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International Scientific-Practical Conference

ECONOMIC GROWTH IN THE CONDITIONS OF GLOBALIZATION

XVIth Edition

October 12-13, 2022

Conference proceedings

Volume I

Chisinau, 2022

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RESOLUTION
of the International Scientific-Practical Conference
"ECONOMIC GROWTH IN THE CONDITIONS OF GLOBALIZATION",
October 12-13, 2022

The XVIth edition of the International Scientific-Practical Conference "ECONOMIC GROWTH IN THE CONDITIONS OF GLOBALIZATION" took place on October 12-13, 2022, under the auspices of the National Institute of Economic Research of the Republic of Moldova. The Conference was attended by representatives of the academic and university environment from the country and abroad, representatives of business and decision-makers, experts, and a large number of young researchers. The Conference brought together for debates and exchange of views about 150 participants from the Republic of Moldova, Romania, Ukraine, Belarus, Italy, Poland, Estonia, Turkey, Azerbaijan, and Bulgaria. During the plenary session and the five thematic sessions, 115 reports were presented and discussed.

The conference participants discussed topics of major interest for the economic, social, and demographic development of the Republic of Moldova and the countries in the region, approached from a theoretical and practical perspective. Among the most important topics were the following:

- ✓ the main macroeconomic indicators, the energy crisis and the skyrocketing prices of goods and services, uncertainties and risks caused by the Russian-Ukrainian war, as well as the consequences of the Covid-19 pandemic, drought, etc.;
- ✓ ensuring food security in the context of the current crises, the efficiency of agricultural production, trade in agri-food products on international markets, ecological agriculture, sectoral analyzes dedicated to soil properties, the goat sector, the growth of cherries and mushrooms, the meat and milk market, the analysis of the grain market and the wine sector, the role of small farms in the agricultural sector, the role of quality schemes and consumer perception, as well as addressing issues related to agricultural higher education;
- ✓ the new models of business development and the promotion of the circular economy, the constraints, and the results obtained in the course towards sustainable development. The determining role of digitization, the social and economic priorities, the risks, but also the advantages of this process were emphasized;
- ✓ the need to adapt societies to demographic changes, especially to the aging of the population, by adjusting economic and social policies to support citizens and communities to mitigate the negative effects of these changes. The importance of ensuring intergenerational solidarity, and creating favorable conditions for capitalizing on the human potential of all generations were emphasized;

- ✓ the priority directions of development of the Republic of Moldova in achieving the commitments undertaken by our country as a candidate country for EU accession, recovery policies, and resilience;
- ✓ the prospects of continuing cooperation between research institutes, developing joint projects aimed at solving the pressing problems of society, and generating economic and social progress.

It was found that:

- Economic resilience means not only recovery but also a remodeling of balances, a "new normal". The risks and vulnerabilities of post-crisis economic recovery are not correlated with social resilience and sustainable development. Supportive policies are necessary but should be adjusted at the local level. Their partial implementation or ineffectiveness of adjustment measures has divergent/adverse effects on the allocation of national resources and human capital.

- The implementation of the National Transfer Accounts methodology registers a significant economic life cycle deficit when the population's income does not cover consumption, this phenomenon is determined by the low demand for labor and the undervaluation of human potential.

- Consumption is ensured through intergenerational transfers. Due to low salaries, vacancies are not exploited, and the population continues to move towards migration, whether temporary or long-term. This situation jeopardizes the prospects of the economy's evolution, the sources of GDP formation, and its distribution.

- In the last two decades and, in particular, recent events - the Covid-19 pandemic and the military conflict between the Russian Federation and Ukraine, have highlighted various vulnerabilities of national and regional economies, which are proliferating, and governments are in a position to review their development patterns to revive their economies and make them more resilient to shocks. Competitiveness, in these conditions, remains one of the key elements, which must be the basis of the strategies of governments, in particular, but also of companies, in particular, for relaunch and development both in the short term and in the long term.

- Unlike the previous periods, currently, the agriculture of the Republic of Moldova is subject to concurrent and quite pronounced risks: pandemic, climatic and economic, including the risks caused by the state of war in Ukraine. And the countries analyzed in the presented reports are also facing a series of economic, climatic, economic, and financial challenges.

- The models applied in the circular economy, the collection of waste under the conditions of the circular economy, the sustainable use of natural resources, and the impact on the environment are to be evaluated and implemented in practice as quickly as possible, and the role of science and researchers consists in facilitating this transition through informational assurance, through consultations and education actions and awareness of this by all actors involved in the construction of this new

economic model, starting from the population, local authorities, the educational and civil community and ending with the business environment.

- Digitization is an indispensable tool of the circular economy model, that's why the participants drew special attention to its risks, as well as their management, opportunities, and advantages of digitalization. At the same time, some aspects related to social inequalities that can be generated by digitization were also mentioned.

- The presentations and debates in the financial field extended to all its components: monetary, budgetary-fiscal, investments, and green finance. Thus there was a convergence of opinions and fundamental benchmarks regarding relevant trends, policies, and practices, but also concrete solutions to overcome the identified barriers. A current and provocative topic put up for debate was the phenomenon of "capital flight" aka "the phenomenon of illicit financial flows". The need to identify these flows, analyze the international framework and implement good practices for the Republic of Moldova was emphasized, with the aim of combating and recovering illicit financial flows and recommending solutions to reduce the impact on the state budget.

- Regarding the demographic situation, it was found that the decline of the population of the Republic of Moldova is largely caused by the problem of migration, which is urgent for several reasons: the context that influences migration intentions; the impact on children whose parents are working outside the country; the challenges faced by migrants in destination countries and the consequences for national security.

- Changes in the age structure of the population influence the formation and redistribution of national resources. The population is aging, the burden on the active population is increasing, and the economic deficit of the life cycle for (pre)retirement age groups is increasing significantly.

- The policies regarding paternity leave have positive implications for the well-being of the child and the parents, but in their implementation, a series of difficulties arise: the precarious information of parents regarding the right to paternity leave; lack of encouragement and discrimination from employers; constraints related to time and circumstances at work (labor shortage); neglect of specific circumstances (premature birth, disability or health status of the mother or child; dependence on additional income from work)

- The analysis of the mortality phenomenon revealed the maintenance of a high level of deaths among the adult population due to non-communicable diseases (cardiovascular diseases, neoplasms), as well as liver cirrhosis and pneumonia. Depending on the place of residence, it was found that, regardless of the cause, mortality is consistently lower among the urban population than among the rural population. However, the socioeconomic crisis of the 1990s and the COVID-19 pandemic affected the urban mortality rate more.

In order to solve the problems presented above, the conference participants formulated suggestions and recommendations intending to remedy the situation in various fields, adjusting the economic, social, and demographic policies in the conditions of internal vulnerabilities and external risks, as follows:

1. Improving entrepreneurial activity and increasing the competitiveness of enterprises:

- Associating companies in clusters, resulting from the urgent need to increase the competitiveness of companies and regions in the Republic of Moldova. The proposal of a theoretical model for evaluating the competitiveness of cluster management, the development of clusters representing an important parameter of the degree of business complexity and a determining factor of innovative activity.
- The adoption of new standards in the development of human capital in the extractive and oil industry to increase the countries' resilience to the energy crisis, caused by the war between the Russian Federation and Ukraine, but also the need to make the transition to the green economy.
- Consolidation of research and the competencies of decision-makers in the field of improving risk management at the micro- and macroeconomic level, associated with the volatility of foreign trade during crises - foreign trade being one of the main channels of transmission of external shocks;
- Increasing the efficiency of external assistance, offered by the EU to the Republic of Moldova to respond to various critical challenges in the development process, which determines the country's resilience to internal and external shocks, produced by the economic crisis, the Covid-19 pandemic and the war between the Russian Federation and Ukraine.
- The development and strengthening of international scientific and technical cooperation to overcome the current global economic and humanitarian crises through the exchange of experience, the joint organization of public events, the use of infrastructure, and informational and analytical resources.

2. Sustainable development and increasing the resilience of the agri-food sector

- Applying the principles of sustainable development and the circular economy in partnership between urban and rural areas. It is necessary to strictly develop an official document regarding the circular economy in the Republic of Moldova.
- Promoting a new development path for rural regions, namely by implementing innovative solutions to improve resilience, and capitalize on local strengths and opportunities. They rely on a participatory approach to develop and implement their strategies, to improve their economic, social, and environmental conditions, in particular by promoting the solutions offered by digital technologies and circular business models.
- Identification of illicit financial flows, analysis of the international and national framework in the field, implementation of the best practices in combating this phenomenon in the Republic of Moldova, application of modern methods of recovery of illicit flows to reduce the impact on the state budget.

- Taking into account the fact that the most important source of ensuring food security in the Republic of Moldova is local agriculture. It is necessary to take urgent and effective measures to increase the production capacities in the agricultural sector, as well as to increase the state reserves of agricultural products, first of all - wheat, barley, corn, etc.
- Establishing at least three levels of responsibility for ensuring the food security of the country's population, including socially vulnerable beds: the first level is the family, and the household; the second level is local public administration bodies (mayors and districts); the third level – the corresponding state bodies (state reserves).
- Continuing the process of diversifying agricultural production based on the application of technologies, plant varieties, and/or productive animal breeds, resistant to droughts, diseases, pests, and other risk phenomena.
- Increasing the support offered to small farmers and young entrepreneurs developing agricultural businesses. Increased support with a special purpose must be given to producers trained in organic agriculture.

3. A complex approach to promoting social and demographic policies:

- The use of wage subsidies in order to reduce the risks of poverty among the vulnerable population. Development of social infrastructure and smart social inclusion measures for disabled people and pensioners.
- The sustainable application of digitization to transform the labor market in the context of social and economic imbalances, ecological problems, and the polarization of social groups. Implementation of social economy structures through the development of social enterprises and capitalizing on the potential of vulnerable groups of the population.
- Implementation of intelligent policies to mitigate the negative consequences of demographic decline and population aging that have reached large proportions and are inevitable in the coming decades. Improving the policies regarding active aging and developing a resilient support system for the post-retirement period, adapted to the specifics of the age group and its needs.
- Intensification of mortality reduction policies with an emphasis on increasing the accessibility of quality medical services for the entire population, especially for those in rural areas, promoting a healthy lifestyle and preventing health-risk behavior.
- Focusing social policies on interrupting the cycles of disadvantages between generations and preventing the perpetuation of a self-replicating population category and the reproduction of poverty by increasing the standard of living of families with children, optimizing and modernizing the educational process, etc.
- Development of multidisciplinary research teams, ensuring the systemic and periodic character of studies, applying complex methods such as National Transfer Accounts, socioeconomic forecasting, longitudinal studies, and demographic projections, in order to identify long-term risks, and develop and implement social programs.

SESSION I

ENTREPRENEURSHIP, IMPROVING COMPETITIVENESS AND STRATEGIES TO RELAUNCH NATIONAL ECONOMIES

PROFITABILITY AND FINANCIAL STRUCTURE OF ITALIAN REAL ESTATE COMPANIES: QUANTITATIVE PROFILES[1]

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Summary

Topicality - The pandemic has had devastating effects on real estate companies. The sector is economically important in many countries and therefore needs special attention.

Purpose - This research analyses the economic and financial dynamics of Italian real estate companies before and during the pandemic. This is also to outline possible relaunch strategies, post Covid-19.

Research methods - The balance sheets of 1,559 Italian companies, with a turnover exceeding € 800,000, for the decade 2011-2020 were analysed. The average trends of Roe and the Financial Independence Ratio were then illustrated, for Italy and each of its macro-areas (North, Centre, and South). The data were subjected to statistical processing. The Anova and Tukey-Kramer methods were used for the comparison between macro-regions.

Results - ROE decreased in the years 2012-2013, presumably due to the reverberations of the 2008 crisis. Then it improved, with a decline due to the pandemic, but this was not generalised. Roe has always been positive. There are no significant differences between the different geographical areas. There is evidence of a good financial situation, which has improved over time.

Implications - This study implements the modest economic literature on real estate companies. Quantitative research highlights the gains that justify the presence of numerous companies. Public policies should be attentive to the sector that implements the national GDP. The Italian situation can be a useful reference for all countries that want to develop the real estate market.

***Keywords**: Performance, Roe, Indice di Indipendenza finanziaria, Anova, Tukey Kramer test.*

***JEL:** G32, R30, R31.*

***UDC:** 332.721+568.155](450)*

[1] This paper is the result of collaboration between the two authors. It is however possible to attribute the paragraphs “Literature review”, “Research methodology” and " Conclusions" to Guido Migliaccio. The other paragraphs are by Andrea De Palma.

Introduction. The real estate sector plays a central role in the development of productive activity and the stability of the financial system.

It plays a central role in the Italian economy, as its contribution to employment, production and the country's financial stability is fundamental and of absolute importance. This sector is characterised by a complex variety of interconnected activities, such as the construction of new buildings and infrastructures, the demolition or renovation of housing stock, as well as all interventions involving the maintenance and static and energy upgrading of buildings to achieve a better quality of living.

The pandemic has had devastating effects on the country's economy, and consequently, also on the sector being researched. In 2020, the turnover of the real estate services business in the five major European countries was estimated at around EUR 350 billion, down 6.3 percent compared to 2019. This was to be expected due to the periods of total business standstill the world experienced during the pandemic.

According to the seventh edition of the report on the real estate services sector in Europe and Italy produced by "Scenari Immobiliari" (Lunghini, 2022), the sector, together with construction, still plays an important role in the economic systems of the main European countries, with added value accounting for between 18 and 21% of the total.

This research analyses the economic and financial dynamics of Italian real estate companies in the decade 2011-2020, i.e. before and during the pandemic, to outline possible post-Covid-19 recovery strategies. The analysis is conducted on the 3 main geographical areas that make up the country, i.e. the North, the Centre, and the South, to answer the following questions:

- *RQ1: What has been the evolution of the main economic-financial indices?*
- *RQ2: Has the pandemic crisis had an impact on the profitability trend and the balance sheet situation of companies in the sector?*

Everything refers to the Italian context, which may be a useful reference for other countries. After the main bibliographic references, the methodology used to elaborate the values of the financial statement is outlined. Then, the main results, implications, limitations of the research, and possible developments of the study with critical considerations and conclusions.

Literature review. The attention of international scholars to the real estate sector is considerable. This is also demonstrated by the most recent publications related to it. Indeed, there are several contributions to investment possibilities (Jayanthi & Saravanakumar, 2022) in a sector that could also be profitable.

Tang et al. (2022) analysed stock market responses and the comovement of returns, while Huang et al. (2022), concerning the Chinese market only, sized up the systemic financial risks arising from the recent pandemic.

Other interesting analyses were developed by Mis et al (2022) who, again regarding Covid-19, quantified the daily rate of return of three major industrial sector share price indices related to the real estate sector.

In addition to the studies focusing on regulated financial markets, there are also more classical bank financing methods (Abuamsha, 2022).

These initial mentions are useful to emphasise the importance of national economies of a sector that, of course, has also been the subject of more typically corporatist analyses.

Particular attention has been paid to the market, and the evolution of prices (De Stefani, 2021) even considering that some experiences are exportable between different nations (Tuyet et al., 2022). This is mainly due to the advent of digital marketing (Luís et al., 2022), which has undoubtedly significantly changed the more classic modes of relationship between supply and demand.

This is also because of the frequent integration of big data in the decision-making process in the real estate sector (Cheryshenko & Pomernyuk, 2021).

The most recent news reserves a relevant place for sustainability requirements for a sector that certainly needs information (Grishkina et al., 2022) and specific training. This is especially so to develop processes typical of the circular economy (Gupta & Tiwari, 2022).

In this context, the quality of life of employees (Majumder & Biswas, 2022), who are suffering the effects of the digitisation of their typical activities (Piazolo & Dogan, 2021), is particularly important.

The Italian situation has mainly been the subject of studies on the economic impact of monetary policy (Ahmed et al., 2021), also unconventional (Ahmed et al., 2020), as well as specific analyses on equity crowdfunding (Battisti et al., 2020).

In Italy, monographic writings on the local language have been widespread (Baiardi et al., 2010; Cermignano & Fasano, 2011).

The absence of quantitative studies on the balance sheet data of Italian companies in the decade 2011-2020 prompted this research intending to implement the economic literature on companies and to test the following hypotheses:

- *(H1) The profitability trend declines;*
- *(H2) The financial structure worsens;*
- *(H3) Location differentiates pandemic effects.*

The purpose of research. The purpose of this study is therefore to outline an initial analysis of the economic and financial situation of Italian companies with Ateco code 68, also distinguishing them by geographical area, in the period 2011-2020, using the study of the temporal evolution of two indices (ROE and Financial Independence Ratio) obtained from the analysis of their financial statements.

Research methodology. A sample of companies with the ATECO code 68: Real estate activities was taken from the AIDA database of Bureau van Dijk (www.bvdinfo.com). The balance sheets of 1,559 companies, with a turnover exceeding € 800,000, for the decade 2011-2020 were then analysed.

The companies were divided according to the 3 Italian macro-regions, North, Centre, and South. Subsequently, ROE, the economic ratio, and the Financial Independence Ratio were analysed.

The graphical representation of the trend of the average annual data for each ratio also required the determination of the interpolating curve, using, as a rule, the polynomial equation of degree 6 that maximized the value of R^2.

ANOVA methods (with a 0.05 level of significance) and, if necessary, Tukey-Kramer were used for the comparison between macro-regions. Each outcome is illustrated and commented on.

Main results

ROE. ROE indicates the return on equity and is the ratio of net income for the period to equity. The ratio shows how many euros of income have been gained (in the case of a profit) or lost (in the case of a loss) for every euro invested in the company by the shareholders. Its value should be as high as possible, away from the value of the appropriate rate of return and the return on public bonds often used as references.

Table 1 shows the values of the ratio for each year for Italian macro-areas.

Table 1: **ROE% - Annual average values**

	2011	**2012**	**2013**	**2014**	**2015**	**2016**	**2017**	**2018**	**2019**	**2020**
Italy	3,85	2,06	2,08	1,91	2,38	2,65	3,00	3,13	2,92	2,65
North	3,78	2,17	2,11	2,14	2,72	2,87	3,40	3,57	3,28	2,38
Center	3,61	1,68	2,11	1,63	1,62	2,47	2,31	2,55	2,49	3,00
South	5,29	2,46	1,73	1,02	2,12	2,31	2,34	2,42	2,24	3,71

Source: elaboration on AIDA data.

To plot the trend graph of annual average values, we first determine the interpolating equation that maximizes the R2 value (Table 2).

Table 2: **Equations of ROE for interpolating curves**

	Equation	R^2
Italy	$y = 0{,}0004x^6-0{,}0147x^5+0{,}2001x^4-1{,}3988x^3+5{,}3476x^2-10{,}546x+10{,}251$	0,9812
North	$y = 0{,}0003x^6-0{,}0097x^5+0{,}1409x^4-1{,}0459x^3+4{,}2668x^2-8{,}8955x+9{,}3227$	0,9861
Centre	$y = 0{,}0008x^6-0{,}0266x^5+0{,}3491x^4-2{,}3075x^3+8{,}1052x^2-14{,}356x+11{,}813$	0,8877
South	$y = 1E\text{-}04x^6-0{,}002x^5+0{,}0186x^4-0{,}188x^3+1{,}6301x^2-6{,}5222x+10{,}344$	0,9726

Source: elaboration on AIDA data.

The R2 value in the North and South is close to 1, which shows that the trend depicted in Figure 1 is statistically valid. In the Centre, the R2 value is slightly lower, thus, the depicted trend deviates, albeit slightly, from optimal values. The analysis of the ROE reveals a sector with a sufficient return on equity, as except for a few years, the sector and the three geographic areas analysed, always show appreciable values, albeit with an uncertain and fluctuating trend.

This results in Figure 1, which shows an irregular ratio trend.

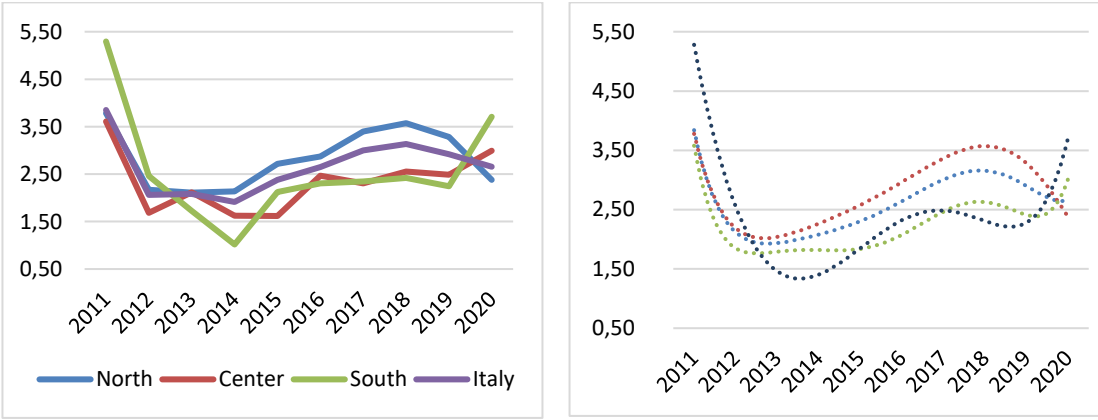

Figure 1: **ROE trend 2011-2020**
Source: elaboration on AIDA data.

The trend in the South starts from very high values, compared also to the other geographic macro-areas, and then registers a more considerable drop in 2014 to a value of 1%. This is followed by a sharp recovery that brings the values of the South back above the other areas under consideration, to values close to 4. The North and the Centre, on the other hand, show a less fluctuating trend than the South, but it should be noted that the North is the only one to have a drop in the ROE ratio in the last years of the decade under review. Moreover, the trends of the curves all show a decline in the years 2013-14, the cause of which can presumably be attributed to the reverberations of the 2008 crisis.

To better measure and evaluate the differences, the annual average data of the ROE were subjected to the ANOVA test (*Table 3)*.

Table 3: **Anova Roe For Countries**

SUMMARY				
Groups	*Count*	*Sum*	*Average*	*Variance*
North	10	28,40824	2,840824	0,403715318
Center	10	23,46232	2,346232	0,404209632
South	10	25,6457	2,56457	1,366922036

ANALYSIS OF VARIANCE						
Origin of Variation	*SQ*	*dof*	*MQ*	*F*	*Significance value*	***F critic***
Between groups	1,228696	2	0,614348	0,847436198	0,439595052	**3,35413083**
In the groups	19,573623	27	0,724949			
Total	20,802319	29				

Source: elaboration on AIDA data.

Confirming the hypothesis, the variance of the ROE shows an F-value of 0.84, lower than F (3.35), which confirms the lack of statistically significant differences between the averages of the three areas examined, as can be seen from Table 4 in which the Tuckey-Kramer test is reported.

Table 4: **Tuckey Kramer Leverage**

Average North group	2,84
Group size North	10
Average Center group	2,35
Group size Center	10
Average South group	2,56
Group size South	10
Mq	0,72
q static	3,51
Comparison between North and Center	
Absolute difference	0,49
Critical value	0,95
Average between North and Center	Difference NOT significant
Comparison between North and South	
Absolute difference	0,28
Critical value	0,95
Average between North and South	Difference NOT significant
Comparison between Center and South	
Absolute difference	0,22
Critical value	0,95
Average between Center and South	Difference NOT significant

Source: Our elaboration.

Financial Independence Ratio. The Financial Independence Ratio shows the relationship between venture capital and investments, and thus the proportion in which the company is dependent on or independent of third-party capital. The ratio formula is:

$$\text{Financial Independence Ratio} = \frac{Net\ assets}{Total\ assets} * 100$$

An abstractly ideal value is 50%.
The data obtained from the AIDA database on the ratio are shown in Table 5.

Table 5: **Financial Independence Ratio - Annual average values**

	2011	**2012**	**2013**	**2014**	**2015**	**2016**	**2017**	**2018**	**2019**	**2020**
Italy	43,03	43,84	44,87	45,76	46,54	47,36	48,51	49,26	50,04	54,72
North	42,93	42,34	46,88	54,62	55,61	50,26	51,86	53,13	49	47,53
Center	32,09	33,22	34,82	35,87	37,64	39,63	41,42	44,58	45	46,29
South	48,73	49,43	47,11	59,97	57,99	63,51	61,53	55,25	54,48	34,55

Source: elaboration on AIDA data.

The Financial Independence Ratio has a rather regular trend for the Centre and the North, while for the South it follows an unstable course, with a maximum in 2016 and a minimum in 2020. This shows that in the South of Italy, firms felt the effects of the pandemic more strongly, increasing their debt exposure to third parties. Table 6 shows the equations needed to obtain the interpolating trend curves and, with R^2, their representative effectiveness.

Table 6: **Equations of Financial Independence Ratio for interpolating curves**

	Equation	R^2
Italy	$y=0{,}0011x^6-0{,}0345x^5+0{,}4097x^4-2{,}3891x^3+7{,}0718x^2-8{,}8898x+46{,}869$	0,9997
North	$y = 0{,}0058x^6-0{,}2002x^5+2{,}7474x^4-18{,}804x^3+65{,}525x^2-102{,}41x+96{,}312$	0,8995
Centre	$y = 0{,}0023x^6-0{,}0695x^5+0{,}8226x^4-4{,}7519x^3+13{,}907x^2-17{,}778x+39{,}98$	0,9973
South	$y = -0{,}0043x^6+0{,}1432x^5-1{,}795x^4+10{,}487x^3-28{,}6x^2+34{,}685x+33{,}964$	0,8587

Source: elaboration on AIDA data.

The equations show that the R2 value for the Centre is close to 1: the trend depicted in Figure 2 is statistically significant. For the North and South, however, it merely approximates the broken line.

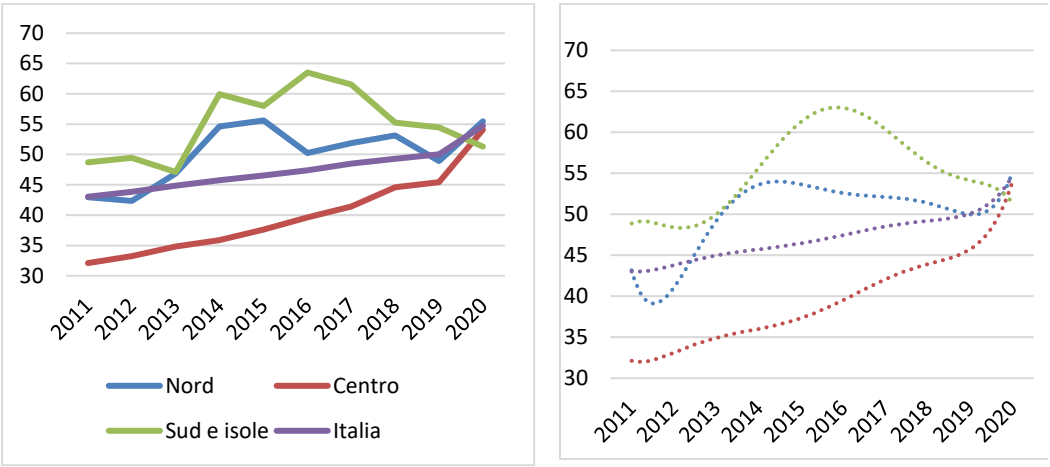

Figure 2: **Trend of the Financial Independence Ratio 2011-2020**
Source: elaboration on AIDA data.

The trend of the different macro-areas is similar for the North and the Centre, which overall, although starting with low values in 2011, continues to grow until reaching a value close to 55 in 2020.

The trend for the South, on the other hand, is fluctuating and, while presenting values that are always higher than those of the other geographic areas, in recent years it has been declining, reaching around 50.

The measurement and evaluation of the difference between the groups are entrusted to the ANOVA test (Table 7).

Table 7: **Anova test on Financial Independence Ratio**

SUMMARY				
Groups	*Count*	*Sum*	*Average*	*Variance*
North	10	494,08	49,408	20,92202
Center	10	391,01	39,101	26,9233
South	10	532,55	53,255	74,37523

ANALYSIS OF VARIANCE						
Origin of Variation	*SQ*	*dof*	*MQ*	*F*	*Significance value*	*F critic*
Between groups	1071,231	2	535,6156	13,14711	0,000103	3,354131
In the groups	1099,985	27	40,74018			
Total	2171,216	29				

Source: elaboration on AIDA data.

The analysis of variance shows that the F-value (13.14) is higher than the critical F-value (3.35), which therefore requires the Tuckey-Kramer test (Table 8).

Table 8: **Tuckey Kramer - Financial Independence Ratio**

Average North group	50,199
Group size North	10
Average Center group	39,881
Group size Center	10
Average South group	54,93
Group size South	10
Mq	40,74
q static	3,51
Comparison between North and Center	
Absolute difference	10,32
Critical value	7,08
Average between North and Center	Difference NOT significant
Comparison between North and South	
Absolute difference	4,73
Critical value	7,08
Average between North and South	Difference NOT significant
Comparison between Center and South	
Absolute difference	15,05
Critical value	7,08
Average between Center and South	Difference significant

Source: Our elaboration.

The statistically significant differences are between the values in the Centre and the South.

Conclusions. The effects of the pandemic on the economic-financial equilibrium of enterprises prompted this analysis of a sector that is fundamental to the economy of many countries, especially Italy.

Using the balance sheets of the last decade of a sample of 1,559 companies characterised by the ATECO code 68 - Real Estate Activities, the trends of two ratios expressing profitability and the degree of independence from third-party capital were outlined.

Appropriate statistical elaborations supported the analysis.

The first hypothesis (H1) can only be confirmed to a limited extent because profitability has declined slightly over the past year and only in certain areas of the country. And the decline was certainly less than in some previous years in which, in Italy, there was the reverberation of the 2008 financial crisis.

The second hypothesis (H2) is by no means confirmed because, over time, the financial structure of companies improves, approaching, even the pandemic years, values considered optimal.

Despite the considerable differences that characterise the Italian macro-regions, very little diversity was found among them. The third hypothesis (H3), therefore, cannot be considered confirmed.

These are the conclusions of a purely quantitative study, without considering other qualitative aspects that could justify the trends described. In the future, the analysis could be more detailed by analysing the trend of the other indices and correlating them with market prices, the cost of money, and, above all, the public support policies that intervened in the most critical periods.

Despite these limitations, the study is nevertheless useful to the management of companies operating in the sector, who can compare their situation with the average, to identify any negative differences, presumably due to management inefficiencies that need to be remedied. It also provides governments with useful indications to guide support and development policies.

Analyses of this kind would not be possible without the valuable contribution of balance sheet databases, which are a fundamental element for quantitative balance sheet studies.

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PROFITABILITY AND FINANCIAL STRUCTURE OF SOCCER CLUBS: AN INTERNATIONAL COMPARISON[2]

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Summary

Topicality - The pandemic has greatly affected the economies of all nations. Sport, too, has suffered the consequences of the measures necessary to contain the infection, with obvious consequences on clubs' budgets.

Proposal - The study analyses the financial performance of a sample of soccer teams in the leagues of three European nations: Italy Spain and Germany. It highlights the ten-year trend of profitability and financial structure. This is also to verify the impact of the pandemic on the balance sheets of the major soccer clubs.

Methodology - From the Orbis Europe full database of the Bureau van Dick database, the balance sheet data for 10 consecutive years of the decade 2012-2021 of the 10 most representative teams of the Italian, Spanish and German leagues were taken. Subsequently, the development of Roe and Leverage was analysed. The data were also subjected to various statistical elaborations mainly to verify whether the differences between the three nations are significant.

Results - In recent years, there has been a much smaller decline in profitability in Spain and Germany, rather than in Italy, where the results have been truly disastrous. On the contrary, a progressive improvement in the financial structure can be noted, especially in the Italian clubs, which have recorded worrying values over time. The Italian clubs, however, although very renowned, have too often had worse outcomes over the decade than the teams of the other two nations.

Implications - This study implements the literature on the effects of the pandemic on the economy, especially in sports. It encourages comparisons in time and space of budgets. It will be necessary to implement the research by analysing the trend of other indices as well to have more detailed information. However, the results are useful for the governance of European soccer clubs and also for public authorities that often support sports activities that are considered socially relevant.

[2] This paper is the result of collaboration between the two authors. It is however possible to attribute to Giuseppe Orsillo the paragraphs “Research methodology” and "Main results", with relative sub-paragraphs. The other paragraphs are by Guido Migliaccio.

This is also at a time when refreshments were needed to cope with the damage resulting from the pandemic.

***Keywords**: Performance, Roe, Leverage, Anova, Tukey Kramer test.*
***JEL:** M10, M19, M40.*
***UDC:** 796.332:568.155(450)*

Introduction. Sport has changed its significance in the individual and social spheres (Scarlata, 2015), and also deserves an educational role (Pollo et al., 2011).

Soccer has mainly established itself in Europe, Italy in particular, and South America.

The advent of mass media (Martin et al., 2015;) developed its social value.

Consequently, teams had to take on a legal form more in keeping with the changed situation. The economic-financial dynamics have also changed significantly due to increasing revenues from season tickets, tickets, television rights, and sponsorships. In Europe, financial fair play was introduced to optimise the economic-financial management of clubs (Bernoldi & Sottoriva, 2011; Ghio et al., 2019).

The pandemic also had negative effects on the Italian soccer sector, due to the interruption of championships and restrictions that then prevented the sale of tickets and season tickets.

To cope with the crisis, clubs had to take drastic measures to remedy the decrease in revenues. Some clubs had to sell their most valuable players and downsize their sporting projects, while others had to resort to loans or reduce salaries.

This research analyses the economic and financial dynamics of Italian, Spanish, and German soccer clubs in the decade 2012-2021, also to verify the effects of Covid 19. The analysis is conducted by analysing and comparing the trend of two balance sheet indices.

The fundamental research question is, therefore:

RQ: Has the pandemic crisis affected the profitability and balance sheet of European soccer clubs?

Everything refers to the Italian context, which may be a useful reference for other countries. After the main bibliographic references, the methodology used to elaborate the values of the financial statement is outlined. Then, the main results, implications, limitations of the research, and possible developments of the study with critical considerations and conclusions.

Literature Review and Hypothesis Development. This study is part of the reflections on leisure time and the consequent demand for 'entertainment' (Wolf, 2010; Resciniti, 2002), which is often satisfied with sports activities, whether practised or followed by mere spectators.

Sport has its particular economy that has become established (Walzel & Roemisch, 2020) with its diffusion, the transition from amateurism to professionalism, etc. (Walzel & Roemisch, 2002).

While there is a vast bibliography on the social, psychological, and educational aspects of sport and soccer, international studies on economic dynamics are relatively more recent.

At the end of the last century and in the first decade of the new millennium, reflection on the economic arrangements of competitive sports (Szymanski, 2003) and thus on the players' market (Duff & Panja, 2018), accentuated by the famous 'Bosman ruling' of 1995 that abrogated the sporting constraint (Antonioni & Cubbin, 2000; Bastianon, 2015), became more prominent.

International comparisons have since spread as well (Lago-Peñas & Sampaio, 2015).

More recent writings also consider current legislation, and its effects on economic and sporting outcomes (Mourão & Gomes, 2017).

In many of the publications, the valuation of intangible fixed assets (Shareef & Davey, 2005) and, among these, especially that of players' multi-year rights (Migliaccio et al., 2022), is of fundamental importance.

The income results of the last few years have been strongly influenced by the pandemic that stopped competition to reduce contagions. This should lead to the verification of the following hypotheses:

(H1) A general decline in profitability and
(H2) A worsening of the financial structure.

However, it must be considered that the anti-counterfeiting measures were different in different countries. This should also have resulted in divergent budgetary outcomes to be verified by testing the third research hypothesis:

(H3) The effects of the pandemic on the economic-financial equilibrium of companies were different in different countries.

The purpose of this study is therefore to outline an initial analysis of the economic and financial situation of companies of three different European nations, also comparing them whit other countries, in the period 2012-2021, using the study of the temporal evolution of two indices (Roe and Leverage) obtained from the analysis of their financial statements.

Research Methodology. From the Orbis Europe full database of the Bureau van Dick database, the balance sheet data of 10 consecutive years from the decade 2012-2021 of the 10 most representative teams of the Italian, Spanish and German leagues were taken (Table 1).

Table 1. **Sample teams**

Italy	*Spain*	*Germany*
Inter	Barcellona	Bayern Munich
Milan	Real Madrid	Borussia Dortmund
Juventus	Celta vigo	Leipzig
Lazio	Getafe	Schalke 04
Roma	Real Sociedad	Borussia Monchengladbach
Fiorentina	Atletico Bilbao	Augsburg
Atalanta	Villareal	Cologne
Udinese	Real Betis	Hoffenheim
Napoli	Valencia	Bielefeld
Genoa	Sivilla	Werder Bremen

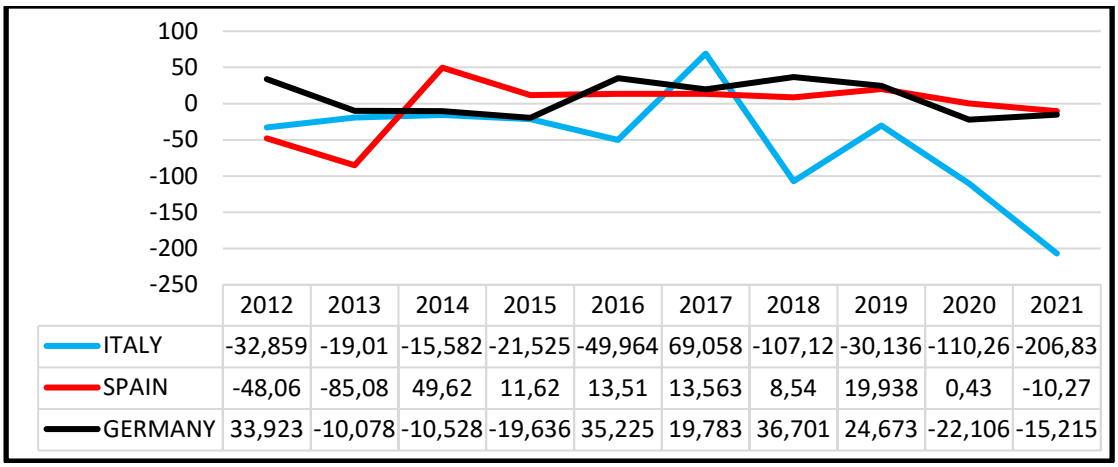
Subsequently, the development of the Roe, economic ratio, and financial leverage, financial ratio, were analysed. The data were also subjected to various statistical elaborations.
ANOVA methods (with a 0.05 level of significance) and, if necessary, Tukey-Kramer were used for the comparison between countries. Each outcome is illustrated and commented on.

Main results

ROE

The Return On Equity (ROE) is one of the best-known financial statement indicators. The ratio measures the percentage net profitability of a company and thus allows its overall profitability to be measured. It is calculated by dividing net profit by equity and multiplying by one hundred. The highest possible value is desired. Table 2 shows the development of the average Roe of the 10 selected teams for each of the three countries, for each year.

Table 2. **Roe confrontation**



	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021
ITALY	-32,859	-19,01	-15,582	-21,525	-49,964	69,058	-107,12	-30,136	-110,26	-206,83
SPAIN	-48,06	-85,08	49,62	11,62	13,51	13,563	8,54	19,938	0,43	-10,27
GERMANY	33,923	-10,078	-10,528	-19,636	35,225	19,783	36,701	24,673	-22,106	-15,215

Source: Our elaboration on data from Orbis Europe full.

In Italy, there are low Roe values with even very negative periods. The collapse of profitability in the pandemic period is evident, reaching record levels. Comparing the Italian situation with other countries, one can see relatively similar values at the beginning of the period considered, which instead diverge considerably in recent years. More precisely, it is Italy that measures extremely low values, while Spain and Germany manage to contain the negative effects of the pandemic. To assess whether the differences shown in the graph are statistically significant, the data are subjected to the Anova test (Table 3).

Table 3. **Anova Roe For Countries**

SUMMARY						
Groups	*Count*	*Sum*		*Average*		*Variance*
Italy	10	-524,232		-52,4232		5472,215
Spain	10	-27,2912		-2,72912		1448,768
Germany	10	72,74282		7,274282		614,2141
ANALYSIS OF VARIANCE						
Origin of Variation	*SQ*	*dof*	*MQ*	*F*	*Significance value*	***F critic***
Between groups	20444,52	2	10222,26	4,069805	0,02852	**3,354131**
In the groups	67816,77	27	2511,73			
Total	**88261,29**	**29**				

Source: Our elaboration.

The above test shows that the value of F (4.07) is higher than F critic (3.354): there is a difference between the different groups.

It is, therefore, necessary to proceed to the post-Anova test to understand between which groups there is the previously reported difference (Table 4).

Table 4. **Tuckey Kramer ROE**

Average Italy group	-52,4232
Group size Italy	10
Average Spain group	-2,72912
Group size Spain	10
Average Germany group	7,274282
Group size Germany	10
Mq	2511,732
q static	3,51
Comparison between Italy and Spain	
Absolute difference	49,69407
Standard error	15,84845
Critical value	55,62804
Average between Italy and Spain	Difference NOT significant
Comparison between Italy and Germany	
Absolute difference	59,69747
Standard error	15,84845
Critical value	55,62804
Average between Italy and Germany	Significant difference

Comparison between Spain and Germany	
Absolute difference	10,0034
Standard error	15,84845
Critical value	55,62804
Average between Spain and Germany	Difference NOT significant

Source: Our elaboration.

The main differences are therefore mainly attributable to the comparison between Germany and Italy, as German clubs recorded better values than Italian clubs in the reference period.

There are, however, no statistically significant differences between Italy and Spain, and between Spain and Germany

Financial leverage. The debt or leverage ratio expresses a company's rate of indebtedness and is measured by comparing total available resources to equity capital.

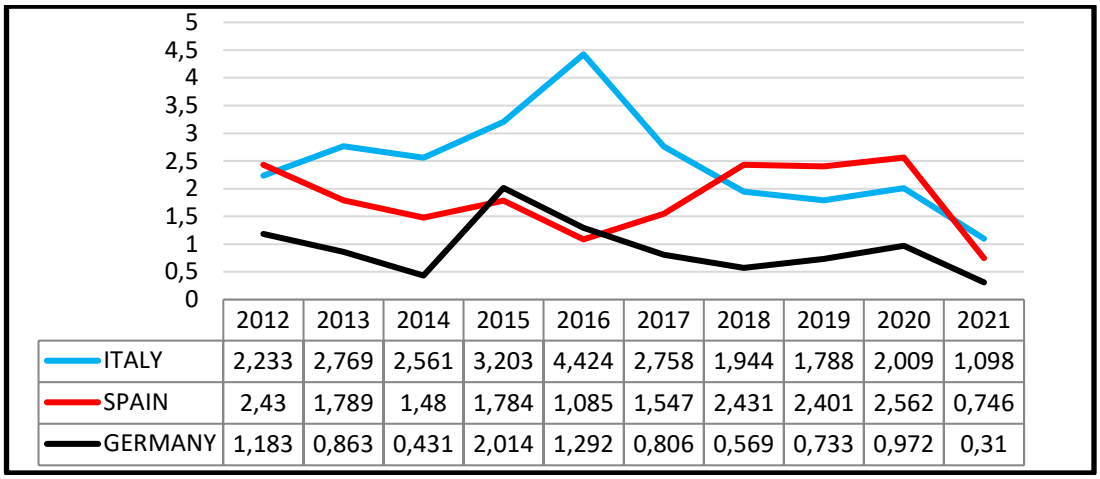
If the value obtained is 1, the company has no debt, the only source being equity.

If the value is between 1 and 2, there is relatively physiological debt.

If, on the other hand, it is greater than 2, debts are high and therefore the financial situation is worrying.

The trend of the ratio of the three countries is in Table 5.

Table 5. **Leverage Confrontation**



	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021
ITALY	2,233	2,769	2,561	3,203	4,424	2,758	1,944	1,788	2,009	1,098
SPAIN	2,43	1,789	1,48	1,784	1,085	1,547	2,431	2,401	2,562	0,746
GERMANY	1,183	0,863	0,431	2,014	1,292	0,806	0,569	0,733	0,972	0,31

Source: Our elaboration on data from Orbis Europe full.

Widespread high values testify to high indebtedness, especially of the Italian clubs, reaching the highest value in 2016. During the pandemic period, the ratio falls and approaches optimal values.

The Italian situation is on average the worst, although it improves with time. The salient feature of the three countries is similar: during the Covid period, the use of debt capital decreased.

To assess whether the differences shown in the graph are significant, the data are subjected to the post-Anova test (Table 6).

Table 6. **Anova Leverage For Countries**

SUMMARY						
Groups	Count	Sum	*Average*	Variance		
Italy	10	2479,041	247,9041	8254,576		
Spain	10	1825,941	182,5941	3911,688		
Germany	10	917,7807	91,77807	2435,87		
ANALISI VARIANZA						
Origin of Variation	*SQ*	*dof*	*MQ*	*F*	*Significance value*	***F critic***
Between groups	122960,9	2	61480,47	12,63113	0,000134	**3,354131**
In the groups	131419,2	27	4867,378			
Total	254380,1	29				

***Source*: Our elaboration.**

The outcome of the Anova test also forces the Tukey-Kramer (Table 7) to identify differences.

Table 7. **Tuckey Kramer Leverage**

Average Italy group	247,9041
Group size Italy	10
Average Spain group	182,5940714
Group size Spain	10
Average Germany group	91,77807369
Group size Germany	10
Mq	4867,377997
q static	3,51
Comparison between Italy and Spain	
Absolute difference	65,31002857
Standard error	22,06213498
Critical value	77,43809376
Average between Italy and Spain	NOT significant difference
Comparison between Italy and Germany	
Absolute difference	156,1260263
Standard error	22,06213498
Critical value	77,43809376
Average between Italy and Germany	Significant difference
Comparison between Spain and Germany	
Absolute difference	90,81599774
Standard error	22,06213498
Critical value	77,43809376
Average between Spain and Germany	Significant difference

Source: Our elaboration.

The main differences are between Italy and Germany and between Spain and Germany.

Conclusions. The study analysed the financial performance of a sample of soccer clubs from the leagues of three European nations. It highlighted, therefore, the trend of profitability and a debt ratio.

This was also to verify the impact of the pandemic on the balance sheets of the leading soccer clubs in Italy, Spain, and Germany.

The first research hypothesis (H1) is confirmed: there was a much smaller decline in profitability in Spain and Germany, rather than in Italy, where the outcomes were truly disastrous.

The more drastic measures aimed at addressing an extremely problematic situation had a greater effect on Roe.

On the contrary, the second research hypothesis (H2) was not confirmed. On the contrary, there was a progressive improvement in the financial structure, especially of the Italian teams, which recorded much more worrying results over time.

Wanting to better compare the results between the three nations, it is evident that the Italian clubs, although very renowned in the sporting sphere, have had worse results over the decade than the teams of the other two nations. The difference was accentuated in the income aspect due to the virus, while paradoxically it had a beneficial effect on debt.

Italy has always had extremely fluctuating values and often considerably worse than those of the other nations.

This first study will necessarily have to be implemented by analysing the trend of other ratios as well, which will certainly allow a more specific analysis. It will also be necessary to correlate the results with other sociometric ratios that measure the trend of the pandemic in the three nations, to identify possible relationships.

In addition to the purely quantitative analyses, it will also be necessary to add considerations arising from the different regulations and the different roles played by soccer in the nations where it is very popular.

It is also necessary to consider the reliefs that the state provided to cope with the pandemic and that might have conditioned the budgetary results in some way.

Investigations of this kind have only been possible thanks to the valuable databases that collect balance sheets for a decade, facilitating their comparison.

This study is of interest to the management of teams, which can thus have useful references to compare the results of their management with the average performance of the sample considered.

Public authorities can also benefit from studies of this kind, considering the state intervention that was necessary to deal with the pandemic.

The economic and financial aspects that have prevailed in this research should, in its subsequent developments, also consider the social value of soccer, which, in some nations, represents a very important phenomenon, especially for certain classes of the population that attribute a considerable, almost existential value to it...

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NOI STANDARDE PENTRU PREGATIREA PROFESIONALA A INGINERILOR MINIERI SI PETROLISTI IN CONTEXTUL CRIZEI ENERGETICE MONDIALE

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Summary

The innovative development of the fossil mineral resource exploitation industry requires the existence of well-trained specialists both theoretically and practically. It is mandatory today for an engineer - whatever his technical specialty is - to have important digital knowledge in addition to the knowledge strictly related to his specialization. For engineers in direct production activity, this knowledge is necessary to be able to correctly and efficiently exploit the latest generation equipment and installations and to ask specialists in the field to design machines and installations of a superior generation. In addition, mining and petroleum engineers are in a continuous struggle with the unknown. Even if prospecting and exploitation methods have been perfected and modernized, when you work in the depths of the earth, on land or in the seas and oceans, surprises can appear at any time. The activity of exploiting useful mineral substances (solid, liquid, and gaseous) is not comparable to the activity of a factory or plant operating on the surface. It is not simple here either, and there are risks here too, but they are easier to manage.

A big challenge for education in the oil and mining fields is attracting young people. This is in the context of promoting the use of green energy sources, which must obviously be done, and which alienates young people, they not understanding the fact that the two energy sources will coexist for a long time and the fact that the jobs in the exploitation of fossil mineral resources will not disappear.

In order to understand all this, the paper schematically addresses the issue related to the analysis of the personality structure of the mining/petroleum engineer, the factors

that determine personal development, the evaluation criteria of personal development, and his technological culture. In this sense, the basic qualities, attitude, and skills necessary for the mining/petroleum engineer are analyzed.

Keywords: *mining engineer, petroleum, land, resources.*
JEL: *L71, L84, M53*
UDC: *622.32:378*

Abstract

Dezvoltarea inovatoare a industriei de exploatare a resurselor minerale fosile necesită existenta unor specialisti bine pregatiti atât teoretic cat si practic. Este obligatoriu astăzi pentru un inginer- oricare ar fi specitalitatea tehnică a acestuia, ca pe lânga cunostințele legate strict de specializare sa dețină cunostințe digitale importante. Pentru inginerii din activitatea productvă directă, aceste cunostințe sunt necesare pentru a putea exploata corect și eficient echipamentele și instalațile de ultima generație și a solicita specialiștilor din domeniu proiectarea de masini si instalatii de o generatie superioara. In plus inginerii minieri si petrolisti sunt intr-o lupta continua cu necunoscutul. Chiar daca metodele de prospectare si exploatare s-au perfectionat si modernizat, atunci cund lucrezi in adancurile pamantului, pe uscat sau in largul marilor si oceanelor surprizele pot apărea in orice moment. Activitatea de exploatare a substantelor minerale utile (solide, lichide si gazoase), nu se compara cu activitate dintr-o fabrica sau uzina care functineaza la suprafata. Nici aici nu este simplu, si aici exista riscuri dar care sunt mai usor de gestionat

O mare provocare pentru învățământul din domeniile petrolier si minier o constituie atragerea tinerilor. Aceasta in contextul in care se promovează folosirea surselor de energie verde, care trebuie evident facuta, si care îndepărtează tinerii, acestia neînțelegând faptul ce cele doua surse de energie vor coexita vreme indelungata si faptul ca locurile de munca din domeniul exploatarii resurselor minerale fosile nu vor dispărea.

Pentru a înțelege toate acestea lucrarea abordează schematic problematica legată de analiza structurii personalității inginerului minier/petrolist, factorii care determină dezvoltarea personală, criteriile de evaluare a dezvoltării personale și cultura tehnologică a acestuia. In acest sens se analizează calitățile de bază, atitudinea și competențele necesare inginerului minier/petrolist.

Cuvinte-cheie*: inginer, minier, petrolist, pământ, resurse.*

Este necesar să pregătim specialiști pentru exploatarea substantelor minerale utile (solide, lichide si gazoase) ale Pământului nu atât pentru astăzi, cât pentru viitor. Acesta înseamnă că un absolvent al unei forme de învățământ cu profil minier suu de petrol-gaze trebuie să aibă ca scop obținerea de noi cunostinte, să fie în competent și capabil să găsească soluții in situații dificile, să fie competitiv, să învețe constant și să se adapteze la condițiile în continuă schimbare ale vieții. Viața necesit ă soluții urgente la problemele urgente ale exploatarii si valorificarii resurselor minerale.

Multe țări, de exemplu, „tigrii din Asia de Est", prin dezvoltarea științei, stăpânirea noilor tehnologii și, cel mai important, prin sprijinul pentru educație și, prin urmare, creșterea capitalului lor uman, au obtinut realizari tehnico stiintifice la nivelul statelor dezvoltate. Astăzi, în întreaga lume, numărul tinerilor care doresc studii superioare este în creștere. Spre exemplu, în Finlanda 94%, SUA 82%, Coreea de Sud 96%, Grecia 91% dintre tineri au și intenționează să aibă studii superioare.

Teza conform căreia educația este baza progresului social este incontestabilă. Stabilitatea politică și starea economică a societății depind de nivelul acesteia. Succesul unei țări în lumea globală poate și va fi determinat de capitalul uman, care trebuie crescut în mod constant prin formarea de specialiști noi cu cunoștințe și abilități modern. Și toate acestea se referă în primul rând la inginerii minieri/petrolisti, care, sunt angajați în exploatarea si valorificarea resurselor pământului.

În anii '70 ai secolului al XX-lea, „Clubul de la Roma" în prognozarea dezvoltării omenirii a arătat că amploarea utilizării materiilor prime minerale va determina nivelul său de viață, care va depinde de dezvoltarea tehnologiei și a exploatarea lor. Societatea poate exista doar cu condiția unui progres tehnologic continuu, iar o încetinire a dezvoltării poate duce la crize. Sustinerea de catre stat a aspirațiilor tinerilor pentru știință este foarte importanta, deoarece stiința joacă rolul de dirijor, receptor și colecționar, oferind informații obiective despre realitate si făcând posibilă luarea deciziilor necesare.

Studenții care doresc să devină ingineri minieri/petrolisti trebuie sa fie sârguinciosi, curiosi, devotati științelor pe care le studiază. De asemenea trebuie să se obișnuiască cu munca independentă, deoarece cunoștințele acumulate stau la baza muncii de succes de-a lungul vieții. Educația tinerei generații trebuie să aibă o prioritate strategică si in acest sens invocam afirmația binecunoscută conform căreia „cu cât o persoană este mai luminată, cu atât este mai utilă pentru patria sa", iar o persoană incultă, din păcate, este adesea periculoasă din punct de vedere social. În același timp, nu trebuie să uităm că un bun specialist în domeniul său trebuie să primească o educație umană generală largă.

Economia modernă are nevoie de un specialist capabil care să stăpânească noi cunoștințe, să creeze noi produse, să găsească noi modalități de rezolvare a problemelor de producție, să nască noi idei și tehnologii.

Pentru a atrage studenți, a universitatile de profil- Universitates din Petrosani si Universitatea Petrol Gaze din Ploiesti si-au creat branduri proprii care trezesc interesul tinerilor.

Dezvoltarea modernă a tehnologiilor intensive în domeniul științei necesită o creștere a cercetării interdisciplinare în formarea unui inginerilor minieri/petrolisti, care trebuie, pe langa asimilarea obișnuită a disciplinelor foarte specializate sa dețina o gama larga de competențe cheie. Astăzi, când o parte importanta a tinerilor se străduiește să devină diplomați, economiști, artiști sau avocați, este necesar să promovăm în mod activ specializarile de mine si petrol-gaze la scară națională pentru a atrage cei mai talentați elevi pe orbita tehnologilor pentru exploatarea resurselor Pământului.

La fel ca multi altii credem că absolventii de invatamant superior vor determina viitorul țării. Propaganda de astăzi a imaginii unui absolvent al universității ca fiind un consumator face ca imaginea unei personae publice/oficiale să fie considerata mai prestigioasă, iar oamenii creativi precum un om de știință, inginer și profesor - creatorii de capital uman, sunt definiți de fapt ca oameni de clasa a doua. Prin urmare, în ciuda declarațiilor oficialitatilor despre importanța științei și educației, salariile lor sunt adesea mai mici decât cele ale unui operator bancar sau ale unui funcționar obișnuit.

Rezultatul acestei politici este că un număr semnificativ de tineri nu se străduiesc să devină ingineri, sa cerceteze și să producă ceva nou. Este mai ușor și mai promițător să-ți aranjezi viața de funcționar într-un birou confortabil departe de dificultățile muncii creative sau să pleci în străinătate în căutarea fericirii tale.
Este important ca universitatile să aibă cadre didactice de cel mai înalt nivel, care se gândesc la ce vor să se gândească și pot să-și permită aceasta financiar.
Într-adevăr, există astfel de oameni practici în toate universitățile țării, dar nu pot face față problemelor care-i interesează fără sprijin financiar.
Secolul 21 este secolul cunoașterii pe care tinerii o dobândesc în familii, școli și universități. Cunoașterea și abilitățile profesionale dobândite vor determina soarta lor în societate. În principiu, o educație bună este o investiție în capitalul uman, a cărui creștere este responsabilitatea nu numai a statului, ci și a oricărei persoane care se respectă. Subliniem că, fără un interes personal propriu, în condiții moderne, stăpânirea cunoștințelor la un nivel înalt este aproape imposibila.

Tinerii absolventi de licee care doresc să continue să studieze, trebuie sa aiba in vedere urmatoarele:

1. Alegerea specialității ar trebui să fie semnificativă caci succesul întregii lor vieți depinde de fapt de aceasta. Majoritatea doritorilor nu au o idee clară despre viitor, nu au nicio o idee cu privire la cine să fie. Așa cum se întâmplă adesea, părinții stabilesc pentru copilul lor specialitatea pe care o aleg, uneori solicitanții folosesc sfaturile prietenilor, posibilitățile de „blat", alteori alegerea unei universități este determinată nu de calcule, ci de circumstanțe aleatorii, cum ar fi apropierea universității de casă, adică se face o evaluare a perspectivelor pentru obținerea unor beneficii aleatorii.

2. Tinerii cand se doresc sa-si aleaga o anumită specialitate, înainte de a se decide trebuie sa-si evalueze capacitățile, cine ar dori să fie, care este probabilitatea de a se angaja. Sa evalueze prestigiul profesiei, locul în care ar vrea să lucreze, modul în care profesia va corespunde principiilor lui de viață. Sa se gândeasca dacă îndeplineste cerințele profesiei, care va fi nevoia acesteia pe piața muncii și, desigur, oportunitatea de a reusi în profesie.

3. Într-o universitate modernă, știința și educația sunt conectate și studentii pot și trebuie să participe la lucrări de cercetare. Pot sa-si largeasca educația participând la o mare varietate de cursuri opționale, inclusiv prelegeri de artă etc. După ce a intrat într-o universitate, tanarul trebuie să-si stabileascaa sarcini viitoare specifice vieții și să-si contureze un plan pentru soluționarea lor.

4. Dupa absolvirea facultatii specialitatea este în mâinile inginerului. Dar în viață este nevoie de autoeducare constantă, de obținerea altor cunoștințe, uneori dintr-un domeniu complet diferit. Cunoașterea este „valuta de neînlocuit", care trebuie actualizată constant, pentru a asimila noi cunoștințe si abilități, pentru a le aplica în afaceri, pentru a atinge obiectivele stabilite. Tot ceea ce va urma în timpul vieții inginerului va fi determinat de el insusi. Prin urmare, este necesar să fie creativ, astfel încât, așa cum spuneau romanii, să „fie și să nu pară" un adevărat profesionist.

5. În toate domeniile mineritului, în era globalizării, ar trebui să existe o inundație de brevete - obținerea de brevete pentru invenții care contracarează concurenții și veniturile din munca lor. Nu degeaba Bill Gates, după ce a plătit o amendă de 160 de milioane de dolari, s-a adresat angajaților - „brevetează tot ce poți".

Din păcate, în lumea intelectuală de astăzi, un brevet este doar o idee, un gând care poate fi „ocolit" și utilizat în propria afacere. Când inginerii creaza invenții (inovații), este necesar să obtina brevete și să le implementeze in producție.

6. Un inginer minier/petrolist trebuie să rezolve toate problemele legate de prospectarea, explorarea și exploatarea zăcămintelor minerale. Aceasta presupune că el sa aiba cunoștințe pentru determinarea scopului, obiectivelor și modalităților de exploatare a zacamantului.

Acestea includ următoarele funcții:

metodologica – contribuie la descoperirea legitatii metodelor, tehnologiilor, creează o bază pentru dezvoltarea considerentelor teoretice ale științei miniere;

analitica - efectuează analize si evaluări privind performanțele organizațiilor de cercetare, ale universităților și întreprinderilor industriale;

predictiva - evaluează dezvoltarea tehnologiilor complexului de resurse minerale, probabilitatea unor evenimente negative și corectarea lor în timp util;

creativa și *ideologica* - ajută la evaluarea și controlul intereselor publice și private în valorificarea resurselor minerale;

cognitiva - dezvăluie tendințele în dezvoltarea lor și evaluează situația în viitor;

educaționala - creează baza pentru formarea personalului calificat pentru complexul de materii prime, formează o cultură a exploatarii și a cercetării.

Astăzi, dezvoltarea inovatoare a industriei necesită saturația sa cu absolvenți cu înaltă calificare în noi domenii tehnologice. În acest sens universitati din Romania (, Universitatea din Petrosani, Universitatea Petrol-Gaze din Ploiesti s.a.) si universitati din strainatate- Universitatile din Polonia, din Germania (Freiberg, Aachen) și multe alte universități sunt un teren propice pentru pregătirea personalului pentru toate sferele de servicii din industria minieră.

Doar calificările tehnice ale unui inginer minier nu mai sunt suficiente: este necesar să aiba o erudiție largă, informatii tehnologice, cunoașterea limbilor străine, fundamentele afacerii, management, psihologie și, cel mai important, capacitatea de autoperfectionare de-a lungul vieții.

Statul, atunci când ii angajează, pentru instruirea lor la nivel international, trebuie să le asigure un salariul adecvat, altfel va exista o scurgere de personal în străinătate. E de înțeles că nu numai banii ar trebui apreciați de tineri, ci in primul rand sa obtina o bună educație, autoritate, reputație, experiență. și realizarea de contacte cu specialiști inalt calificați. Succesul unei țări în lumea globală este determinat de capitalul uman, care trebuie crescut constant prin formarea de specialiști noi cu cunoștințe moderne, abilități și capacitatea de a le folosi în munca.

Credem ca globalizarea se va încheia cu integrarea universală, ceea ce înseamnă că pentru a supraviețui trebuie să fii un mare specialist în domeniul tău. O universitate modernă ar trebui să ofere absolventului său o practică, cunoștințe matematice capabile să-i dezvolte creativitatea pentru transformarea cunoștințelor în soluții tehnologice.

Tinerii specialiști vor trebui să studieze mai mult și mai bine pentru a lucra în domeniul exploatarii si valorificarii substantelor minerale utile ale globului pamantesc, deoarece lumea viitoare nu este o „țară promisă" și trebuie să fii responsabil nu numai pentru tine, ci și pentru viitorul tarii.

Compania care angajeaza ingineri minieri/petrolisti are nevoie de un specialist cu o bună pregătire de bază, nu de un specialist îngust, în plus acesta trebuie să urmeze un stagiu industrial obligatoriu, de preferință multiplu, care creează de fapt un inginer minier/petrolist capabil să creeze ceva nou.
Mai jos, prezentam cateva aspecte caracteristice pentru pregătirea unui specialist în industria miniere sau petroliera, care fac posibilă evaluarea de ansamblu a pregătirii sale, iar acestea definesc: care este personalitatea unui inginer minier, ce oportunități există pentru dezvoltarea sa, ce competențe are și care sunt trăsăturile caracteristice ale personalității sale. Și, ca rezultat, de ce este capabil un inginer minier/petrolist instruit la o universitate de profil.

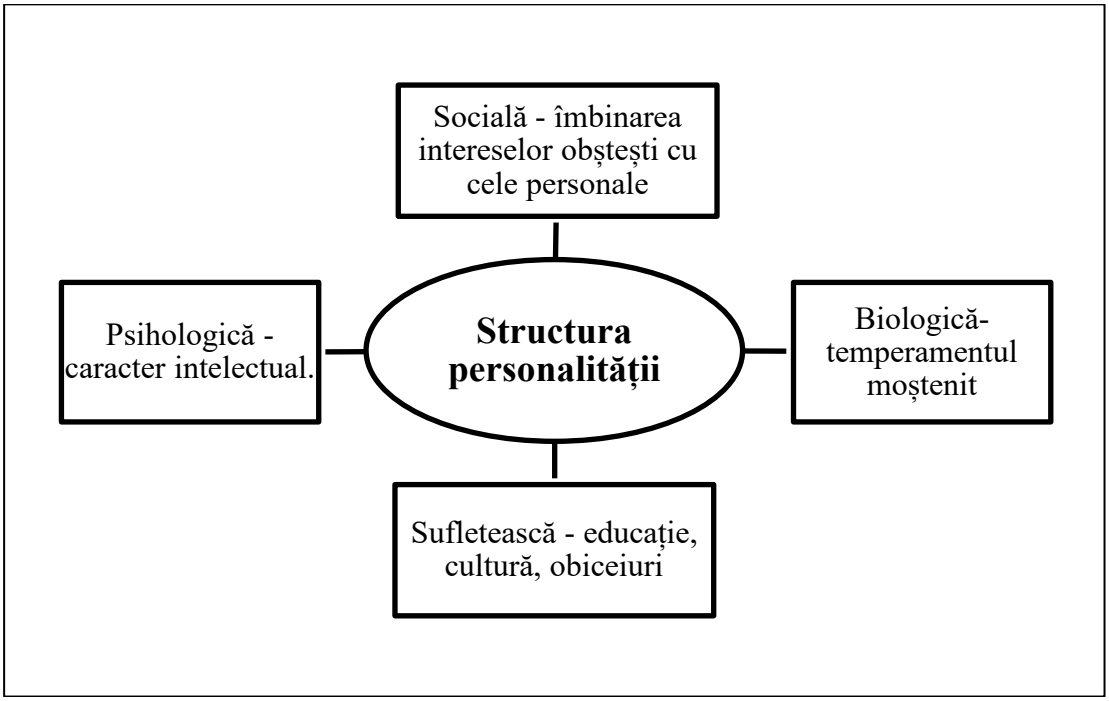

Figura 1. **Analiza structurii personalității unui inginer minier/petrolist**

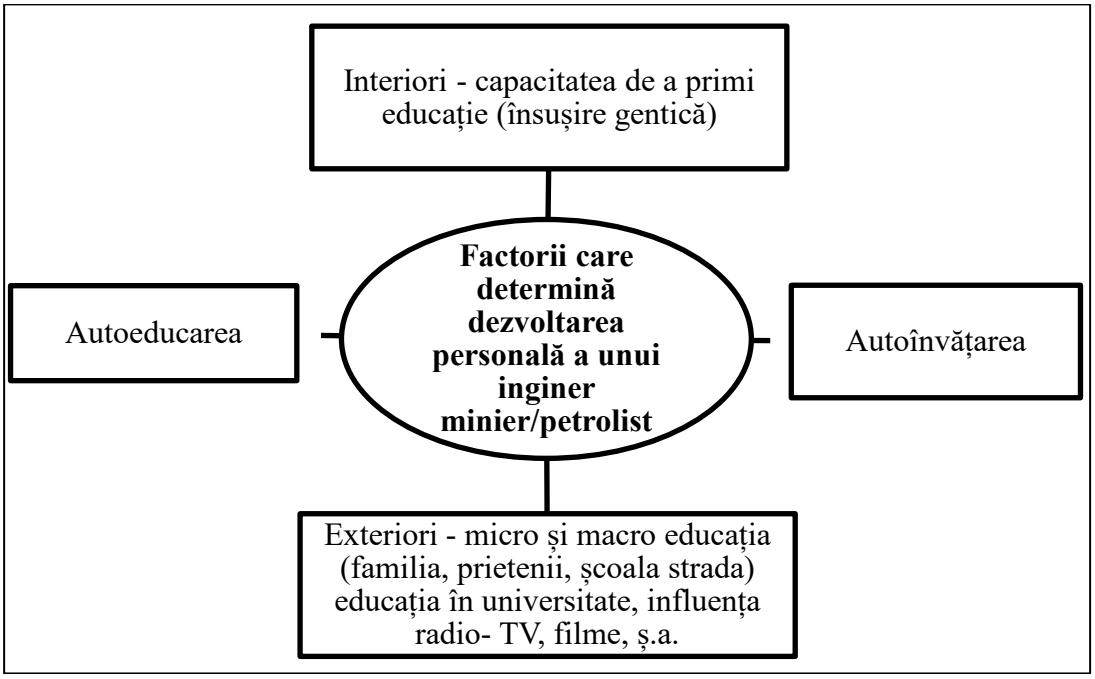

Figura 2. **Factorii care determină dezvoltarea personală a unui inginer minier/petrolist**

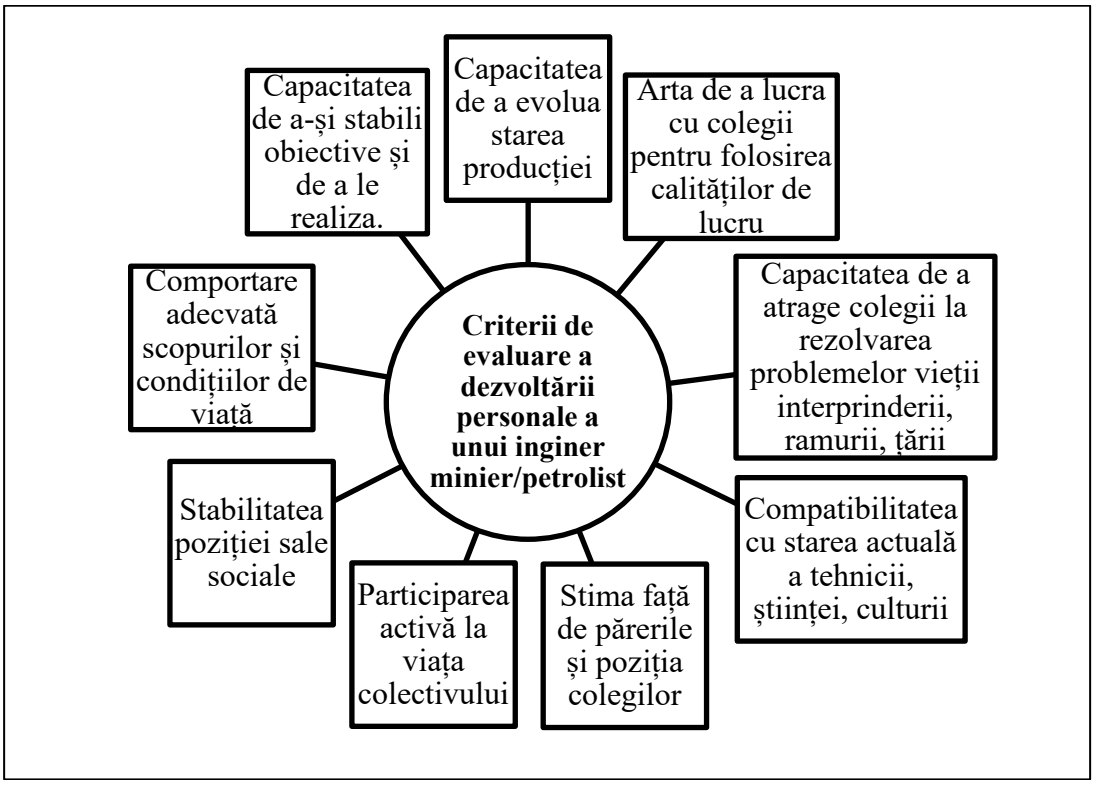

Figura 3. **Criteriile de evaluare a dezvoltării personale a unui inginer minier/petrolist**

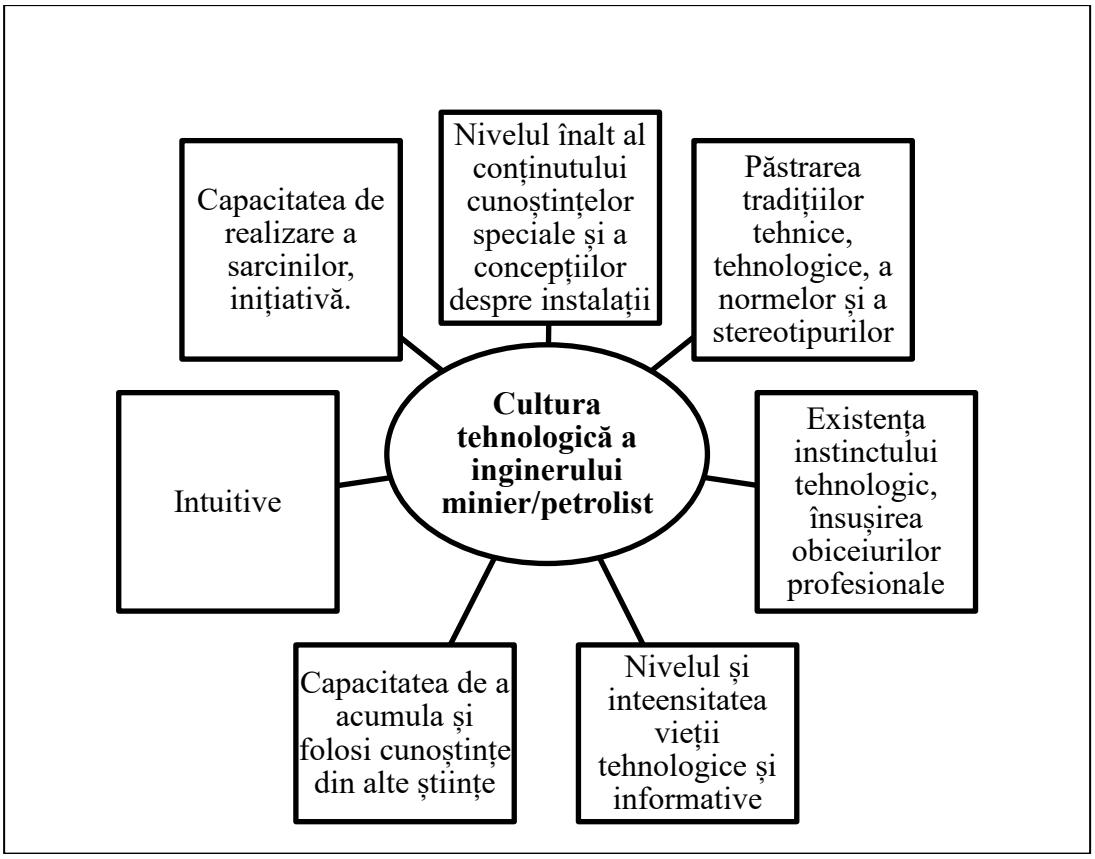

Figura 4. **Cultura tehnologică a inginerului minier/petrolist**

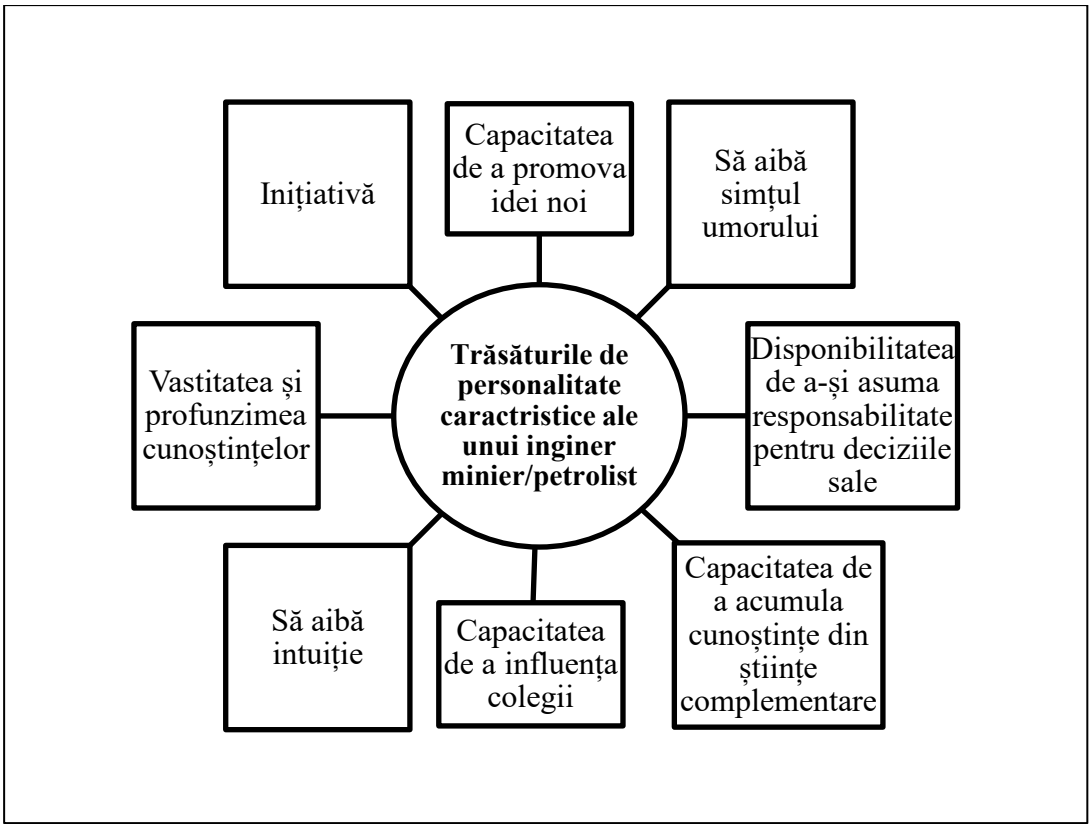

Figura 5. **Trăsăturile de personalitate caracteristice ale unui inginer minier/petrolist**

Sfat catre ingineri:Cititi! Gânditi constant, pentru că „Marele este în mic". Pregătiti-va să cautați ceva nou în munca voastra!

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CONSIDERENTE PRIVIND EVOLUȚIA COMERȚULUI EXTERIOR ANTE ȘI POST CRIZE INTERNAȚIONALE

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Summary

The reduction in global trade in 2020 was smaller than during the global financial crisis of 2008-2009, but the impact of COVID-19 was marked by the heterogeneity of certain goods and trading partners. Globally, trade in services has declined more and the recovery after the lock-down has been slower than in the case of trade in goods. The structure of foreign trade by category of goods has changed in the context of significant disruptions in the international transport sector. Although it is currently unknown which changes will have long-term and short-term effects, the unprecedented heterogeneity of the effects of the pandemic on trade suggests an acute need for adaptation which means the identification of development opportunities but also a high degree of uncertainty accompanied by significant adjustment costs.

Based on the latest available statistical information on the foreign trade of Romania on goods and partners and analyzing the economic context developed under the conditions induced by the two important crisis in the last 15 years, the 2008-2009 crisis and COVID-19 pandemic, this section is dedicated to the international trade transactions at global, regional / European and national level.

It is necessary to identify directions for action and strategies to reduce risks at both company and government level.

***Keywords**: Foreign trade, global crisis, COVID 19 pandemic*
***JEL**: F14, O11, O24*
***UDC:** 331.5*

Introducere. Impactul pandemiei de COVID-19 asupra comerțului global a variat în funcție de bunuri, servicii și parteneri comerciali specifici. Eterogenitatea modificărilor fluxurilor comerciale între produse, surse și destinații semnifică incertitudine ridicată și costuri de ajustare și a necesitat stimulente suplimentare pentru adoptarea de noi strategii de atenuare a riscurilor sau ajustarea celor existente - (Arriola C, 2021). Perturbarea economică și socială a expus și a exacerbat fragilitatea economică existentă, a evidențiat recuperarea nesustenabilă după criza financiara din 2008-2009, cu efecte importante în special în economiile emergente, unde rata sărăciei a crescut și inegalitatea s-a agravat (Banca Mondială, 2022). De aceea, o evaluare adecvată a impactului economic al crizei COVID-19 nu este doar de dorit, ci și provocatoare, dacă scopul este de a atenua incertitudinea (Baker SR, 2020). Criza COVID-19 a avut originea în măsurile de politică adoptate pentru combaterea crizei de sănătate (Barbero J, 2021). Prăbușirea comerțului mondial a fost determinată de măsurile de închidere/restricționare a numeroase activități si, de aici, o serie de

restricții obligatorii și voluntare impuse tranzacțiilor comerciale. Nici comerțul on-line nu a putut atenua semnificativ reducerea tranzacțiilor cu bunuri deoarece, în esență, acestea sunt dependente de deplasarea fizică în spații geografice largi.

Dinamica comerțului cu bunuri a fost asimetrică pe țări și categorii de bunuri, la fel și perioada de recuperare, puternic dependentă de natura bunurilor și utilitatea acestora față de nevoile comune și specifice pe perioada pandemiei. Dincolo de aprecierea globală, potrivit căreia, comerțul internațional și-a revenit mai repede după criza pandemică (UNCTAD, 2021), analizele specificităților naționale ne indică o paletă largă de modalități de reacție la limitările impuse de protecția sanitară. De exemplu, analiza efectuată pentru Elveția (Büchel K, 2020) a relevat că în perioada de lock-down din anul 2020, când activitatea economică a fost oprită, valoarea comerțului a scăzut cu 11% față de aceeași perioadă a anului 2019, acest șoc fiind mai puternic decât cel din 2009. Pe de altă parte, scăderea exporturilor elvețiene a fost legată de numărul de cazuri de îmbolnăviri COVID-19 în țările partenere importatoare, iar importurile elvețiene sunt legate de gradul de restricție al măsurilor guvernamentale din țara exportatoare. Nu în ultimul rând, la nivelul mărfurilor comercializate, doar produsele farmaceutice și chimice nu au fost afectate negativ de șocul comercial, întrucât pandemia a condus la creșterea cererii și ofertei de astfel de bunuri la nivel mondial (Liu X, 2021). În cazul Spaniei (De Lucio J, 2020), analizele au relevat că pentru perioada ianuarie-iulie 2020, severitatea măsurilor în țările de destinație a afectat direct tranzacțiile externe și a redus exporturile spaniole, în timp ce importurile de mărfuri nu au înregistrat o scădere atât de bruscă. De asemenea, analizele au arătat o scădere mai accentuată a comerțului cu servicii, datorită importanței turismului în economia spaniolă. Alte studii au furnizat dovezi suplimentare bazate pe analiza datelor de comerț ale statelor membre UE din iunie 2015 până în mai 2020 (Kejzar KZ, 2020). Pe măsură ce pandemia s-a extins și măsurile de protecție au devenit mai stricte, cererea de pe piața europeană a scăzut constant, în același timp cu reducerea utilizării forței de muncă și încetarea producției industriale (Espitia A, 2021). COVID-19 a avut un impact negativ asupra creșterii comerțului pentru toate statele membre ale UE, precum și pentru partenerii lor comerciali.

Studiile au arătat că pandemia COVID-19 a afectat creșterea comerțului prin reducerea ponderii țărilor în lanțurile valorice globale în primele șase luni ale anului 2020 (Hayakawa K, 2021). Participarea țărilor în lanțurile valorice globale depinde de nivelul veniturilor lor prin prisma obiectivelor specifice: economiile cu venituri mari se concentrează pe obținerea creșterii și asigurarea durabilității, în timp ce țările cu venituri mici și medii caută să atragă investiții străine directe pentru creșterea gradul de modernizare economică (Banca Mondială, 2017). Studiile au arătat că țările cu venituri mici au o pondere redusă de locuri de muncă care implică activități ce pot fi realizate de acasă, făcându-le mai sensibile la blocajele care afectează producția de bunuri si unele servicii. În consecință, efectul COVID-19 asupra economiei poate fi mai pronunțat pentru țările cu mai puține resurse de asistență medicală, care se confruntă cu riscul de incapacitate de a accesa produse de îngrijire a sănătății (McMahon DE, 2020).

Prin urmare, la nivel macroeconomic, pandemia a perturbat grav comerțul internațional. Indiferent de sector, companiile au fost nevoite să se adapteze, prin

implementarea de noi procese și oferirea de noi produse sau servicii corespunzătoare schimbărilor comportamentului de consum. Accentuarea dezvoltării comerțului electronic a fost un rezultat al pandemiei, alternativa tranzacțiilor online devenind factorul cheie în satisfacerea cerințelor clienților și chiar în atragerea unora noi (FedEx, 2021). Comerțul electronic a devenit astfel o alternativa atractivă chiar și pentru cei mai neexperimentați dintre cumpărătorii online. Totodată, valoarea mărfurilor comercializate electronic a fost direct proporțională cu incidența și severitatea efectelor pandemiei COVID-19, respectiv, cu cât numărul de îmbolnăviri a fost mai ridicat, cu atât a fost mai mare probabilitatea ca populația să opteze pentru comerțul electronic (Sturza M., 2021).

Considerații privind comerțul internațional în timpul crizelor

Pandemia COVID-19 și măsurile politice asociate au avut consecințe economice puternice în anul 2020. Scăderea estimată cu 8,5% a volumului comerțului internațional cu bunuri și servicii în 2020 a marcat una dintre cele mai mari reduceri ale comerțului internațional de la sfârșitul celui de-al Doilea Război Mondial, după cea din 2008-2009 (OCDE 2022). De aceea, efectele economice ale crizei financiare globale din 2009 și cele ale pandemiei de COVID-19 asupra comerțului internațional sunt tot mai des comparate, chiar dacă originile crizelor, măsurile politice și mecanismele de ajustare economică au fost diferite. Motivația acestor comparații derivă din cel puțin următoarele argumente:

- Caracterul de contagiune al efectelor crizei asupra unor spații geografice largi, cu efecte mai mari asupra țărilor mai slab dezvoltate, în mai mare măsură dependente de comerțul internațional.
- Recuperarea fragilă post-criza financiara asociată cu gradul de deschidere la export au crescut vulnerabilitatea țărilor mai slab dezvoltate la un nou șoc, ce a afectat mare parte din mediul de afaceri.
- Ambele crize au evidențiat că efectele pe termen mediu și lung sunt mult mai importante asupra mediului de afaceri, forțând la adaptare, la inovare organizațională.
- Reziliența economică și robustețea economiilor post-criză este tot mai mult dependentă de refacerea sustenabilă, asociată la ultima criza cu accelerarea transformării digitale.
- Comerțul cu bunuri, prin esența sa, presupune mobilitate spațială și, de aici, nevoia de conectivitate liberă și permanentă între piețele naționale.

Criza din 2009 a avut originea în sectorul financiar și s-a caracterizat printr-o scădere bruscă a tranzacțiilor comerciale în mai multe țări și la nivelul mai multor bunuri, asociată cu reducerea încrederii firmelor în piețele internaționale (Baldwin, R., 2020); în același timp a avut loc o reducere drastică a finanțării comerțului (OCDE, 2010). Pandemia COVID-19 a avut origini în afara sistemului economic și a forțat guvernele din întreaga lume să implementeze măsuri semnificative pentru a izola virusul și a oferi sprijin companiilor, cu o influență puternică și pe termen lung asupra modelului comportamental al firmelor și a relațiilor inter-umane. Acești factori au dus la efecte puternice și eterogene asupra cererii, ofertei, piețelor interne și comerțului internațional.

Schimbările din 2020 ale cererii și ofertei globale de bunuri și servicii au creat presiuni semnificative asupra comerțului internațional. Costurile induse de închiderea

temporară a frontierelor, reducerea oportunităților de călătorie pentru pasageri și întreruperile din activitatea de transport au avut, de asemenea, un impact negativ asupra tranzacțiilor comerciale internaționale. În unele cazuri, au scos la iveală vulnerabilități precum oferta de resurse materiale, piese și componente, dar și existența unor stocuri neașteptat de mari de produse/bunuri, pe măsură ce cererea pentru acestea a scăzut și/sau tranzacțiile ca atare/deplasarea bunurilor au fost restricționate.

Impactul crizei COVID-19 asupra comerțului exterior a fost mai brusc, dar mai puțin sever decât cel al crizei economice și financiare din 2009, în primul rând ca urmare a perioadei limitate de lock-down și a naturii cauzei declanșatoare, respectiv non-economică. La nivel global, criza economică din 2009 a dus la o reducere cu circa 20% a volumului tranzacțiilor comerciale (20,1% pentru export și, respectiv, 19,8% pentru importurile de bunuri și servicii), în timp ce pandemia de COVID-19 a afectat comerțul internațional cu aproximativ 11% (11,0% la export și 11,2% la importurile de bunuri și servicii) (UNCTAD, 2022). La nivelul UE se observă aceeași evoluție negativă, respectiv o reducere în perioada 2008-2009 de circa 21% (21,9% la exporturi și 19,9% la importuri) în timp ce în 2020 scăderea este mai mică de 10% față de 2019 (10,3% exporturi și 9,1% la importurile de bunuri și servicii) (UNCTAD, 2022).

România a fost mai afectată din perspectiva exporturilor în perioada crizei economice 2008-2009 (-32,7% în 2009 față de 2008) decât din cea a importurilor (care au scăzut cu 19,2%), fapt ce indică un caracter ciclic al cererii de produse românești pe pieţele externe în funcție de natura bunurilor si sustenabilitatea tranzacțiilor bilaterale. În timpul crizei pandemice, România a fost mult mai puțin afectată decât media UE, exporturile de bunuri și servicii reducându-se cu 6,5%, iar importurile cu 8% în 2020 față de 2019 *(Grafic 1).*

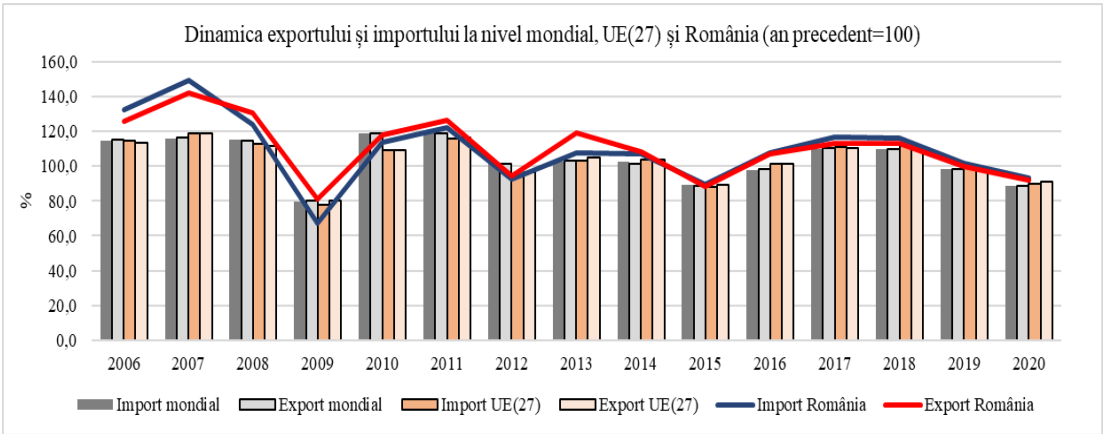

Figura 1. **Decalaje de comportament ca reacție la crize. Dinamica comerțului exterior cu bunuri și servicii la nivel internațional, UE(27) și România (an precedent=100)**

Notă: UE în structura din anul 2020
Sursa: Baza de date UNCTAD

Scăderea creșterii economice la nivel mondial din anul 2008, sub impactul crizei financiare, a avut efecte puternice în evoluția comerțului internațional, atât în sfera bunurilor, cât şi în cea a serviciilor. Anul 2009 a înregistrat o contracție puternică a schimburilor pe plan mondial pe fondul restrângerii condițiilor de creditare care a condus la reducerea resurselor necesare finanțării comerțului, creșterea incertitudinii pe pieţele internaționale, aspecte care au determinat reorientarea activității întreprinderilor către pieţele interne.

Reducerea volumului comerțului internațional în anul 2020 a avut loc în contextul unei tendințe de reducere a tranzacțiilor comerciale începând cu anul 2019 (exporturile și importurile de bunuri și servicii la nivel mondial au scăzut cu circa 1,6% în 2019 față de 2018). Factorii probabili din spatele acestei încetiniri au inclus incertitudinea și tensiunile din domeniul politicii comerciale (OMC, 2020) precum și reducerea expansiunii lanțurilor internaționale de aprovizionare (Arriola, C., 2020).

Regulile de distanțare socială din perioada pandemiei de COVID-19 au influențat foarte mult furnizarea de servicii, care se bazează mai degrabă pe contactul uman decât pe comerțul cu bunuri. La nivelul UE, închiderea frontierelor și încetarea parțială a producției de bunuri au condus la o reducere în principal a serviciilor de transport și a turismului. Acestea sunt cele două mari categorii de servicii prestate la nivel internațional și cele care au suferit cel mai mult din cauza restricțiilor COVID-19.

Exportul și importul de bunuri ale României în context european și regional

Reducerea comerțului internațional cu mărfuri și redresarea ulterioară au fost determinate de rata de răspândire geografică a virusului SARS COV-2, de momentul introducerii și de gradul de restricție a măsurilor luate de guverne pentru izolarea virusului. Astfel, în 2020, schimbările în evoluția comerțului cu bunuri au avut loc la momente diferite în statele lumii în comparație cu evoluția din timpul crizei economice și financiare din 2008-2009. *Graficul 2* prezintă evoluția exporturilor României de bunuri comparativ cu evoluția exporturilor totale ale principalii parteneri comerciali, respectiv Germania și Italia în cele două perioade de criză.

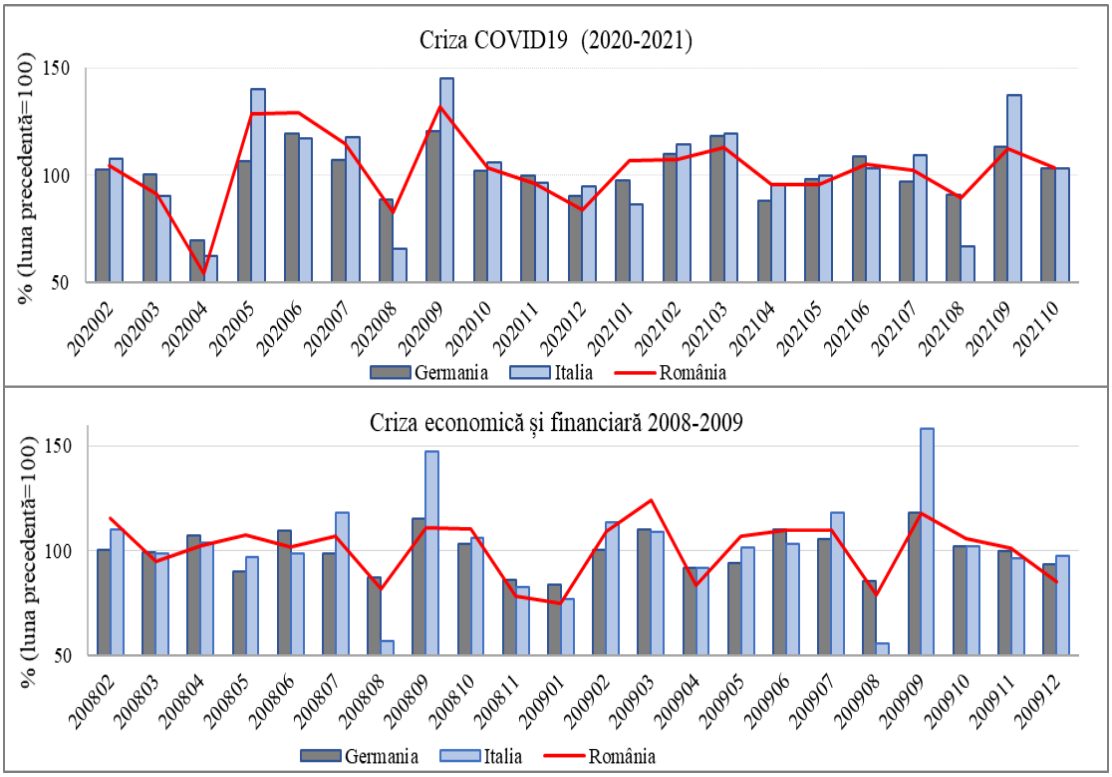

Figura 2. **Dinamica exporturilor de bunuri ale României și ale principalelor țări partenere în perioade de criză (luna precedentă=100)**

Notă: UE în structura din anul 2020

Sursa: Baza de date COMEXT, Eurostat

Există două aspecte fundamentale cu impact puternic asupra analizei și rezultatelor acesteia, respectiv:

a) România este stat membru UE și

b) Fenomenul de globalizare.

Piața unică europeană constituie catalizatorul pentru stimularea tranzacțiilor comerciale externe ale statelor membre, atât în interiorul UE, cât și cu țările terțe. În același timp, reprezintă fundamentul îmbunătățirii capacității de inovare și producție, de creștere a eficienței comerciale prin acces la o cantitate mai mare de resurse și la un număr extins de piețe naționale pe care companiile din UE desfășoară operațiuni comerciale.

Analiza datelor lunare disponibile la Eurostat pentru comerțul internațional cu bunuri al statelor membre UE a relevat faptul că fluxurile de export ale României sunt puternic sincronizate cu evoluția exporturilor principalelor țări partenere, Germania și Italia. Atât criza financiară din 2008-2009, cât și pandemia de COVID-19 au afectat comerțul exterior al României într-o măsură mai mică decât cel al Italiei, dar mai mare decât în cazul Germaniei.

Criza internațională din 2008-2009 a demonstrat o sincronizare puternică a ciclurilor economice la nivelul Uniunii Europene (UE), afectând în același timp statele membre ”vechi” ale UE (state fondatoare și care au aderat până în anul 1995);

impactul crizelor a fost resimțit cu întârziere în ”noile” state membre (care au aderat după 1995) (Tatomir C., 2013).

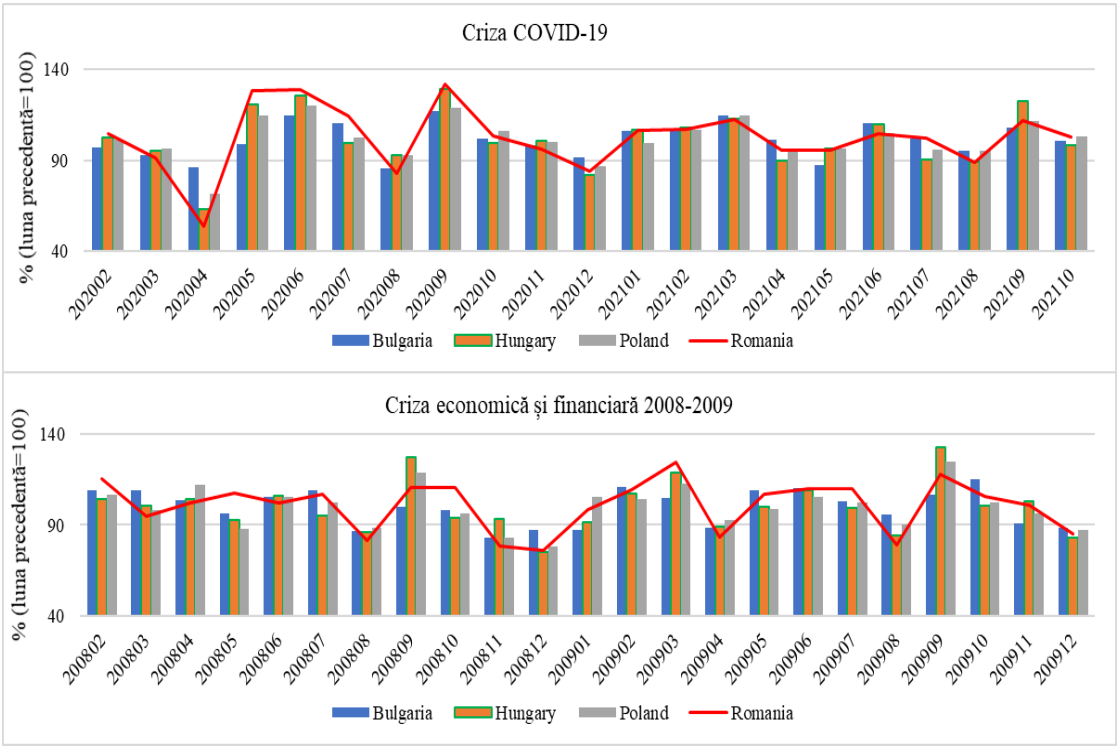

Figura 3. **Dinamica exporturilor de bunuri ale României și ale țărilor vecine din Estul Europei în perioade de criză (luna precedentă=100)**

Notă: UE în structura din anul 2020

Sursa: Baza de date COMEXT, Eurostat

Analiza dinamicii exporturilor lunare (% față de luna precedentă) demonstrează o sincronizare puternică la nivel regional a fluxurilor de export, după cum reiese din informațiile prezentate în Graficul 3. Cele două șocuri macroeconomice și anume criza economică din 2008- 2009 și criza sănătății din 2020 au afectat în mod similar comerțul exterior al țărilor din sud-estul Europei, deși apreciem că gradul ridicat de corelare a fluxurilor de export este influența apartenenței la UE, mai degrabă decât locația geografică. Indicele de concentrare al exporturilor și importurilor României este relevant în acest sens (*Grafic 4).*

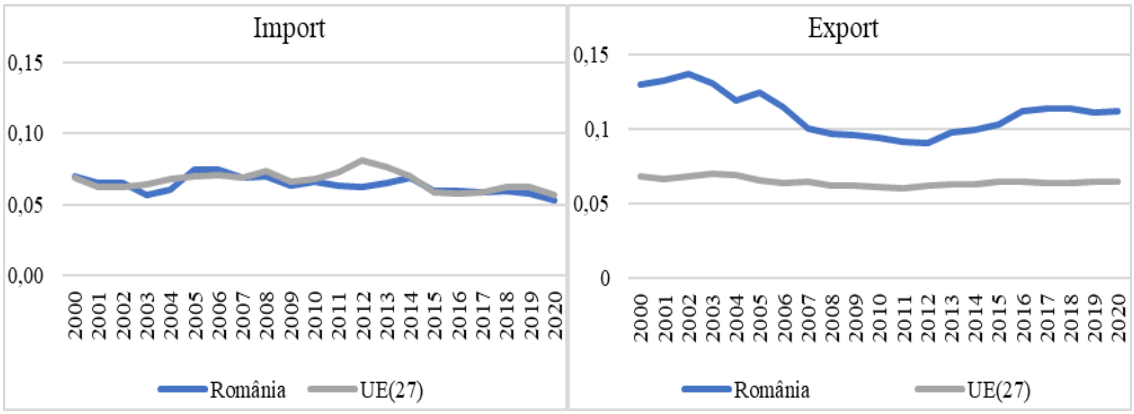

Figura 4. **Indexul de concentrare pentru exporturile și importurile României**

Notă: UE în structura din anul 2020

Sursa: Baza de date UNCTAD

Indicele de concentrare a exporturilor și importurilor, denumit și Indicele Herfindahl-Hirschmann (HHI) a fost calculat utilizând formula de mai jos:

$$H_j = \frac{\sqrt{\sum_{i=1}^{n}\left(\frac{x_{ij}}{X_j}\right)^2} - \sqrt{1/n}}{1-\sqrt{1/n}}$$

unde:

H_j = indicele țării sau al grupului de țări

x_{ij} = valoarea exportului /importului pentru țara j și produsul i

$$X_j = \sum_{i=1}^{n} x_{ij}$$

și

n = număr de produse (la nivel de 2 cifre SITC Rev. 3).

O valoare a indicelui mai apropiată de 1 indică faptul că exporturile sau importurile unei țări sunt foarte concentrate pe câteva produse. Dimpotrivă, valorile mai apropiate de 0 reflectă o distribuție mai omogenă a exporturilor sau a importurilor pe o serie de produse.

Folosind datele statistice privind comerțul internațional cu mărfuri la nivelul anului 2021, trebuie remarcate următoarele aspecte privind gradul de concentrare a importurilor și exporturilor de mărfuri:

- cele mai importante 10 țări partenere cu care România a dezvoltat relații comerciale internaționale reprezintă peste 60% din exportul total de mărfuri și aproape 70% din importul total de mărfuri al României;

- primele două țări partenere au o pondere semnificativă în comerțul exterior: Germania deține peste 20% din importurile și exporturile de mărfuri, iar Italia reprezintă aproximativ 11% din exporturile de mărfuri și peste 9% din importurile de mărfuri;

- China și Turcia se numără printre principalii parteneri comerciali extra-UE ai României, aproximativ 11% din importuri provenind din aceste țări.

Importurile și exporturile de mărfuri ale României se caracterizează printr-un grad moderat de concentrare, având în vedere destinațiile exporturilor, respectiv țara de expediere a importurilor. Cu toate acestea, există o tendință de reducere a concentrației atât pentru exporturi, cât și pentru importuri, mai ales în perioadele de criză.

Concluzii și recomandări

Schimbările în evoluția comerțului internațional în 2020 au fost profunde, iar influența pe termen lung nu poate fi pe deplin apreciată. Redresarea exporturilor și importurilor din a doua jumătate a anului 2020 sugerează că durata crizei COVID 19 a produs schimbări semnificative pe termen lung. Dar măsurile luate de guverne pentru a proteja populația au continuat chiar și în anii 2021 și 2022, afectând în principal turismul, activitate care susține și mai mult constrângerile asupra comerțului cu bunuri și servicii.

Schimbările structurale în comerțul internațional înseamnă incertitudine ridicată și costuri de ajustare atât pentru guvernele lumii, cât și pentru companii. Pe baza experienței acumulate în timpul pandemiei de COVID-19, companiile pot adopta noi strategii pe piețe, în special din cauza probabilității de noi pandemii în viitor sau a unor potențiale alte crize. Astfel, companiile ar putea acționa cu mai multă prudență, pentru a atenua riscurile de afaceri, ar putea renunța la o parte din forța de muncă umană prin automatizarea într-o mai mare măsură a proceselor de producție, creând stocuri suplimentare pentru a asigura o rezistență mai mare la eventualele întreruperi ale lanțurilor de aprovizionare.

Pe termen scurt, reducerea veniturilor populației ca urmare a opririi parțiale a activității economice, a dus la reducerea cererii de bunuri cu efecte imediate asupra ofertei. Deși perioada de lock-down a fost scurtă, modelul comportamental al consumatorilor s-a schimbat din cauza necesității de a reduce cheltuielile și de a adopta un comportament mai restrâns în consum.

Redresarea economică este condiționată de abordarea riscurilor economice interdependente generate de criză. Guvernele lumii trebuie să abordeze probleme precum instabilitatea financiară, accesul redus la credit sau datoria externă. Pe lângă aceste probleme financiare și economice interne, perspectivele de redresare post-pandemie sunt influențate de evenimentele din economia globală, cum ar fi prețul bunurilor primare, în special al combustibililor. Aceste evoluții globale expun atât gospodăriile, cât și companiile și guvernele la o serie de riscuri la adresa redresării economice.

Odată cu nevoia de a aborda riscurile prezentate de pandemie, trebuie să se profite de oportunitățile de dezvoltare durabilă a economiei. Schimbările climatice reprezintă un risc major pentru economia mondială. În acest context, Comisia Europeană a inclus în planul bugetar 2021-2027 o componentă importantă (Next Generation EU) destinată redresării economice în urma pandemiei. Planul bugetar a fost creat în jurul Pactului Verde European lansat la sfârșitul anului 2019 cu scopul de a reduce poluarea, astfel încât Europa să devină neutră din punct de vedere climatic până în 2050.

În România este necesară alocarea de fonduri financiare suplimentare pentru stimularea companiilor și susținerea activității acestora, în special cele cu capital românesc. În plus, sunt necesare acțiuni de protejare a forței de muncă locale pentru a reduce fenomenul migrației și rata șomajului.

Producția națională trebuie încurajată pentru a dezvolta acele sectoare în care există un potențial mare dar și o risipă de valoare adăugată. Este cazul exportului de materii prime, cu valoare adăugată redusă și impact minim asupra balanței comerciale, și a importului de produse finite sau chiar de materii prime mai ieftine decât cele disponibile pe piața românească. Această practică, care este deosebit de răspândită în cazul materiilor prime agricole (de exemplu, cerealele), ar trebui redusă pentru a încuraja dezvoltarea capacității de procesare pentru a obține mărfuri competitive pentru export.

Pentru a reduce dependența de marile companii multinaționale, sprijinirea dezvoltării companiilor cu capital românesc trebuie să fie o prioritate la nivelul politicilor și strategiilor naționale. Nu în ultimul rând, finanțarea cercetării și dezvoltării prin alocarea de fonduri pentru nevoile companiilor poate contribui la reducerea importurilor de bunuri care răspund nevoilor în creștere ale populației și ale firmelor.

Această lucrare a primit sprijin financiar prin proiectul intitulat" DECIDE - Dezvoltare prin educație antreprenorială și cercetare inovativă doctorală și postdoctorală", Cod proiect POCU/380/6/13/125031, proiect cofinanțat din Fondul Social European prin Programul Operațional Capital Uman 2014 – 2020".

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RESEARCH AND INNOVATION POLICY AT WARTIME: CASE OF UKRAINE

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Summary

The war started by Russia in Ukraine has caused a lot of challenges for economic development. It is hardly imagined without the contribution of research and innovation. Rebuilding R&I became another challenge for Ukrainian policymakers. Thus, ***the purpose of the paper*** *is to analyse the R&I policy of Ukraine during the war caused by Russia and to develop policy recommendations for the post-war recovery. To achieve it, we used several methods, in particular expert opinion generalization, relevant scientific and policy literature analysis, and statistical analysis.*

The paper considers three approaches to innovation policy, that Ukraine could choose as a response to the war: produce; buy; repurpose. Currently, Ukraine uses mainly the second one, by buying and receiving modern armament and equipment. Meanwhile, there were some innovative developments in Ukraine, which are not produced in sufficient quantities. After the war, Ukraine couldn't buy armament due to fiscal constraints. Thus, in the short-run period, the government should reorient efforts using repurpose approach. However, such an approach is not sustainable in the long-run period, when the development of a broader S&T base is required to create a solid base for further repurposing in emergency cases. The war caused massive damage to Ukrainian R&I potential, which by now is not fully measured and quantified. There are two types of damage: physical loss of research and innovation infrastructure (e.g. research facilities, and high-tech enterprises) and «brain drain», which should be at the focus of R&I policymakers. Therefore, a set of policy measures is proposed to address the war-led challenges in R&I.

Keywords: *R&D and innovation policy, science, war, damage, recovering, economic development.*

JEL: *O31, O32, O38, H56*

UDC: *001.89(477)*

Introduction. The war started by Russia in Ukraine has caused a lot of challenges for economic development. It is hardly imagined without the contribution of research and innovation. Rebuilding R&I became another challenge for Ukrainian policymakers. Thus, **the purpose of the paper** is to analyze the R&I policy of

Ukraine during the war caused by Russia and to develop policy recommendations for the postwar recovery.

Literature review. Despite there being a bulk of war conflicts in the world during the last century, it is impossible to identify a proper benchmark for research and innovation policy for Ukraine. Thus, we have to analyse different experience and take key messages and approaches to rebuild our own R&I policy and design effective measures. There is an objective reason for that as wars took place in different time periods, conditions, size and economic structure of countries vary a lot, etc.

However, the common approach for R&I policy is the acknowledgment of the crucial role of science and technology in war and post-war recovery. Mobilizing science during WWII in the US "...had large effects on the direction and location of U.S. invention and high-tech industrial employment, setting in motion agglomeration forces which shaped the technology clusters of the post-war era" (Gross & Sampat, 2020). Duy Dung Thin stated that S&T output was considered by the Vietnamese government as a tool for hunger and poverty elimination within a short period of time and for economic restoration (Meske & Thin (eds), 2000).

Stimulation of innovation is a part R&I policy, development of which is not a trivial task during wartime. There was a paper by Leadbeater C. (2020), a NESTA expert, where he analysed three approaches to R&I policy at crisis: produce, purchase and repurpose. Each approach has pros and cons, but none of them is sustainable for a longer period of time. Policymakers should activate purchase and repurpose as an immediate crisis response.

Ukrainian scholars didn't pay a lot of attention to R&I policy-making during crisis times. Whereas most of studies on R&I policy were focused on the issue of intensification interaction between science and business, designing policy mix to stimulation innovations, rebuilding research system, etc.

Research methodology. To achieve the main purpose of the paper, we used several methods, in particular expert opinion generalization, relevant scientific and policy literature analysis, and statistical analysis.

Main results. Before the war in February 2022, Ukraine had 2nd rank by area and 9th rank by the population in Europe. However, its economic performance was rather poor. The GDP level is lower than it was before the independence in 1991, while the economic development is not sustainable. In 2021, GDP per capita was about 4100 Euro, and real GDP growth was 3.4%. It makes Ukraine a low-middle-income country.

The unsuccessful economic development of Ukraine was accompanied by transformation of research and innovation systems. There were a number of attempts to use innovation policy tools and incentives, but their outcomes were not quite good as overall business conditions were rather bad.

The war exacerbated existing problems in the economy and brought massive damage to economic process. According to a number of studies and forecasts, fall of real GDP of Ukraine is expected in between 35 and 50% (Korablin S., 2022). Such a wide range of estimation is associated with high uncertainty in war duration and damages to infrastructure, including industrial as well as different methodological approaches.

It is obvious that simple rebuilding of the economy will not be enough for sustainable development. Moreover, as Ukraine became a candidate for the EU membership, it forces Ukraine to accelerate processes of integration into the EU value-added chains, digital and green transformation within the tremendous changes in human resources and limited access to capital.

It should be noted that Ukraine has not got a successful experience in directed structural transformations and innovation-based growth support. In recent pre-war, there was a demand for reforming R&I policy, as science and research are the main sources of innovations (Mazzucato & Dibb, 2020).

In 2015 the new law on S&T activity was adopted. But it did not lead to the expected results, as the law provisions were not properly addressed in the government activities, e.g. creation of the National Research Fund was very long and didn't support its activity with sufficient financing. Despite the Law, the research intensity of GDP dropped from 0.48 to 0.43% during 2016-2020 (Ukrstat, 2021a). It seriously limits researchers in their abilities to produce effective solutions to solve urgent problems during wartime and in post-war period.

On the side of innovations, the new law is still under development. However, the government developed so called the National Innovation Strategy 2030. It was aimed at enabling and promoting scientific research and the transformation of innovative ideas into commercial solutions more broadly. The implementation of the strategy should address gaps in legal frameworks, improve education and fortify an entrepreneurial culture, and strengthen the national innovation infrastructure. Other objectives are to promote private R&D and boost demand for innovation (UNECE, 2020). However, Ukraine repeats the same mistake – good ideas with poor (or wrong) implementation. The Action plan for the Strategy was not developed in time and it was approved only more than 1 year after the Strategy adoption. One of the reasons is that the civil service has no specific training in drafting policy (UNECE, 2020). In other words, the ministry staff, even those who joined the Ministry within the public government reform, lacks of skills in policy drafting.

To summarize the weakest points of innovation policy, we used the UNECE experts' assessment. According to them, there are poor coordination and complementarities with SME development and industrial policies, inadequate institutional and legal frameworks, and miscoordination at the central government level (and we can add at regional level too). Also, in the context of innovation policy tools, there were any subdomains where Ukraine got higher scores, while the biggest challenge is supporting relations and linkages between science and industry. It should include clusters, business networks, innovation infrastructure, mobility, etc.

According to the latest data, the innovation activity of enterprises dropped to less than 10% in 2018-2020 (Ukrstat, 2021b). The main factor was the tremendous drop in reporting non-technology innovations, while implementation of technology innovations decreased slightly due to COVID-19 induced financial constraints. We also could assume that enterprise representatives who fill in statistical questionnaires are not fully aware of what innovation is.

In the 2022 Global Innovation Index, Ukraine ranked 57th out of 132 economies in terms of innovation performance (GII, 2022). The poor performance

was in the area of market sophistication, institutions, and infrastructure. So, the R&I policy making should be focused on (UNECE, 2020):

- Increase the share of high-tech and medium-high-tech goods in total manufacturing;
- Increase public and private investment in R&D, strengthen industry–science linkages, and encourage technology upgrading;
- Commercialize more innovative ideas by stimulating demand in the domestic market.

The war, obviously, did not only exacerbate existing problems, but created new challenges in the R&I area. It caused massive damage to Ukrainian R&I potential, which by now is not fully measured and quantified.

There are two types of damage: physical loss of research and innovation infrastructure (e.g. research facilities, and high-tech enterprises) and «brain drain», which should be in the focus of R&I policymakers.

The latter one is the most dangerous for post-war recovery. Unlike restoration of buildings and purchasing of new equipment, human resources could be simply substituted. It takes plenty of time to grow and educate a researcher. This is also a challenge for Ukraine as many pupils and students might not return to Ukraine, even after the end of the war.

The outflow of students, PhD students and researchers means that many R&D projects in Ukraine were interrupted or even cancelled, that despite the war may lead to some tensions between the Ministry of Finance and R&D performing organizations, funded from the state budget.

While "hosting" countries implement measures to integrate Ukrainian asylums. EU has launched the platforms, e.g. #ScienceForUkraine (https://scienceforukraine.eu), ERA4Ukraine, special call was announced in MSCA Horizon Europe, to support Ukrainian researchers at risk. National research foundation of Ukraine aggregates programs and grant calls for Ukrainian researchers as, while its direct task of R&D financing is suspended due to budget cut (KPI, 2022).

Thus, many researchers who got scholarships in foreign universities and research institutions might choose to stay there after the war as they get not only access to modern scientific equipment, but also different integrational support (e.g. language learning, etc)

By now, there were any official declarations on planned measures to retain researchers in Ukraine and to return those who left the country. Meanwhile, the Recovery plan for the economy is being developed, which may force the government to address the issue.

Speaking about the physical losses in R&I area, the representative of the Ministry of education and science of Ukraine reported that at least 68 research institutions were damaged, 2 destroyed completely, and 9 research facilities are under occupation. In general, around 15% of the research infrastructure in Ukraine was damaged (MES, 2022)[3]. It also includes unique research facilities, e.g. laboratories of the Institute for Safety Problems of Nuclear Power Plants and the nuclear subcritical

[3] https://mon.gov.ua/ua/news/nauka-u-voyennij-chas-vidbuvsya-onlajn-zahid-shodo-innovacijnogo-i-tehnologichnogo-rozvitku-dlya-zdobuttya-peremogi-ta-vidnovlennya-ukrayini

installation "Source of Neutrons" at the National Science Center Kharkiv Institute of Physics and Technology.

Regarding innovation activity, it should be noted that Ukraine was lagging the EU average. During 2016-2018 share of innovative enterprises was 50% in the EU, while only 28% in Ukraine with a descending trend in 2018-2020.

Since the war started, about 50% of enterprises terminated their activity either completely or nearly activity (Advanter, 2022). It was a short-term shock of the war, but after a few months, while the situation is becoming more stable, enterprises recover their activity. According to the latest data, in August 2022 share of enterprises that are not working or loaded less than 25% decreased to less than 10%. And the share of those who loaded more than 50% increased to 75%.

However, speaking of SMEs most of them (above 50%) don't have enough financial resources to survive in long term war and lack of capital is an obstacle to recovery activity (Advanter, 2022).

Thus, implementation of new technologies and innovations seems unclear given that 80% of innovation expenditures in pre-war time was own funds of enterprises (Ukrstat, 2021c). So the role of government in boosting innovation and technology upgrading the economy gains more importance.

The central and regional governments (e.g. Lviv regional military administration) launched programs and initiatives to support the relocation of enterprises into safe regions. After 6 months of the war about 750 enterprises were relocated and about 300 is in the process.[4]

The relocation process might have a positive impact on industrial park development, first in Western Ukraine, and later across the whole of Ukraine, when the war is over and industrial activities will be recovering. In addition, the relocation could force enterprises to implement innovations related to adaptation to new markets, raw materials and inputs, new logistics etc. In overall about half of enterprises are needed a business transformation, e.g. innovative approaches, of which up to 20% have already been transformed[5]. The demand for innovations will increase due to the implementation of the best available technologies and management practices. About half of enterprises are considering on the issue and 10% confirmed their plans to implement them (CID, 2022).

Given that financial constraints are a big problem for many SMEs, the government should develop and introduce a set of financial instruments to support enterprise recovery based on modern technologies.

So, now Ukraine should re-examine its R&I policy adding the challenge of recovery in the short-run period. One of the studies on R&I policy at crisis time suggests three approaches to innovation policy, that country could choose as a response to the crises and war: produce; buy; repurpose (Leadbeater C., 2020). Let's explore all of them in the Ukrainian context.

The first approach – **produce** – obviously require a broad base of basic and applied research empowered with effective mechanism and tools to turn scientific

[4] http://uaprom.info/news/185830-bezpechni-regioni-pereyihali-745-pidpriyemstv.html

[5] https://usp-ltd.org/23-biznesu-zaluchaiut-ponad-polovyny-spivrobitnykiv-opytuvannia/?fbclid=IwAR2O2WGzFcls-F4M09BmNlqU1SDGu6uLmnloyJdv8IxoQOX78LjrRhX3NLc

knowledge into a final product. Thus, it requires a lot of time and resources. Such an approach was used by leading states, e.g. US and UK, during WWII. It is important that private companies took an active part in R&D performed by government-funded laboratories.

As an indicator that shed some light on country's capacity to produce its own innovative products we use the ratio between basic and applied research and experimental developments. In Ukraine the ratio looks like 1:1:2 and R&D intensity is lower 0,5%, while in France it is about to 1:2:2, and in Austria, it is 1:2:3. And R&D intensity in France and Austria were 2,2% and 3,1% respectively (Eurostat, NA.). The data shows that Ukraine is lagging in applied research which is a crucial chain between scientific knowledge and product. Even in such conditions, Ukrainian companies and scientists were able to create competitive defence-oriented products (e.g UAV, antitank complex Stuhna, tactical rocket Neptune etc), but the scale of production was quite low and was not sufficient in wartime. The war forced the government to change its attitude towards military innovations and launched a call for military-tech startups. There was a call on dual purpose technology announced by the Lviv regional administration. Also, a group of businessmen organized Innovation Defense Initiative (https://idi.camp/) to select and support the best solutions for army needs. So, a defense hackathon was organized with the support of the Ukrainian startup Fund, Ministry of digital transformation, Ukroboronprom (Ukrainian defense industry company) and some IT companies.

The second approach is **purchasing of innovations**. It is a quite fast option to implement. This approach is common in many countries. It was clearly demonstrated by COVID19 response. However, there are some risks associated with purchasing of innovations. First of all, these are unclear (uncompetitive) purchasing tenders and lack of coordination as in short run there is no full information neither on needs nor all possible options to buy. Also, there are specific regimes in trade of military and defence-related innovations. Usually, the price for them is very high while many up-to-date innovations are not supplied to global markets due to political and security reasons.

Currently, Ukraine is heavily related on imported/purchased defence-related innovations as own innovations were not implemented into large scale producing. Moreover, many production sites were destroyed during the war, so purchasing is the only option for prompt response during the war.

After the war, probably Ukraine couldn't buy armament due to fiscal constraints. Thus, developing own defense-oriented product is a key for the future security of Ukraine. They can be turned to civil economy and put on commercial way.

The third approach is **repurpose**. According to Leadbeater C. (2020), it is the best option for innovation policy to response on crisis. The idea of this approach is to adjust current R&D to the emerged challenge. It is cheaper than to invent something from a scratch or to purchase on global markets. Repurposing cases are known also during WWII, when machinery plants mastered production of tanks and other military equipment.

Of course, in modern times the complexity of goods is much higher and repurposing requires a well-developed industry and highly qualified engineers to change production lines in short-time period.

A few cases of repurposing can be found in Ukraine as well. For example, the Ukrainian company Eleek is a manufacturer of e-bikes. It adjusted the existing model of the e-bike for the need of the Ukrainian Army[6]. Another company had been developing electric light commercial vehicles, but they pivoted activities and developed a buggy for the Army's needs. Meanwhile, we did not find examples of repurposing in R&D sector.

In long-term period repurpose will no longer be sustainable because industrial pivoting will be limited to existing science and technology bases. Therefore, the development of basic and applied science is crucial for producing of innovative solutions in response to unexpected shocks.

According to Leadbeater (2020), one of the key points for the implementation of repurposing as an innovation policy approach is that it requires proper institutions and persons who are able quickly to unite existing opportunities to solve emerging challenges. The ability for fast repurposing should be embedded into post-crisis economic and social strategies.

Despite the lack of government support, few institutions that tried to foster innovative development emerged in pre-war time in Ukraine. And since the war started the process has become more intensive. As an example, in March 2022, the Association of Industrial Automation of Ukraine initiated the establishment of the Ukrainian cluster alliance, a multi-industry nationwide union of enterprises, business associations, clusters and cluster organizations of Ukraine that strive to increase their competitiveness by implementing the principles of cluster cooperation, industrial, digital and green innovations, automation and effective interaction with the government. By now, it is the largest union of business clusters with 32 members (UCA, 2022a).

UCA started to implement many initiatives in order to support manufacturing and foster innovative activity and cooperation between enterprises and their internationalization. Among them free-membership in CSIA, cooperation with the European Cluster Alliance and European Cluster Cooperation Platform, manufacture of Medical kits for Ukrainian Army Forces, innovation matchmaking events etc. It worth to mention UCA's efforts on inclusion of Ukrainian enterprises in Innovation Communities of the European Institute of Innovation and Technologies. This work is quite successful as UCA became a partner of EIT Manufacturing and launch of "Pre-accelerator in Ukraine – powered by EIT Jumpstarter" program.

Such activity is oriented not only on the recovery of business activity in short term period, including export but rather on the creation basis for long-term sustainable development after the war, based on digitalization and other technology innovations.

Meanwhile, bottom up initiative is not enough to maintain recovery of economy on innovations. And government should take more responsibility on adjusting innovation policy to the war and post-war needs. It is also acknowledged by the UCA and it was the reason why UCA (2022b) develop a set of proposals for the government that include measures on:

- Buy Ukrainian.
- Integration into GVC.

[6] https://nashkiev.ua/news/ukrainska-kompaniya-eleek-rozrobila-elektrobaik-dlya-zsu

- Inno-Integration.
- Standardization.

Discussion and conclusions. In the paper, we shed light on how Ukrainian R&I sector responded to the war. The next steps should be done by the government to ensure sustainable after war recovery and economic development. As is known, at the end of April 2022, the President of Ukraine created the National Council for the Recovery of Ukraine from the Consequences of the War, which includes 23 working groups. The result of the work of the National Council was the Plan of measures for the post-war recovery and development of Ukraine, which was publicly presented at a special conference in Lugano on July 4-5, 2022.

At first glance, the Recovery Plan has a comprehensive nature and ambitious goals, and is seen by the government as a unique chance not only to compensate for the damage caused by the war, but also to accelerate economic growth and improve the quality of life in Ukraine. The plan consists of 17 national programs, 850 projects and financing volume of 750 billion dollars (more detail at https://recovery.gov.ua/). But according to foreign specialists and experts (URC, 2022) responsible for certain areas, at the moment, the document cannot be considered finalized yet. And indeed, there is poor coordination between different programs and low consistency of measures. R&I is underestimated. The increase in innovative activity is mentioned only in the context of the development of mechanical engineering, while R&D are considered as a part of Education. All this leads to the disappointing conclusion that science and innovation are once again at risk of not becoming a decisive factor in the development of Ukraine. Instead, world experience proves that science and technology are not only one of the key factors of economic and social development of the country in the long term, but also the most important factor for overcoming the consequences of crises and wars. Those countries that managed to turn science into a source of development were able to achieve significant economic results and high living standards.

But, when it comes to real actions, the government's approach to economic development, including a drastic cut of R&D financing and a lack of support of an innovative activity, is not sustainable in the long-run period, when the development of a broader S&T base is required to create a solid base for further repurposing in emergency cases.

A set of policy measures was proposed by businesses and researchers to address the war-led challenges in R&I. However, they are not taken seriously by the government as the government does not demonstrate a long-term strategic vision of the post war recovery. It rather shifts some important activity to international donors and the EU, who do a lot of support in many areas, and business itself.

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CORPORATE GOVERNANCE IN ESTONIA: EQUILIBRIUM ON BOARD

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Summary

This paper starts with an assumption, that there are strong strategic benefits in having boards with members of different backgrounds, experience, and particularly gender, which is reflected in better corporate governance. The central research question of this paper is: Why and how might Estonia increase the number of women on the boards of listed companies? In the case of Estonia, all listed companies on the Tallinn Stock Exchange (NASDAQ TLX) are included in our sample. The authors purposely focus on developing ownership strategies to improve diversity on the boards of corporations with concentrated ownership structure, without regard to arguments that emphasize equal rights or a feminist agenda. The results of the current research are a valuable analytical resource for the Estonian business community, as well as for policymakers.

Keywords: *board diversity, case study, corporate governance, Estonia, gender diversity.*

JEL: *D74, M1, M14, O16*

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Introduction. The subject of corporate governance has become a major concern for business and academia, reflecting the owners' deep concerns about the diverse and dynamic business environment and the results they want from their corporations (Hilb, 2016). Moreover, corporate governance differs significantly from country to country in terms of control patterns and the types of shareholders that prevail in each group of countries. For instance, countries that promote shareholder-value governance approaches (such as the United States of America or the United Kingdom) and countries that strive for stakeholder-value approaches (such as Germany or Japan). (Goergen, 2012) Therefore, different systems of corporate governance are derived and significantly observable worldwide (La Porta, Lopez-de-Silanes, & Shleifer, 1999; Tricker, 2015) and there are considerable similarities and differences among different corporate governance systems (Goergen, 2012). Furthermore, researchers have devoted a considerable amount of attention to developing a better understanding of the heterogeneity and homogeneity of worldwide corporate governance systems (Goergen, 2012). Additionally, due to the many corporate crises that have occurred in different corporate governance systems, the phenomena of corporate governance has become a critical topic worldwide (Hilb, 2016).

On the other hand, discussing the topic at several different European Union institutions, among local politicians, and in the public media, the issue of gender equality at the board level in Estonia has still not been properly addressed in Estonia. According to the European Commission fact sheet "Gender Balance on Corporate Boards" (2016), during the past six years (2010-2016), the share of women increased in 23 of the 28-member states. The largest percentage point increases were recorded in Italy (+25.5 %), France (+24.8%), Belgium (+16.1%), Germany (+14.6%), Slovenia (+14.1%), the United Kingdom (+13.7%) and the Netherlands (+13.2%). During the same period, in Estonia, the number of female board representatives increased by 1.2%. (Jourová, 2016)

The central research question of this paper is: Why and how might Estonia increase the number of women on the boards of listed companies? Following four sub-questions "What are the current state of corporate governance and supervisory board composition of listed companies in Estonia? What is the degree of gender diversity on boards in Estonia? How have other economically developed countries such as Finland, Sweden, and Norway overcome different social, cultural, and political barriers to encourage more gender participation on boards? What experiences from these three countries are relevant to Estonia? To reveal the best way for Estonia, the authors comparing different means and policies applied by Finland, Sweden, and Norway.

The results of the study reveal that there is a need for more independent members, a curb on multiple directorships, and better nomination procedures to put Estonia in line with "best practice" corporate governance standards. Increasing women in the boardroom with corporate governance was never a simple challenge to address. Finland, Sweden, and Norway have already demonstrated success in this process.

The paper proceeds as follows. Section "Theoretical framework: Equilibrium on board" reviews the theories and evidence relating to board diversity, focusing especially on gender diversity and corporate governance. The section "Case Estonia: Corporate governance in Estonia" starts with the analysis of corporate governance in Estonia, followed by a comparative analysis of other Nordic countries. Finland, Sweden, and Norway are useful reference points, as they have successfully increased the number of women on boards by different means and present an established track record for Estonia to consider as it might increase gender diversity on boards. Section "Conclusions," concludes the paper and proposes the future research direction.

Theoretical Framework: Equilibrium on Board. The effect on a company's financial performance is a controversial one. The scholarly proponents for this view (Carter, Simkins, & Simpson, 2003), as well as among non-profit organizations (Catalyst, OECD, World Bank) and consulting companies (McKinsey, PWC), measure different business ratios (such as ROE and ROI) to argue that companies with higher numbers of women on their board demonstrate better financial results. At the same time, contrarian scholars argue that already successful firms can hire more women on their boards (Farrell & Hersch, 2005), and therefore a strong correlation between increased gender participation and financial success is not necessarily the case.

These mixed conclusions regarding greater women's participation on boards are rooted to some extent in their methodological differences and inherent biases. Another problem is numerous micro and macroeconomic factors affecting firm financial performance, which is almost impossible to measure within the framework of any given research. This problem was pointed out by Du Plessis, O'Sullivan, & Rentschler (2014) "Because of the innumerable variables impacting upon the performance of corporations, concluding that a diverse board improves corporate performance is hence difficult" (Du Plessis, O'Sullivan, and Rentschler, 2014, 4). Therefore, the body of literature specifically analysing the impact of diversity in the boardroom on financial performance is conflicting for a reason: perhaps it is ultimately not possible to settle conclusively.

Research methodology. Research philosophies tell us about the philosophic assumptions the author has about the world, the nature of knowledge and knowing, the role of values, and how to go about studying the phenomena. Current work is based on constructionism, interpretive ontological assumptions are that the world is complex and dynamic and is constructed, interpreted and experienced by people in their interactions with each other and with wider social systems. Reality is constructed by people based on beliefs, feelings and experiences; multiple local and specific "constructed" realities exist (Hine & Carson, 2007). An interpretive epistemological assumption is that knowledge is based not only on observable phenomena, but also on subjective beliefs, values, reasons, and understandings. Values are an integral part of social life − no values are wrong, only different (Hine & Carson, 2007). Interpretive research focuses on the full complexity of human sense making as the situation emerges (Kaplan & Maxwell, 1994).

1. Case Estonia: Corporate governance in Estonia

Authors employ stakeholder theory (Freeman, 1984; Donaldson and Preston, 1995) as the main framework and case studies as a research strategy. The stakeholder theory (Freeman, 1984) is based on the relationship-based local corporate governance system, which focuses on the responsibility of major shareholders towards all the stakeholders of the corporation. These stakeholders may include creditors, employees, suppliers and other parties with whom the corporation conducts its business (Goergen, 2012). Furthermore, Berle and Means (1932) predicted that corporations evolve towards a separation of ownership and control as they become larger. Therefore, managers eventually have a high discretionary power over the corporation and most shareholders are not able to control the managers' actions (Roe, 1994). Under this dilemma, stakeholder theory suggests that a corporation should pay attention to all its constituencies (Freeman, 1984). In contrast with agency theory, stakeholder theory suggests that a corporation could not create a long-term advantage without a good relationship with customers, employees, suppliers, regulators and communities (Goergen, 2012).

The sample includes all (n = 16) Estonian companies listed on the Tallinn Stock Exchange (NASDAQ TLX) in 2017. For the comparing case study, four countries were chosen: Estonia, Finland, Sweden, and Norway. These latter three countries, Finland, Sweden, and Norway were selected as the objects of research since they successfully achieved gender balance on boards by different means (quotas, soft law, and corporate governance code) and might serve as a relevant example for Estonia.

The legal basis for regulating corporate governance in Estonia is described by the statue in the Commercial Code (2014), Securities Market Act (2001), Accounting Act (2002), and various acts on auditing and credit institutions (EBRD). The Estonian Financial Supervision Authority (EFSA), the main regulator in Estonia for CG, and the Tallinn Stock Exchange have also established normative recommendations for listed companies (CGR, 2006), which came into force in January 2006.

Given this legislative framework, it is a little surprising that in Estonia there is a general lack of monitoring or history of enforcement to compel companies to adhere to the rules of the CGR. Since 2005, there is no evidence of enforcement or de-listing in connection with complying with the terms of the CGR. Moreover, the EFSA and the NASDAQ provide no regular information regarding companies and their attempts to improve CG; no ranking or public scrutiny of the companies of any kind is provided concerning governance.

During the last decade, in particular, norms in Europe for CG have evolved to respond to market challenges, and in the majority of OECD countries, corporate codes have been updated or amended. Meanwhile, the Estonian CGR has not been updated since 2006 (OECD, 2017). In 2011 and 2017, the EFSA did cite the Action Plan of the European Commission to improve the CG framework, including a "disclosure of board diversity policy" and an improvement of the "quality of corporate governance reporting prepared on the 'comply or explain' basis," but has not brought these principles to bear in the Estonian marketplace (EFSA, 2013, 7).

According to Estonia's Commercial Code Articles of association (§ 139, 2007), in the case of a two-tier board structure, the exact number of members of each board or the minimum and a maximum number of members should be specified in a company's Article of Association. However, the Commercial Code requires that a Management board consist of at least one member and the Supervisory board of at least three members. According to the EBRD, the average Supervisory board of listed companies in 2015 consisted of five members (no data was provided on the Management board size). The OECD concluded: "Supervisory body of public limited liability companies is required to have a supervisory board with at least three members. In practice, the majority of listed companies have five to six members on the supervisory board. The management body of public limited liability companies is required to have a management board that may comprise only one member. In practice, the majority of listed companies have two to four members in the Management board." (OECD, 2017, 105)

To consider the 16 listed Estonian companies in 2017, the Management Board consists of one to four members (with an average of two members), and the Supervisory board consists of three to nine members (with an average of five members) (authors' calculation based on NASDAQ Fact sheets, 2017).

Risk management and auditing skills are very often represented on audit committees, which have been established by almost all listed companies (81% of all listed companies or 13 out of 16 companies). Moreover, many members of Supervisory boards possess long-term experience serving in governmental institutions (e.g., Parliament [*Riigikogu*], Ministry of Defence, Ministry of Finance, Bank of Estonia, county and district courts etc.) as well as trade associations (Estonian Chamber of Commerce, Estonian Traders Association, Estonian Food Industry

Association etc.). The authors assume that these types of governmental and trade experiences may be beneficial to board members in terms of regulatory risk compliance.

An independent board member is theoretically free of any ties with a given company or its major shareholders. The maximum tenure of independent members in Estonia is specified as eight to ten years (OECD, 2017; CGR, 2006). The International Financial Corporation (IFC, 2012) of the World Bank defines an "independent director" as a person "who has no direct or indirect material relationship with the Company other than membership on the Board" and fits the following criteria: 1) has not been employed at a company within the past five years; 2) has not had a commercial relationship with a company or its affiliates (including as a major shareholder) and has not supervised a person who has had such a relationship; 3) is not a member of a non-profit organization receiving "significant funding" from a company or its affiliates; 4) has not received pay from a company or its affiliates within the past five years other than from serving on the board, which should in any event be a significant part of his or her annual income; 5) does not have share options or a pension of any kind from the company or its affiliates; 6) is not employed as an executive officer in another company that has board members from among the executives of the original company; 7) has not been affiliated with or employed at a present or former auditor of the company or its affiliates within the past five years; 8) does not possess a "material interest" in the company or its affiliates and does not oversee a person that holds such an interest; 9) is not related as a family member to any person meeting the definition of points 1-8); 10) is identified in the annual report of a company as independent director; 11) does not serve on a company board for more than ten years (IFC, 2012).

Another consideration of importance in establishing proper corporate governance is the issue of one person having multiple directorships at the same time. Estonian law and the CGR do not provide any guidance on this matter, although it is problematic for Supervisory boards in Estonia. There is widespread recognition of the conflict of interests when corporations have interlocking directors, but what are the problems with multiple directorships?

Admittedly, there is no clear viewpoint among scholars and business consultants on this issue. Clements, Neill, and Wertheim (2015) presented arguments both for and against multiples directorships: the "Busyness Hypothesis," which essentially states that one person cannot adequately manage more than one directorship competently because of the demands that even one board can present (Clements, Neill, & Wertheim, 2015, 3). On the other hand, they pose an "Experience Hypothesis," which supposes that one person can apply experience from one corporation to another board membership (Clements, Neill, & Wertheim, 2015, 4).

In the Estonian case, it is significant that directors who sit on different boards do not have appointments in the same industry, which would logically negate the value of the "Experience Hypothesis." The exception is when one person sits on the boards of subsidiaries of a given corporation as well as the group holding board. Currently, 55% of the members of Supervisory boards could be considered "multiple" directors, some of whom sit on three or more boards. On average, according to the authors' calculations, a "multiple" director in Estonia sits on the boards of 5.5

companies (from 2 to 16 companies simultaneously). For comparison, multiple directors in Finland sits on average on 1.2 boards (Finland Chamber of Commerce, 2016).

Regarding tenure, in Estonia the maximum term of office on a Supervisory board member before re-election is five years (CGR, 2006). The most common maximum term on Supervisory board among OECD countries is three years, while in Finland and Sweden the maximum term is one year (OECD, 2017). For the Management Board, in Estonia, there is no specific recommendation regarding tenure. Therefore, again Estonia falls on the riskier end of the spectrum among OECD countries in its practical implementation of director limits.

On the questions of committees in Estonia, there is one requirement for the establishment of an audit committee, but no requirements on the chair or independence of the members of the audit committee. There is no requirement to establish nomination or remuneration committees. To consider Estonian listed companies, the majority do have audit committees, but very few have remuneration committees. Nomination committees are not common: only 1 out of 16 companies established nomination and remuneration committees. In the case of board-level committees, Estonian companies are far behind other countries in representing "best practice" standards for corporate governance.

Listed companies are required to have at least one employee representation on boards in Estonia (OECD 2017, 112). Among the 16 listed companies in Estonia, not 1 has an employee representative on its Supervisory board. Estonia is woefully deficient in this particular criterion for effective corporate governance.

Estonia is among the very few jurisdictions where the responsibility to establish systems of internal control and risk management are not specified by listing rules or recommended by regulations (OECD, 2017). Nonetheless, the majority of Estonian listed companies pay close attention to internal controls in the sense that they have formed audit committees. Very few of the Estonian companies, e.g., banks, have established risk committees. One major mitigating factor for these risk committees, unfortunately, is that in some cases the members of the Management Board and representatives of major shareholders sit on the risk committee. Having the same person sitting in both groups defeats the purpose of the risk committee since no person can objectively review his own decisions at an arm's distance.

In Estonia, there is no specific recommendation for executive remuneration as well as no requirement for shareholder approval regarding board members and key executive remuneration. Estonian listed companies are not obliged to disclose the function and role of board members. There are no established practices for regular systematic evaluation on the performance of board members (only one company mentioned random evaluation of board members performance), so there is no linkage between the performance of board members and their remuneration.

A handful of Estonian companies have only briefly mentioned, without addressing, the need for gender diversity at the board level. One company (AS Tallinna Vesi) declared the existence of a diversity policy, without having any women on the Supervisory board. Regarding the need to define a formal policy to increase diversity at the executive level, the most commonly used commentary was that personnel were chosen based on skills and experience, rather than gender. For example, "LHV has not

deemed it necessary to implement a diversity policy, as LHV is governed in the recruitment of staff and management members by the best interests of LHV – the education, skills and previous experience of the person on a gender-neutral on a non-discriminatory basis" (AS LHV, 2017, 30).

The EBRD defines gender diversity on Estonian boards as "very weak" (EBRD 2017). According to its data, the percentage of female directors in 2015 was 9.8%. The OECD estimated the total number of women on both corporate (Management and Supervisory) boards in Estonia is 8.2% (OECD 2016), whereas the average EU female board representation is 23.3% (EC 2016). The authors' estimation based on analyses of CGR (2016) of listed companies corroborates the EBRD data: total female representation on boards (both Supervisory and Management) is equal to 9.6%. The number of totally male boards is 50.0% (8 of 16).

Moreover, according to Jourová (2016), the number of women on listed company boards in Estonia in the past six years (2010 to 2016) has increased by 1.2%, compared to the average EU rate of increase of 11.4%. This trajectory of progress on the issue of gender diversity is just another indication of how poorly Estonia fares in this measure of good corporate governance.

Based on the analysis of the annual reports (2016) of 16 listed Estonian companies in 2017, the authors have concluded their compliance with the Corporate Governance Code (CGR). It is important to note that the tone of management, according to annual reports, is somewhat dismissive, and indicates that management believes it is not necessary to comply with the CGR. It seems that there is a lack of understanding of the value of "best practices" corporate governance among the management of listed Estonian companies. Of course, "for practical considerations, some of the recommendations are partially followed" (AS Ekspress Grupp, 2016, 32).

To summarize, on a regulatory level, the authors found no evidence of enforcement on issues of the Estonian CGR for listed companies and no recent attempts to modernize the CGR regulations themselves. On a managerial level, there appears to be a lack of understanding of the value of good corporate governance, including all contemporary guidelines for best practice. What can be done to improve CGR in Estonian listed companies and gender equality on boards? What are the main barriers for Estonian women to get on board and how they can be eliminated or minimized? It is instructive to look at neighbouring countries to answer these questions.

2. Boardroom diversity in Finland, Sweden, and Norway

All developed countries have faced challenges to increase diversity while improving, the quality of boards over the last two decades. On the one hand, traditions, stereotypes, and simple sexism have preconditioned many corporate cultures to favour men over women for new openings. But there are also deeply rooted cultural problems with the availability, attitude, and supply of women candidates for boards. Several European countries, notably the three Nordic nations, Finland, Norway, and Sweden, which have long been ahead of the times in issues related to women's rights, serve as helpful guides to the question of women on boards in Estonia. The ways that these countries have handled this issue highlight steps that Estonia might take to improve its gender diversity at the board level.

To be sure, the main barriers for women to enter the boardroom in contemporary European business are the same ones that have typified the question of women's rights for the past hundred years, or more: gender stereotypes, a decidedly masculine corporate culture, and the unequal distribution of family responsibilities. According to the International Labour Organization (ILO) in 2015, two-thirds of women now in executive positions in Europe indicated that stereotypes about women, and their abilities, is the most important hurdle for them to successful careers. McKinsey (2013) has also indicated that corporate culture and long-established mindsets have to a large degree held back women from higher corporate roles. In this 2013 survey "Women Matter," McKinsey revealed that 40% of women respondents and 30% of men respondents believe that existing corporate culture (communication and leadership style) does not encourage women to be efficient leaders (McKinsey, 2013). The same research indicated that many women want to become corporate leaders though they are less confident than men to try to attain success. Although family responsibilities in this survey are cited as an obstacle to career advancement by both men and women, some 62% of female respondents believe nonetheless that having families for women is ultimately compatible with developing their careers (McKinsey, 2013).

The latest version of the Finnish Corporate Governance Code, which entered into force in 2015, includes an additional recommendation for reporting precise objectives and measures regarding board diversity policy as well as requirements to describe the precise means to achieve the objectives (Recommendation 9, FCGC, 2015). This recommendation allows companies to use their discretion to formulate a diversity policy based on their company size and strategy, considering age, gender, business background, etc., but must nonetheless be reflected in their Corporate Governance Report (FCGC, 2015, 25). These policies are essentially non-binding, though if they do not comply, companies are supposed to explain why they do not comply with the Finnish Corporate Governance Code, and how they deal with this issue (otherwise known as a "comply or explain" policy) (Securities Market Association, 2012). It is moreover instructive that strict quotas for women were considered and rejected in Finland, as the Finland Chamber of Commerce considers quotas as restricting the rights of shareholders (Finland Chamber of Commerce, 2016).

Currently, there are no legislative requirements for Finnish listed companies to increase diversity on their boards. It is, however, telling that Finland introduced quotas for government organs, and state-owned enterprises to increase the number of women on these bodies. In 2005, a new amendment, the Act on Equality between Women and Men (1986) was introduced, in which Section 4a (232/2005) proclaimed that "the composition of public administration bodies and bodies exercising public authority" (Finnish Act on Equality between Women and Men, 2005, 2). This legislative document requires all government committees, advisory boards and other corresponding bodies to achieve at least 40% representation of both men and women. Other public authorities or state-owned enterprises should achieve "equitable" representation of both men and women. Adherence to this quota is mandatory. In effect, the Finnish government has set an example of increasing the number of women

in state boards and companies, which acts as a clear message to business community leaders.

According to the Swedish Corporate Governance Board (2018), the Swedish Corporate Governance Code (SCGC) was developed in 2004 by a body called the Code Group. The Swedish Corporate Governance Code was formulated according to the "comply or explain" principle, such that compliance is not obligatory for listed companies, but a lack of compliance needs to be explained. There are, however, no penalties for non-compliance. The Swedish Corporate Governance Code has been updated to provide clarity on grey areas, to meet new legislative requirements, and EC directives, for the last time in 2016. The current SCGC (2015) includes diversity recommendations in clause 4.1: "The board is to have a composition appropriate to the company's operations, phase of development and other relevant circumstances. The board members elected by the shareholders' meeting are collectively to exhibit diversity and breadth of qualifications, experience and background. The company is to strive for gender balance on the board" (SCGC, 2015, 17). Thus, the Swedish Corporate Governance Code has called for women on boards, but without specifying an exact target in the past. By 2020 however, the Swedish Corporate Governance Code has made it a goal for listed companies to increase women on boards to 40%. Sweden has increasingly been motivating companies to include women on boards as early as 2005, though admittedly in a non-binding fashion.

There are no legislative regulations for gender diversity for listed companies in Sweden. Corporations in Sweden are governed by the Swedish Companies Act and the listing requirements and applicable rules of respective stock exchanges according to the Swedish Securities Council. But in these laws and rules, there are no formal quotas to increase women at the board level. Although legislators have discussed measures several times, and even introduced draft legislation on quotas, these proposals were rejected each time. According to Deloitte (Deloitte, 2017), the last draft on a quota was considered and rejected in September 2016 parliament [*SverigesRiksdagg*] draft was proposing for 40% representation of each gender on boards of listed and state-owned companies by 2019.

In Norway, the corporate governance document is termed The Norwegian Code of Practice for Corporate Governance (NCP) which provides a similar function as the corporate governance code in the other countries. This NCP is principally intended for companies that are required by the Norwegian Accounting Act to provide a report on their policies and practices for corporate governance. This mainly relates to companies whose shares are listed on regulated markets in Norway, i.e., Oslo Børs and Oslo Axess, and also savings banks with listed equity certificates. As in Finland and Sweden, companies in Norway must comply with the NCP or explain a valid reason why they do not comply and how they deal with a given issue.

In Norway, contrary to Finland and Sweden, the government took the lead role in addressing gender diversity in the boardroom. According to Smith (2014), in 2002 less than 10% of the Norwegian boardroom was composed of women. In 2003, the Norwegian parliament took the unprecedented step to mandate a 40% quota for women on listed company boards where gender equality on board was described in a clause of the Norwegian Public Limited Liability Companies Act (1997, § 6-11a.). With a grace period for compliance until 2008, by that year all PLC Norwegian

companies met the quota terms (Storvik, 2011; Ahern & Dittmar, 2012; Smith 2014, 45). This requirement applied to the boards of state-owned and inter-municipal companies, and later, the regulations were expanded to include the boards of all municipal and cooperative companies (Storvik & Teigen 2010; Smith 2014, 45).

3. Improving gender diversity on boards in Estonia

The Estonian corporate world faces many challenges to improve corporate governance. The number and quality of independent board members, conflict of interests, public information regarding board members, and their nomination, as well as gender diversity, remain problematic areas of board composition. The current high number of multiple directorships also points out the problem of a lack of qualified candidates, of either gender, to serve boards. Perhaps one might explain the limited managerial talent pool on account of the relatively low wages and small market size, which are not interesting for international executives. But undoubtedly, increasing the number of qualified women on boards would not only help to improve the pool of candidates but also increase board diversity, which is a vital part of contemporary corporate governance, as described in the Introduction. The authors will first discuss a primary question that Finland, Sweden, and Norway encountered, "Would quotas be appropriate for Estonia?" before highlighting specific topical issues in turn.

On the question of quotas, many researchers and policymakers who have analysed the results of quota law in Norway cannot justify their further implementation (Du Plessis, O'Sullivan, & Rentschler, 2014; Smith, 2014; Davies, 2011). In the authors' opinion, such radical means as an introduction of a quota law to Estonia would be inappropriate for the economic situation and would bring more harm than good to Estonian business. Several major problems would lead to negative consequences of quota law, as was observed in Norway (and debated in Finland) in particular: 1) quotas infringe shareholders rights; 2) quotas do not by themselves promote women and develop women talents – they just bring them to the boards, which at least in Norway, was perceived negatively by men as well as by women; 3) listed companies are not ready to meet any legislative quota requirements: there are no internal (talent development programs) or external policies (nomination committees, established HR practices, qualification criteria) to hire qualified women to serve on boards (because of this poor situation, the immediate impact of quotas would be de-listing for many companies, which would defeat the quota's purpose); 4) currently the size of potential female candidates pool to serve on boards is unclear, so it is difficult to assess an appropriate quota size for Estonia.

Therefore, in the authors opinion the best way to improve gender diversity for Estonia would be to employ a voluntary strategy, e.g., to achieve more efficient and binding implementation of the CGR in combination with supportive policies and actions from the government and other private institutions. To discuss the major issues raised by the examples of Finland, Sweden, and Norway, the following topical questions might serve as a blueprint for Estonia.

Estonia is fortunate to have relatively high numbers of trained and educated women. According to the World Economic Forum (2016), more women than men attained tertiary education (88.0% of women versus 59.0% of men), women are represented among business owners (35.8% of firms include women owners), and women represent 45.0% of research and development personnel (World Economic

Forum, 2016; The Global Gender Gap Report, 2016). Moreover, women have a strong presence in senior management in Estonia, at 40% (Grant Thornton, 2017).

By these markers, it would seem clear that mentorship and collaboration programs could help prepare the ranks of qualified women for Estonian boards. For instance, the PBF (Norway) already has a track record for international partnership, successfully sharing their experience with the United Kingdom to help form the UK Professional Board Forum. Currently, the PBF is already assisting with Professional Boards Forum in France, Holland, Spain and Australia. Mentoring programs could also be established within Estonian listed companies to develop talent. It is much cheaper to build skills and experience inside companies than to acquire from outside.

Conclusions. This paper aimed to address the question of: Why and how might Estonia increase the number of women on the boards of listed companies? After conducting research, it became apparent that for Estonia the most relevant way to increase gender diversity is a voluntary one where the business itself initiates change. However, before approaching the issue of gender equality, Estonia has several fundamental governance challenges to address. There is a need for more independent members, a curb on multiple directorships, and better nomination procedures to put Estonia in line with "best practice" corporate governance standards. And more effective enforcement policies, whether via the CGR, or governmental authority, could ensure compliance with these standards. The OECD has noted that a more inclusive gender balance requires "a deep cultural change at both societal and organizational levels" (OECD, 2016). Most certainly for Estonia, a change in the boardroom to increase the number of women is just one of the CG problem areas that need attention. A first step should be to update overall CG standards and to improve compliance, and then a comprehensive policy on gender diversity could be determined. Only then could the means to achieve better gender diversity be introduced.

Nonetheless, the experience of Finland, Sweden, and Norway in addressing gender diversity in the boardroom does draw some pathways for Estonia to consider. Quotas as a mechanism to increase the number of women on boards were ultimately effective in Norway, but at an initial economic cost that may be too significant for the developing economy of Estonia to bear. The cases of Sweden and Finland, which explicitly rejected quotas, provide a more relevant example for Estonia because there was no stress on the economy when the process began. In these two countries, efforts by the Finland Chamber of Commerce and the Swedish Agency for Economic and Regional Growth to mentor women helped to identify and train a generation of women as a first step to providing an environment where they could be successful in the boardroom. The corporate culture in these two countries also was responsible in the sense that non-binding CG recommendations for increasing women in the boardroom were accepted as necessary, rather than ignored, by corporations.

Efforts to improve gender diversity in the boardroom in Estonia would have to encompass many initiatives not only to mentor women but also to introduce women candidates within listed companies. Two initiatives from Finland and Norway, for example, offer relevant experiences. Estonia might collaborate with the Finland Chamber of Commerce, with its successful Women Leaders Program, or the PBF in

Norway, which has already partnered with other organizations in the UK to improve corporate governance, to address its lack of veteran women board members. As the case in Norway demonstrated, once women began to serve more broadly on boards from 2004, the availability of talented and experienced women becomes increasingly self-sustaining.

This study practically contributes to an understanding that there is a need for more independent members, a curb on multiple directorships, and better nomination procedures to put Estonia in line with "best practice" corporate governance standards. From this study, owners will understand increasing women in the boardroom to improve corporate governance was never a simple challenge to address. Finland, Sweden, and Norway have already demonstrated success in this process.

The current paper is intended as a pilot study to provide the blueprint for a larger-scale study of diversity in Estonia. However, there are many challenges that Estonian companies must address to bring boardrooms more in line with contemporary EU corporate governance standards before such a study is warranted.

Increasing women in the boardroom to improve corporate governance was never a simple challenge to address. Finland, Sweden, and Norway have all demonstrated success in this process, albeit by different measures and at different paces. Estonia is in many ways fortunate to draw on its experiences to adapt its policies to improve corporate governance and to increase gender diversity in particular, in the boardroom. This will undoubtedly lead to superior returns in the long run for Estonian corporations. Good corporate governance is manifested in the design and implementation of a long-term, adaptive, enlightened strategy. Veranen (1996) has emphasized that corporations must be managed masterfully and skilfully. The findings are of importance insofar as they provide new knowledge and consequently, further our understanding of the diverse phenomena of corporate governance in Estonia.

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STAKEHOLDER SALIENCE DURING THE COVID-19 PANDEMIC: AN INVESTIGATION THROUGH ITALIAN COMPANIES' NON-FINANCIAL DISCLOSURES

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Summary

This research analyzed mandatory and externally audited non-financial reports of large Italian companies to explore the impact of the pandemic on corporate stakeholder salience. The findings indicate that, during the pandemic, stakeholders' identity and priority order did not change. Nevertheless, new material topics emerged, particularly regarding human resources and the natural environment.

To the best of our knowledge, this is the first study that reviews the stakeholder salience pattern through non-financial disclosures flowing from the specific European Union Directive, and particularly mandatory non-financial disclosures of Italian companies. From this point of view, the achieved results look valuable because they feed the existing literature on stakeholder salience with additional and consistent evidence from a recent and, thus, underexplored reporting tool.

Other interesting aspects concern stakeholder prioritization under ordinary and stressful conditions. From that point of view, this study makes three main contributions. First, it implements an original research tool: the priority index. The second innovative aspect concerns the analysis of materiality disclosures to investigate stakeholder prioritization. Finally, the third key point is investigating changes in stakeholder prioritization under a challenging event different than the most common financial crisis.

Keywords: *stakeholder salience; stakeholder engagement; materiality; corporate non-financial disclosures; accountability; COVID-19 pandemic.*

JEL classification: *M1, M4*

UDC: *005(450)*

Introduction. The capability to properly engage with stakeholders is widely acknowledged as a key factor of success for companies. Due to the dynamism in the institutional context, this task also implies the ability to catch changes in salient stakeholders' identity, recognize new material issues, adjust prioritization, and meet new relevant demands promptly. Under stressful conditions, such a challenge looks even more demanding: indeed, material issues concerning stakeholders can change quickly and in a way that was not forecastable just some months before.

Mainly building on the stakeholder theory and the literature on corporate reporting, this research examined the impact of the COVID-19 pandemic on stakeholder prioritization. The findings show that, in the short period, stakeholders' identity and priority order did not change. Nevertheless, new material topics emerged.

Literature review. The literature widely agrees on the transitory nature of stakeholder salience (Khurram & Charreire Petit, 2017; Mitchell et al., 1997; Parent & Deephouse, 2007).

The limited availability of strategic resources, like financial capital or competencies, obliges managers to select salient stakeholders and to define a scale of priority (Barney, 1991; Jawahar & McLaughlin, 2001), in order to focus on stakeholders who more affect the corporate performance (Buallay et al., 2021).

However, conditions that lead to stakeholder identification and prioritization are not constant over time. Stakeholders who possess limited power, urgency, legitimacy, or interest can capture managers' attention by acquiring or reinforcing the missing or poor attributes (Driscoll & Starik, 2004; Freeman, 2010; Mitchell et al., 1997). Globally, the dynamic nature of stakeholder salience and prioritization is grounded on changes in the institutional context (Greenwood et al., 2002) that force business strategies and actions to be reassessed and adjusted (Kent & Dacin, 2013).

When those changes are particularly unexpected or challenging or impact a lot of entities, like in the case of a financial crisis, climate change, or a pandemic, more attention is required. On one side, many entities are involved in reshaping their stakeholder salience map, and activities to fit relevant stakeholders' demands, including business reporting, must be reassessed. On the other side, the common denominator of a wide crisis leads a lot of firms running in a similar institutional context and facing similar issues to react through similar behaviors (Dacin, 1997; Scott, 1987). Those behaviors affect the institutional context in return (Oliver, 1991): hence, the institutional context after the crisis will be the result not only of new conditions determined by the crisis but also of reactions by the firms, which therefore need to be investigated.

To the best of our knowledge, despite a wide literature on stakeholder salience and corporate social responsibility reporting, studies on changes in stakeholder prioritization and related disclosure during a crisis are limited. This contribution aims to fill in this gap, also responding to Lodhia et al. (2021), who suggested investigating the implications of the COVID-19 pandemic on stakeholder engagement and non-financial disclosures. The research questions are as follows.

Q1 – Who were salient stakeholders before and during the coronavirus pandemic?

And, regarding stakeholders who were recognized as salient before the pandemic and kept that status also during the pandemic:

Q2 – How did the priority level of salient stakeholders change during the pandemic?

Research methodology. The empirical research was based on mandatory non-financial reports published by Italian manufacturing and trading companies regarding the reporting periods 2018, 2019, and 2020.

Consistent with the European Directive 2014/95/EU and the Legislative Decree n. 254/2016, which transposed the European Directive into Italian legislation, large companies (exceeding 500 employees) headquartered in the Member States must disclose a series of social, environmental, and governance statements annually. Italian

companies fulfilling the requirements were no. 208 in 2018, no. 206 in 2019, and no. 210 in 2020 (CONSOB, 2022).

The sample was drawn from the above universe to fit three main features of the research. First, the need to compare firms with similar stakeholder categories: thus, only manufacturing and trading companies were selected, excluding banks, financial institutions, insurance companies, etc. Second, the scope of investigating changes in stakeholder prioritization during the triennium 2018-2019-2020: firms that published their non-financial report only for one or two of those reporting periods were also excluded. Last, different time spans could affect the managers' perceptions about stakeholder salience: hence, the sample included only companies closing their reporting periods on the same date (December 31st).

The definitive research sample consisted of 55 companies. For each company, non-financial disclosures regarding 2018, 2019, and 2020 were examined, totaling 165 observations.

According to the European and Italian legislation, all the investigated non-financial reports were accompanied by an assurance report provided by an independent third party; this requisite enhances confidence in those reports' reliability (De Beelde & Tuybens, 2015). Furthermore, companies can freely select standards for non-financial reporting, but all sample companies adopted GRI standards: this condition improves consistency and comparability (Testarmata & Ciaburri, 2022).

The empirical research investigated the managers' perceptions of stakeholder salience and prioritization through the content analysis of materiality disclosures which were included in sample companies' non-financial reports. This method looks to be strongly supported by the literature (e.g., Guthrie & Abeysekera, 2006; Unerman, 2000).

The main steps of data collection and analysis were developed as follows.

First, the 165 sampling reports were analyzed to pinpoint each company's stakeholder map or list for every investigated year. Stakeholder categories and the percentage of companies that cited them in 2018, 2019, and 2020 are listed in Table 1.

Table 1. **Percentage of companies including each category in the stakeholder map**

Stakeholder Categories	Year 2018	Year 2019	Year 2020
Investors and Financial Analysts	100%	100%	100%
Customers, Consumers, and Customer/Consumer Associations	100%	100%	100%
Human Resources and Trade Unions	100%	100%	100%
Natural Environment	98%	98%	98%
Suppliers	95%	100%	100%
Local Community	87%	91%	91%
Authorities	71%	76%	76%
Competitors and Sector Associations	38%	40%	36%
Media and Influencers	45%	42%	40%
Others	60%	56%	55%

The second step was concerned with the content analysis of materiality disclosures to measure the level of priority that, every year, each company assigned to each stakeholder category. The priority index was defined as the number of material topics involving each stakeholder category over the total number of material topics a company identified. For instance, assume that in 2018 the company XY indicated a total of 20 material topics, and two of them refer to the environment (e.g., energy efficiency and waste collection): the priority that the company XY assigned to the environment in 2018 equals 10%, that is 2 over 20. If one material topic involved more than one stakeholder category, the weight of that topic was shared among all stakeholder categories involved.

As far as each stakeholder category, Table 2 shows the percentage of companies citing at least one material topic on which it is involved; the percentage is computed over the whole sample (P2) and over the sample companies that mentioned the specific category in their stakeholder list or map (P1).

Table 2. **Companies defining the priority levels for stakeholder categories**

Stakeholder categories	Companies defining the priority level	Year 2018	Year 2019	Year 2020
Investors and Financial Analysts	P1	100%	100%	100%
	P2	100%	100%	100%
Customers, Consumers, and Customer/Consumer Associations	P1	95%	95%	95%
	P2	95%	95%	95%
Human Resources and Trade Unions	P1	100%	100%	100%
	P2	100%	100%	100%
Natural Environment	P1	100%	100%	100%
	P2	98%	98%	98%
Suppliers	P1	85%	84%	85%
	P2	80%	84%	85%
Local Community	P1	75%	72%	72%
	P2	65%	65%	65%
Authorities	P1	8%	7%	5%
	P2	5%	5%	4%
Competitors and Sector Associations	P1	14%	14%	10%
	P2	5%	5%	4%
Media and Influencers	P1	4%	4%	9%
	P2	2%	2%	4%
Others	P1	6%	6%	7%
	P2	4%	4%	4%

Key Line:
P1 = No. of companies citing at least one material topic involving the stakeholder category / No. of companies citing the category in the stakeholder list or map
P2 = No. of companies citing at least one material topic involving the stakeholder category / No. of sample companies

Summary statistics (min, max, mean, median, and standard deviation) of the priority index regarding the principal stakeholder categories (investors and financial analysts; customers, consumers, and customer/consumer associations; human

resources and trade unions; the natural environment; suppliers; the local community) are summarized in Table 3. For this study's purpose, stakeholders are labeled as "principal" when more than 20% of sample companies indicated at least one material topic where those stakeholders were involved, thus permitting the definition of priority levels and the following test of the research hypothesis.

Table 3. **Priority levels for the principal stakeholder categories: summary statistics**

	Year 2018	Year 2019	Year 2020
Investors and Financial Analysts			
Min	6%	5%	4%
Max	48%	48%	50%
Mean	23%	24%	24%
Median	24%	25%	23%
Standard Deviation	9%	9%	10%
Customers, Consumers, and Customer/Consumer Associations			
Min	5%	5%	3%
Max	44%	44%	33%
Mean	13%	14%	13%
Median	11%	13%	12%
Standard Deviation	8%	8%	7%
Human Resources and Trade Unions			
Min	8%	8%	8%
Max	54%	54%	50%
Mean	30%	29%	30%
Median	29%	29%	29%
Standard Deviation	9%	9%	8%
Natural Environment			
Min	8%	7%	7%
Max	50%	40%	50%
Mean	23%	22%	23%
Median	22%	22%	23%
Standard Deviation	9%	7%	8%
Suppliers			
Min	4%	4%	4%
Max	17%	18%	17%
Mean	7%	8%	7%
Median	7%	7%	7%
Standard Deviation	3%	3%	3%
Local Community			
Min	3%	3%	3%
Max	17%	14%	17%
Mean	7%	7%	7%
Median	6%	6%	6%
Standard Deviation	3%	3%	3%

The last step focused on answering the research questions concerning a possible relationship between changes in stakeholder prioritization and the pandemic.

Two periods were identified: the pre-pandemic, 2018-2019, and the pandemic, 2019-2020. For each biennium, company, and stakeholder category, the change in stakeholders' priority level was assessed and codified: code 0 corresponded to a decrease in the priority index; code 1 paired with a stable priority index; code 2 identified an increasing priority index. The number and the percentage of companies presenting decreasing, constant, or increasing priority indexes for each principal stakeholder category in the biennium before the pandemic and the biennium of the pandemic are listed in Table 4.

Table 4. **Changes in stakeholders' priority index before and during the pandemic**

	Biennium 2018-2019		Biennium 2019-2020	
	No. of companies	%	No. of companies	%
Investors and Financial Analysts				
Decreasing priority	4	7.27%	23	41.82%
Constant priority	45	81.82%	16	29.09%
Increasing priority	6	10.91%	16	29.09%
Total	55	100%	55	100%
Customers, Consumers, and Customer/Consumer Associations				
Decreasing priority	5	9.80%	29	56.86%
Constant priority	35	68.63%	14	27.45%
Increasing priority	11	21.57%	8	15.69%
Total	51	100%	51	100%
Human Resources and Trade Unions				
Decreasing priority	8	14.55%	7	12.73%
Constant priority	46	83.64%	27	49.09%
Increasing priority	1	1.81%	21	38.18%
Total	55	100%	55	100%
Natural Environment				
Decreasing priority	14	25.93%	9	16.67%
Constant priority	34	62.96%	15	27.78%
Increasing priority	6	11.11%	30	55.55%
Total	54	100%	54	100%
Suppliers				
Decreasing priority	5	11.63%	23	53.49%
Constant priority	30	69.77%	13	30.23%
Increasing priority	8	18.60%	7	16.28%
Total	43	100%	43	100%
Local Community				
Decreasing priority	6	18.18%	17	51.52%
Constant priority	23	69.70%	10	30.30%
Increasing priority	4	12.12%	6	18.18%
Total	33	100%	33	100%

Finally, Pearson's Chi-square and Cramér's Value were used to test a possible association between the periods and the change in stakeholders' priority indexes. Findings are summarized in Table 5.

Table 5. **Association between the periods and the change in stakeholders' level of priority**

	Pearson $\chi 2$		Cramér's V
	Value	Sig.	
Investors and Financial Analysts	31.7027	0.000	0.5368
Customers, Consumers, and Customer/Consumer Associations	26.4149	0.000	0.5089
Human Resources and Trade Unions	23.1937	0.000	0.4592
Natural Environment	24.4543	0.000	0.4758
Suppliers	18.3590	0.000	0.4620
Local Community	10.7821	0.005	0.4042

Main results and discussion. The answer to the first research question is provided by findings in Tables 1, 2, and 3.

Table 1 lists the main stakeholder categories and the percentage of companies including them in their stakeholder list or map. Investors, customers and consumers, and human resources (with subjects or associations representing or supporting their interests) were generally considered stakeholders by all the companies and in all the reporting periods. The natural environment was not mentioned as a stakeholder by just one firm. Suppliers, excluded by three companies in 2018, were cited by all the sample companies in the following years, 2019 and 2020. 87% of companies in 2018 and 91% in the subsequent biennium recognized the local community as a stakeholder. An increasing trend also distinguished authorities (e.g., central and local Governments, control bodies, etc.), which passed from 71% in 2018 to 76% in 2019 and 2020. Competitors and media were mentioned by less than 50% of the companies; in the triennium 2018-2020, the trend was variable for the first category and decreasing for the second one. The residual category "Others" involves schools, universities, research centers, and not-for-profit organizations, with a whole recognition percentage between 55% and 60% and decreasing during the triennium.

Managers' perception of stakeholder salience was assessed through the number of companies citing at least one material issue for each stakeholder category (Table 2) and the priority index's summary statistics (Table 3).

All companies included human resources in both their stakeholder map or list and the materiality disclosures, always recognizing them as the highest priority. The priority index was between 8% (minimum) and 54% (maximum) in 2018 and 2019 and between 8%-50% in 2020. The mean was 30% in 2018 and 2020 and 29% in 2019, while the median equaled 29% in all the years; the standard deviation was around 8%-9%.

The second position on the priority scale was assigned to investors. Like human resources, investors were included in both the stakeholder map or list and the materiality analysis by all the companies. The priority score was included between 6% (minimum) and 48% (maximum) in 2018, 5%-48% in 2019, and 4%-50% in 2020. The mean was 23% in 2018 and 24% in 2019 and 2020; the median equaled 24% in 2018, 25% in 2019, and 23% in 2020; the standard deviation set around 9%-10%.

The natural environment ranked third on the priority scale, followed by customers and consumers, suppliers, and the local community.

All companies citing the natural environment as a stakeholder also included the same in the materiality analysis. Still, a company totally ignored environmental issues: that is why, in Table 2, the related percentage P2 equals 98%. The priority index was between 8% (minimum) and 50% (maximum) in 2018, 7%-40% in 2019, and 7%-50% in 2020. The mean equaled 23% in 2018 and 2020 and 22% in 2019 and was always close to the median (22% in 2018 and 2019 and 23% in 2020). The standard deviation was 9%, 8%, and 7% in 2018, 2020, and 2019, respectively.

All companies cited customers and consumers in the stakeholder map or list, but only 95% of them involved this category also in the materiality analysis. The related priority index was between 5% (minimum) and 44% (maximum) in 2018 and 2019, while boundaries were reduced respectively to 3% (minimum) and 33% (maximum) in 2020. The mean was around 13% (increasing to 14% only in 2019), while the median was 11% in 2018, 13% in 2019, and 12% in 2020. The standard deviation equaled 8% in 2018 and 2019 and 7% in 2020.

Regarding the remaining categories, the difference between the number of times when they were cited in the stakeholder map or list and the number of cases when they were involved in the materiality analysis acquires increasing relevance.

In 2018, suppliers were mentioned as stakeholders by 95% of companies (see Table 1), but they were involved in the materiality analysis only in 85% of the cases (see Table 2, percentage P1). The difference, equal to 10%, represents companies that assigned suppliers a generic role of stakeholders but attributed them no sufficient power because their demands could constitute material issues. That difference was even higher in the other years: 16% in 2019 and 15% in 2020. Suppliers' priority index was between 4% (minimum) and 17% (maximum) in 2018 and 2020 and between 4%-18% in 2019; the mean and the median were around 7%, while the standard deviation equaled 3%.

Concerning the local community, the gap between the number of citations in the stakeholder maps or lists and materiality disclosures equaled 12% in 2018 and 19% in 2019 and 2020. The priority index was between 3% (minimum) and 17% (maximum) in 2018 and 2020, while the range was 3%-14% in 2019; the mean, the median, and the standard deviation were, respectively, 7%, 6%, and 3%.

The remaining categories, namely authorities, competitors and sector associations, media and influencers, and others, were cited in materiality disclosures by a few companies, many less than companies including those categories in their stakeholder map or list. This condition impeded any further analysis of such stakeholders' priority levels. Still, it underlines a key point: the initial inclusion of a category in the stakeholder list or map does not automatically imply that such a category is engaged in the materiality analysis and thus gets a specific position in the corporate priority scale.

The findings in Tables 4 and 5 respond to the second research question, testing a possible association between the pandemic crisis and changes in stakeholder prioritization.

Pearson's Chi-Square Test and Cramér’s Value confirm that changes in priority indexes before the pandemic (biennium 2018-2019) were significantly different from

changes that occurred during the pandemic (biennium 2019-2020). Moreover, such a result is demonstrated for all principal stakeholders (see Table 5).

Precisely, Table 4 shows that the priority level recognized to stakeholders tended to be constant in the biennium before the pandemic: indeed, between 2018 and 2019, the priority index did not change in 82% and 84% of the cases, respectively, for investors and the human resources, and the same evidence emerged in about 70% of the observations regarding customers, suppliers, and the local community, and 63% of the cases concerning the natural environment.

Conversely, prioritization tended to change in the biennium of the pandemic. Research findings show that, between 2019 and 2020, the priority tended to decrease for investors and financial analysts (42% of the cases versus 29% of constant and increasing levels), customers and consumers (57% of the observations versus 27% and 16% respectively for constant and increasing levels), suppliers (54% of the cases, versus 30% and 16% respectively for constant and increasing levels) and the local community (52% of the cases, versus 30% and 18% respectively for constant and increasing levels).

The above decreases were counterbalanced by a higher priority widely recognized to human resources and the natural environment.

In the last biennium before the pandemic, priority acknowledged to human resources was constant in 84% of the cases. Conversely, in the biennium of the pandemic, that percentage decreased to 49%, while 38% of companies recognized increasing priority to human resources. A deeper analysis of materiality disclosures showed that new material issues related to the pandemic were as follows: first, the need for additional tools and protocols to protect workers' health, to prevent the spreading of the virus in the firm, and to organize production processes so that they can be carried on also when some workers or collaborators become sick; second, the need for implementing flexible work arrangements, outside of the firm's buildings, for employees and whenever this approach is possible. 38% of companies made the above new needs explicit, adding specific items in the materiality analysis. However, a major part of the other companies included these issues in broader topics already discussed in materiality disclosures before the pandemic, like workplace safety, well-being at work, and work-life balance. Whether all the companies declared additional needs connected to the pandemic separately, the percentage of priority index increase for human resources would have been even higher. This research finding is consistent with Zharfpeykan and Ng (2021) as far as new needs regarding human resource engagement that the pandemic has solicited, but also adds an interesting piece of evidence: compared with new material topics related to other stakeholders like investors, customers, consumers, or suppliers, the additional material issues emerging during the pandemic for what that concerns the human resources seem to prevail.

A valuable research result refers to the natural environment as well. While during the last biennium before the pandemic, the priority index assigned to this stakeholder was mainly constant (63% of the cases) or even decreasing (26% of the cases), during the biennium of the pandemic, it strongly increased (56% of the cases). What underlying relationship between the environment and the pandemic might justify this evidence? OECD (2020) suggests that the coronavirus pandemic has highlighted «the need for a comprehensive and integrated approach to human health»,

and it has promoted people's increasing awareness of the need to enhance environmental health (Kachaner et al., 2020).

Conclusions. This research was undertaken to review the stakeholder prioritization pattern through the first mandatory non-financial disclosures of large Italian companies, also investigating the impact of the pandemic crisis that blew up in 2020.

Findings support other empirical studies concerning the identity of the most common manufacturing and trading companies' stakeholders (e.g., Gianfelici et al., 2018; Moore, 2001; Sweeney & Coughlan, 2008). Consistent with the priority order, they are as follows: first, human resources and trade unions; second, investors and financial analysts; third, the natural environment; fourth, customers, consumers, and the related associations; fifth, suppliers; sixth, the local community. According to the literature (e.g., Mitnick, 2000; Smith et al., 2005; Weber & Marley, 2012), restricted or no materiality disclosure generally matches stakeholders and issues that partially attract or do not attract the companies' interest.

To the best of our knowledge, this is the first study that reviews the stakeholder salience pattern through non-financial disclosures flowing from the specific European Union Directive, and particularly mandatory non-financial disclosures of Italian companies. From this point of view, the achieved results look valuable because they feed the existing literature on stakeholder salience with additional and consistent evidence from a recent and, thus, underexplored reporting tool.

But the most innovative and interesting aspects concern stakeholder prioritization under ordinary and stressful conditions. From that point of view, this study makes three main contributions. First, it implements an original research tool: the priority index. Many scholars admit that stakeholder prioritization and engagement lie in managers' perceptions (Boesso & Kumar, 2009; Mitchell et al., 1997; Parent & Deephouse, 2007), but measuring those perceptions is a tricky issue. The second innovative aspect concerns the analysis of materiality disclosures to investigate stakeholder prioritization. This solution looks to be consistent with literature demonstrating that companies' approach to materiality is mainly stakeholder-oriented and affected by the stakeholder engagement process, particularly under GRI standards (Mio et al., 2020). Additionally, this approach responds to other scholars' solicitations to further explore non-financial information materiality (Fasan & Mio, 2017) and links with stakeholder engagement (Saenz, 2019). The third key point is investigating changes in stakeholder prioritization during the pandemic. The literature widely stresses the dynamic condition of stakeholders (e.g., Khurram & Charreire Petit, 2017; Mitchell et al., 1997), but the way specific events can affect stakeholder salience and prioritization is an under-investigated theme.

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AN EVALUATION ON THE EFFECTS OF THE COVID-19 PANDEMIC ON THE WORLD TOURISM ECONOMY

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Summary

The Covid-19 pandemic, which was first identified at the beginning of January 2020, is a major health crisis that has affected the whole world for more than two years. While the Covid-19 pandemic caused the biggest economic crisis of the century on a global scale, tourism is one of the sectors most negatively affected by this process. In this study, by giving general information about the Covid-19 pandemic, the effects of the pandemic on the world tourism economy were examined. Accordingly, in the study, situation of tourism before the pandemic and during the pandemic period and the effects of the pandemic on the world tourism economy were examined based on secondary data. In this context, reports, documents and previous studies on this subject were scanned with the literature review method in the study. As a result of the examination, it was determined that the Covid-19 pandemic has deeply affected the world tourism economy in the tourism seasons of 2020 and 2021. However, in this process, it was seen that countries do not want to lose their income from tourism activities due to the economy and other factors measures have been taken by supporting the tourism sector with many financial, consultancy, and supportive packages, especially taxes. Finally, it was seen that tourism professionals predicted that the year of 2022 will be the year of recovery in the tourism sector compared to the previous two years. Based on these results obtained as a result of the study and the view that 2022 will be the year of recovery in the tourism sector compared to the previous two years, inferences were made about what kind of structural changes will occur in the tourism sector. In this context, it is thought that the study will also guide tourism practitioners as well as its contribution to tourism literature.

Keywords: *Covid-19 pandemic, World tourism economy.*
JEL: *Z00, Z39, M00*
UDC: *338.48(100)*

Introduction. The history of humanity is full of pandemics that caused the death of millions of individuals. These can be listed as “SARS”, “bird flu”, “swine flu”, “MERS and Ebola outbreaks”, respectively, in addition to relatively old pandemics such as “Black Death (14th century)” and “Spanish Flu (1918-20)”. All these pandemics have had significant effects on people’s lives. In its report titled “Managing epidemics: key facts about major deadly diseases” published in 2018, the World Health Organization (WHO) (2018) drew attention to the fact that the probability of a new HIV, a New Ebola or a new flu pandemic is not very low, only

the time cannot be predicted. While the WHO's report was still warm, in late 2019, as a result of research conducted on a group of patients who showed signs of respiratory disease such as "fever", "cough" and "shortness of breath", the information that a new type of coronavirus disease was defined on January 13, 2020 which that proves how much WHO is right on his predict. Right after the definition of the disease, this new type of coronavirus disease, which was also named as Covid-19 by WHO on February 11, 2020, caused a pandemic to be declared on March 11, just one month later, with the effect of its rapid spread (WHO, 2020).

Mankind witnessed many pandemics that have affected the world, such as Covid-19 (Poudel et al., 2020). These pandemics have played very important roles in shaping the world with their demographic, economic, social and political consequences. Sometimes they have been instrumental in the destruction of an empire and sometimes the establishment of a new state. Undoubtedly, it was assumed that a phenomenon that was so decisive for the history of humanity would largely disappear or its possible effects would weaken with modern medicine. However, endless demands, unnecessary waste of resources and excessive intervention in nature have caused pandemics to disappear, on the contrary, to appear more frequently. Because all the comments and studies on this subject are that these new types of viruses will enter our lives at shorter intervals and cause more deadly results. These new types of viruses that we created as a result of our non-random relationship with the natural environment will continue to be a part of our lives from now on. These pandemics, which are also a reflection of how we live, will either force us to learn to live with themor inflict heavy damage as in the past (Žižek, 2020).

The Covid-19 has dealt a great blow to the tourism sector as well as to all sectors of the world economy (Menegaki, 2020). Therefore, besides the short-term consequences of Covid-19, it is an important issue whether it can change modern tourism, which is the result of 70 years of experience and habit. Because the construction of modern tourism and the economy it creates is a form that the capitalist system can never give up. In addition, the closure of tourism businesses has not only damaged the consumption economy but also caused hundreds of millions of people working in these businesses to be unemployed. Undoubtedly, vacation is a culture and a greater need for human beings than is thought. This need can be postponed during pandemic periods, but it does not disappear. However, the prolongation of this process directly affects the magnitude of the damage (Chen et al., 2020). In this process, although many countries have taken incentives and facilitating steps in this sense, it was seen that the damage is inevitable. In this sense, the aim of this study, which consists of secondary data sources is to examine the effects of the pandemic on the world tourism economy in the 2020-2021 period. In this context, this study can be evaluated as a literature study on both the trauma caused by the pandemic in the world tourism economy, the changes in seasonal tourism movements and the future of tourism from the point of view that 2022 will be the year of recovery in the tourism sector compared to the previous two years. The study will contribute to the tourism sector and related literature from this point of view.

Metodology. In this study, which was prepared based on secondary data, literature review method was used. In the context of the study, it was tried to examine "How the Covid-19 pandemic affects the world tourism economy?", "The situation of tourism

before and during the pandemic period" and make inferences about "What kind of structural changes will occur in the tourism sector?". In this context, an extensive literature review was made from reports, documents, and previous studies related to this subject. In this direction, relevant institutions and organizations have been examined, which are; "the World Tourism Organization (UNWTO)", "the World Travel & Tourism Council (WTTC)", "the Association of Turkish Travel Agencies (TÜRSAB)", "the Organisation for Economic Co-operation and Development (OECD)", "the United Nations Conference on Trade and Development (UNCTAD)", "Turkish Academy of Sciences (TÜBA)" and previous studies on this subject.

Tourism sector before and during the Covid-19 pandemic and it's effects on the world tourism economy. The tourism sector is a dynamic sector that quickly feels the negative effects of demand. 1/11 of the general employment in the world takes place in the tourism sector (WTTC, 2021). Tourism is an important sector that provides economic development, especially for countries with high levels of unemployment. In this context, the tourism sector is important and income-generating, especially in terms of increasing the income of people living in rural areas and improving their living conditions.

Tourism is one of the sectors that showed the fastest development all over the world after the World War II. According to UNWTO (2020a) data, while there were just 25 million international tourist arrivals in 1950s, this number has exceeded 500 million in 1990s and 1 billion in 2011. While the growth rate of the tourism sector, which has continued its development process steadily, was around 4% annually before the Covid-19 pandemic. The sector grew by 3.8% in 2019, the number of international tourist arrivals in 2019 reached 1 billion 461 million, and the international tourism revenue was USD 1.5 trillion (TÜRSAB, 2020). In 2019, the international tourism revenue was recorded as USD 3.5 trillion, approximately 51% of international tourist arrivals, which were 1 billion 461 million worldwide, were made to European countries. The table of international tourist arrivals between 2010-2019 is as follows:

Table 1. **International Tourist Arrivals and Regional Distribution of Travels Between 2010-2019**

	NUMBER OF ARRIVALS BY YEARS*				Distribution
Region	**2010**	**2017**	**2018**	**2019**	**%**
WORLD	952	1,332	1,407	1,461	100
EUROPE	487	676,6	716,1	742,3	50,8
- N. EUROPE	57	79,1	78,7	79,6	5,4
- B. EUROPE	154,4	192,7	200,2	203,8	14
- O. EUROPE	98,6	136,9	148,5	154,3	10,6
- MEDITERRANEAN (EUROPE)	177,1	267,9	288,8	304,6	20,8
ASIAN-PACIFIC	208,2	324,1	347,7	363,6	24,9
AMERICAN CONTINENT	150,3	210,7	215,7	220,1	15,1
AFRICA	50,4	63	68,4	71,2	4,9
MIDDLE EAST	56,1	57,7	59,4	63,9	4,4

Source: (UNWTO, 2020b)
*million

However, the Covid-19 pandemic, which emerged in China at the end of 2019 and affected the whole world in a short time, has been an event that seriously affected the lives of individuals and triggered an economic crisis in the global context. Although the Covid-19 pandemic has significant and tangible effects in terms of the tourism sector, the pandemic has had a negative impact on all tourism-related activities, especially tourism companies and their personnel (OECD, 2020).

The Covid-19 pandemic has not only affected human health all over the world, but also negatively affected many sectors and disrupted the social and economic structures of societies. (Mofijur et al., 2021). In order to reduce death cases and transmissions caused by Covid-19 pandemic, states had to take measures such as "travel restrictions", "curfews", "obligation to use masks", "social distance" and "quarantine measures" in order to reduce human mobility. The aforementioned practices and restrictions had a serious and negative impact on production and consumption, caused a slowdown or halt in economic activities, and caused an economic recession in a global context. The Covid-19 pandemic has had the most serious impact on the tourism sector due to travel restrictions. Unprecedented travel and curfews, both within the country and between countries, caused the biggest fluctuation in the global economy until this period. Accordingly, tourism activities have also slowed down significantly as of March 2020 (Strielkowski, 2020).

When the data is evaluated such as "populations of countries", "number of cases", "number of deaths", etc., it is possible to state that the pandemic is more common in continents, regions and countries where human mobility is intense. Especially the Mediterranean and European destinations, which are among the most important tourism regions in the world, and Central and North American destinations were negatively affected during the pandemic process due to the decrease in tourism movements (TÜBA, 2020).

The decline in the global tourism sector has also been evaluated by the OECD (2020). The Covid-19 pandemic described by the OECD as an "unprecedented crisis". Within the framework of UNWTO (2021a) data, international tourism movements completely stopped in 156 of 217 destinations globally as of April 27, 2020. 83% of the destinations on the European continent have completely closed their borders for international tourism, this rate is 80% in the America, 70% in Asia and the Pacific, 62% in the Middle East, and 57% in Africa. Accoring to the World Tourism Organization (UNWTO) (2021a), the sector, which experienced its best season in the previous year, suffered a serious loss of -73% worldwide, while it was noted that 7 out of 10 people could not travel during this period. With the decrease in travels, a drastic loss of 64% was experienced in tourism revenues, and it was stated that only USD 533 billion of tourism revenue could be obtained in return for 402 million trips worldwide in 2020.

Countries such as "Croatia", "Egypt", "Albania", "Qatar", "Montenegro", "Bahamas", "Macao", "Dominican Republic", "Seychelles", "Curacao", "Jordan", whose economy is largely dependent on tourism, have felt the severity of the Covid-19 pandemic in the first place. Classic Mediterranean destinations such as "Spain", "Turkey", "Greece", "Italy" and "France" were less affected by the Covid-19 pandemic, due to the measures they took in 2020. While these countries continued their struggle against the Covid-19 pandemic, they have tried to reactivate their

tourism activities at every opportunity when the restrictions were lifted, and took various measures. Some of these measures are given in Table 2 below.

Table 2. **Measures Taken by Countries for Tourism Against the Covid-19 Pandemic**

Country	International Tourist Arrivals	Measures
France	89.4 million	Up to a certain wage, 75 percent of the salary of employees is paid by the state. The minimum wage is paid by the state in its entirety. The government becomes a partner in the credit risk to be given to the companies. Companies are given loans up to 25 percent of their revenues in 2019. In case of reservation cancellations, coupon payment is made by the government instead of refund.
Spain	82.8million	€440 salary support is provided to the unemployed. The state pays 70 percent of the salary of employees who are on compulsory leave. Tax debts up to thirty thousand euros are postponed to future dates. Tax payments of companies with annual income up to six hundred thousand Euros are postponed until June. Insurance premium payments are delayed for up to 6 months. Interest on overdue debts of small businesses and freelancers is deferred. The amount of guarantee applied in loans is increased up to one hundred billion euros and twenty billion euros of these loans are used by medium and large enterprises.
United States of America	79.6 million	It is aimed to reduce the economic and social damage by donating a total of USD 2 trillion to the households. While cash assistance is provided to small-scale enterprises, large- scale loans are provided to large enterprises. USD 100 billion in aid is provided to states, cities and municipalities, especially to hospitals. The increase in unemployment is prevented by helping businesses with a wide employment area such as the tourism sector.
China	62.9 million	General services, tourism and transport sectors are exempted from Value Added Tax (VAT). 80 percent of the deposit allocated to travel agencies is temporarily transferred to licensed tour operators. The compensation period for the losses incurred in 2020 is increased from 5 years to 8 years. Financial support is provided to businesses located in different touristic destinations of the People's Republic of China, funds are set aside for qualified tourism businesses, Value Added Tax is reduced, insurance premiums are reduced or postponed. Numerous applies are carried out such as supporting tourism enterprises that do not reduce employment, providing low-interest loans and loan renewal opportunities. Class "A" tourism enterprises are exempted from Value Added Tax.

		It contributes to tourism marketing by supporting the domestic tourism activities of travel agencies. Numerous measures are taken to support the tourism industry, such as “promoting virtual tourism activities”, “providing ease of payment for congress center rentals”, and “extending payback periods”.
Italy	62.1million	Italy provides employment support reaching €10.4 billion. For two months, transactions that reduce employment are prevented and labor tax is not collected. Unemployment insurance is extended. Value Added Tax is suspended and the government guarantee is increased from 70 percent to 80 percent for loans up to USD 800 thousand. Overdue tax payments and tax returns are suspended. There is a 50 percent tax reduction on hygiene and sanitation products. A government-guaranteed coupon applies to canceled travel tours. Holiday support is provided to low-income families to support domestic tourism.
Austria	46.18 million	The Government of Austria has announced a €38 billion bailout package for all sectors, including subsidies for small businesses, payroll support, loan guarantees and tax deferrals. Before the pandemic, the demands of the accommodation facilities that had loan debts to stop the payments were taken into account and in this direction, matching platforms have been established to provide convenience for companies that want to receive accommodation services, banks, food retailers, plumbers, etc.
Turkey	45.8 million	In all businesses in the tourism sector, hygiene and distance rules are started to be applied and it is tried to protect employees and tourists. Measures against the pandemic are being increased with rules such as “contactless payment”, “a distance of one and a half meters”, “disposable products”, “the abolition of the open buffet” and “the prevention of maskless travel in transportation vehicles”. Turkey, which launched the “Safe Tourism Program” in 2020, has defined measures to be taken in various institutions, especially food and beverage, transportation and accommodation establishments, in order to ensure the health and well-being of all its tourists and tourism personnel, with the practice quickly adopted by the key players in the sector. In this context, considering the criteria determined for accommodation and food and beverage facilities, the certificate given to the facilities as a result of the compliance of the inspections in terms of cleanliness, hygiene and health is called the “Safe Tourism Certificate”.

Mexico	41.4 million	The government of Mexico has provided more than USD 600 million in aid by preparing a program to support the private sector for 6 months. Direct and indirect tax payments are deferred. Two hundred and fifty thousand Mexican pesos support is provided for each business and credit needs are met. Various opportunities are provided in terms of both the employer and the obligations of the employees to the state. Value added tax and other payments of touristic enterprises, especially in the food and beverage and accommodation sector, are postponed to future dates.

Source: (Demertzis et al., 2020; OECD, 2020)

On the other hand, only 6 countries could reach 10 million tourists in 2020 (UNWTO, 2021a), which is called "The year of the Coronavirus" (Archvadze, 2021).

Table 3. **International Tourism Statistics-2020**

Rank	Country	International Tourist Arrivals (millions)	Income from Tourism (in billion USD)	Average Spending per Tourist, USD	International Tourism, Receipts(% of total exports)
1.	Italy	25.2	19.8	786	3
2.	Mexico	24.3	11	453	3
3.	United States of America	19.4	76.1	3915	4
4.	Spain	19	18.5	976	5
5.	Turkey	15.9	10.2	643	7
6.	Australia	15.1	13.8	918	7
7.	Poland	8.5	7.8	923	2
8.	Hungary	7.4	3.2	432	2
9.	Holland	7.3	9.1	1253	1
10.	Greece	7.2	4.9	684	10
11.	United Arab Emirates	7.2			
12.	Thailand	6.7	14.2	2118	6
13.	Portugal	6.5	8.8	1360	12
14.	Russia	6.4	2.9	449	1
15.	India	6.3	13	2059	3
16.	Croatia	5.5	5.6	1004	21
17.	Malaysia	4.3	3	690	1
18.	Saudi Arabia	4.1	4	975	3
19.	Japan	4.1	10.7	2600	1
20.	Vietnam	3.8	2.5	651	1

Source: (UNWTO, 2021a)

The Covid-19 pandemic also changed the ranking of countries in 2020. Spain, which was the 1st in 2019 with 83.5 million tourists, dropped to the 4th place with 19 million tourists in 2020. Ranking 3rd in 2019, China, with the radical measures it

took, almost zeroed the number of tourists and was virtually eliminated from world tourism. In this period, Italy was the country that hosted the most tourists in the world with 25 million 200 thousand tourists. On the other hand, Mexico ranked second for the first time in its history with 24 million 30 thousand tourists. While America and Spain took the 3rd and 4th places with 19 million tourists, Turkey kept its 5th place in the world with 15.9 million tourists during this period (UNWTO, 2020b).

Table 4. **International Tourist Arrivals by First 5 Country-2019**

Rank	Country	International Tourist Arrivals (millions)
1.	Spain	83.5
2.	USA	79.4
3.	China	65.7
4.	Italy	64.5
5.	Turkey	51.2

Source: (UNWTO, 2020b)

Table 5. **International Tourist Arrivals by First 5 Country-2020**

Rank	Country	International Tourist Arrivals (millions)
1.	Italy	25.2
2.	Mexico	24.3
3.	USA	19.4
4.	Spain	19
5.	Turkey	15.9

Source: (UNWTO, 2021a)

Along with the travel bans and the closure of border crossings to control the Covid-19 pandemic, severely affected by the Covid-19 conditions and cannot be normalized in the short term (Pham et al., 2021). Due to the fact that the activities of all tourism companies at the national and international level have come to a standstill, people working in the tourism sector have become unemployed (Sharma et al., 2021). UNCTAD (2020) announced that approximately 120 million people in the tourism sector worldwide are facing the threat of unemployment due to the Covid-19 pandemic. It was also stated that there could be a loss between 910 billion and USD 1.2 trillion in tourism revenues, and the loss was USD 1.3 trillion.

According to the data announced by the UNWTO (2022), the number of international tourist arrivals increased by 4% in 2021 compared to the previous year. Recovery processes in 2021 also showed regional variations due to travel restrictions, vaccination rates and consumer confidence that differ around the world. While the European continent completed the year with an increase of 19% compared to 2020, the increase in the number of international tourist arrivals in the Americas was by 17%. The 57% rise achieved by the countries on the Mediterranean coast was the most important factor in the rise in the European continent. Finally, the Caribbean's tourist arrivals rose by 63%, while the rise in Central America was by 54%. However, in line with the announced data, the number of international tourist

arrivals in 2021 increased to 421 million. Despite this increase, the number of international tourist arrivals remained 72% below the pre-Covid-19-pandemic period of 2019. Although the economic contribution of tourism in 2021 was USD 1.9 trillion over USD 1.6 trillion in 2020, it could not approach USD 3.5 trillion before the Covid-19 pandemic. Export revenues from international tourism exceeded USD 700 billion in 2021. In 2019, this figure was at the level of USD 1.7 trillion.

On the other hand, the UNWTO (2022) announced that in the first quarter of 2022, the number of international tourists reached 117 million, with an annual increase of 182%. However, when compared to the data in 2019, when tourism was at a record level, it was shared that Europe was behind by 43% and America by 46%. Likewise, compared to 2021, in the first quarter of 2022, there was an increase of 132% in the Middle East, 96% in Africa, and 64% in Asia and the Pacific. According to the assessment made by the UNWTO (2022), the increase in vaccination rates in 2022 contributed to the increase in the coordination and agreements that facilitate international travel.

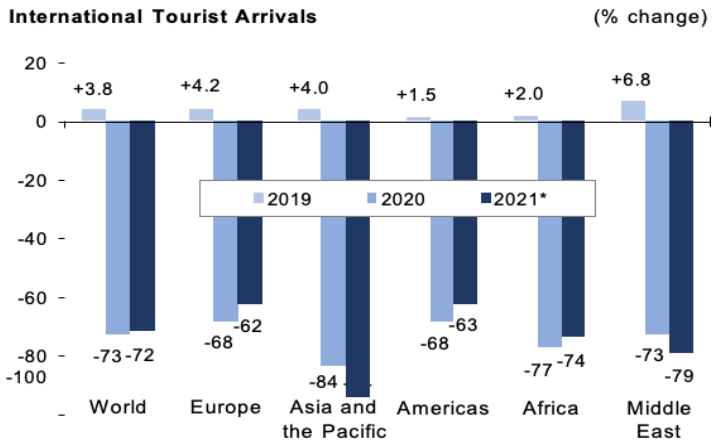

Figure 1. **% change over 2019-2021**
Source: (UNWTO, 2022)
* Provisional data (% change over 2019)

In addition to the above, the UNWTO (2020c) announced that the average expenditure per person in international tourism arrivals, which was USD 1300 in 2020, increased to USD 1500. It was also stated that this increase is due to the prolongation of vacation periods as well as the increase in transportation and accommodation costs. According to the research carried out by UNWTO (2021b) with the participation of tourism sector representatives around the world, it was seen that tourism professionals believe that 2022 will be better than the last two years, but after 2024 stands out in their expectations for reaching 2019 levels. In addition, it was determined that 4% of tourism professionals around the world has stated that the tourism levels will reach the 2019 levels in 2022, while 32% of them have announced this expectation as 2023. It was also determined that 63% of tourism professionals predict that the levels before the pandemic will be reached in 2024 or later.

Studies on this subject in the literature have showed that “Covid-19 pandemic can contribute to the redefinition of many things in tourism and the re-establishment of balances, and the creation of a more responsible and ethical tourism understanding”. Wachyuni and Kusumaningrum (2020)’s study aimed to examine “the travel intentions of tourists’ post- pandemic in Jakarta, Indonesia”. Results of the study conducted with 128 people between February-April 2020 showed that “the travel preferences are 78%, or the majority of respondents stated that they would go back on tour”. Additionally, the findings revealed that “about 65% will return to travel in the near term which is 0-6 months after the pandemic is declared over, of the type of tourism desired by respondents is nature tourism by 66% and the majority of the desired tour duration is short-period, which is 1-4 days”. The research’s consequences also showed that “travel intention mean value is higher than travel anxiety”.

According to the findings of the study carried out by Özdemir (2020) with Turkey’s tourism sector representatives, public institutions, tourism enterprises and 62 domestic tourists in April 2020, it was determined that “tourists will tend to nature-based tourism after the pandemic”. On the other hand, as stated by tourism representatives, it was determined that “there will be serious trend changes in the type of accommodation business preferred after the pandemic and in the product variety of travel agencies”. If the post-pandemic scenario is for alternative tourism, it was pointed out that “it is likely that there will be a tourism activity in rural areas, so the interest in nature-based tourism types such as “highland tourism”, “eco-tourism” and “rural tourism”, small-scale accommodation businesses will increase, travels will be made with small groups, transportation vehicles will serve with the same size but low capacity”. In addition, in the context of the study, it was pointed out that “the understanding of responsible tourism and sustainable tourism will increase in service providers and buyers by considering practices such as hygiene, cleaning and sanitation”.

According to Öztürk and Tankuş (2020), digitalization already experienced in the tourism sector will show its effect without slowing down post-pandemic. In addition, within the scope of the study, it was concluded that “people will generally suspend their holiday decisions during and after the Covid-19 process, and avoid regions with high carrying capacity, especially during tourism seasons, as well as places where Covid-19 cases are intense throughout the country”. Another conclusion reached within the scope of the study is that “people will prefer individual holiday attitudes and prefer small-scale places by leaving the most used tourism routes due to the social and psychological effects of fear and anxieties caused by being in a mass”. On the other hand, it was stated that “individuals will take into account the physical conditions in the places they go and give more importance to the hygiene and safety conditions for their own health while managing their holiday activities”. In addition to this situation, it was pointed out that “not only the individual himself, but also other individuals who take part in the holiday activity will keep their virus protection and health status under observation”. Lastly, it was stated that “this situation indicates there will be more meticulous and skeptical consumers in the future of tourism sector compared to the past”.

Mirzaei et al. (2021)'s study conducted on Iranian tourists show that "health and safety have come to the forefront of travelers' needs". The study's findings also showed that "the hygiene and disinfection of tourism facilities have changed from hygiene factors to motivator factors". In addition, due to the extended length of trips is perceived as a risk to Iranian tourists' health, hence it is understood that "travelers prefer to take shorter trips". The study's findings also showed that "Iranian tourists rather get help from professionals to book their trips".

Jeon and Yang (2021) examined "the structural changes of a local tourism network focusing on Gangwon Province, in the Republic of Korea, which has experienced a rise in tourist demand following the Covid-19 outbreak". The research designed a matrix using the movement patterns of tourists who visited Gangwon Province during corresponding periods before and after the outbreak and then conducted a network analysis. The consequences showed that "as tourists travelled, they focused their movements on local areas and simplified travel routes". In addition, findings revealed that "the demand for tourism was concentrated on beaches, which previously tended towards a low tourism density".

Eşitti (2021) emphasized that "competition in the tourism sector will be experienced intensely among countries with alternative tourism diversity when evaluated in terms of outbreaks that may occur in Covid-19 process and after". It was also stated that by the researcher "natural habitats, physical spaces isolated from society, digitalization, and smart tourism applications will gain more importance in terms of tourism activities and will come to the fore in the destination preferences of tourists".

Moya Calderón et al. (2022) aimed to determine "the changes and consequences in travel plans due to Covid-19 and characterize the behavior of domestic tourism in Costa Rica after the confinement through an online survey". The findings indicated that "the respondents expressed their intention to travel in the first six months, mostly two nights, and accompanied by their family members". In addition, the findings revealed that "the factors related to safety and security appeared as key drivers affecting travel decisions". The findings also showed that "protected areas and nature-based tourism are the preferred destinations to visit after the lockdown with a clear concentration in the most visited protected areas of Costa Rica".

According to all these studies mentioned above, the tourists' perception of Covid-19 has influenced the intentions and motivation in the tourism sector and has changed travel behaviors as well as the tourism industry.

Conclusions. The tourism sector has a critical importance for the country's economies with the employment volume and foreign exchange reserves it provides. However, the Covid-19 pandemic, which was seen for the first time in December 2019 and spread rapidly in the world, has deeply affected the tourism sector, as it has in all sectors. The activities of the tourism, accommodation and aviation sectors have completely stopped due to travel bans, closure of borders and increased quarantine measures. Restrictions and bans on activities such as "concerts", "conferences", "congresses", "sports leagues", "entertainment", "eating and drinking" have also deeply shaken tourism. Social distancing, vaccination, testing, hygiene, visa, quarantine, health measures, various bans have hampered national and international tourism, business and private life travels. According to the assessment made by the

UNWTO (2020d), the damage caused by Covid-19 pandemic to the tourism sector has increased 10 times that of the global economic crisis in 2009. According to the published data by the UNWTO (2021c), the direct world economic contribution of tourism amounted to USD 3.5 trillion in 2019, USD 1.6 trillion in 2020, and USD 1.9 trillion in 2021. In 2020, only USD 533 billion of tourism income could be obtained in return for 402 million trips worldwide. As mentioned World Tourism Barometer published by UNWTO (2022), international tourism has rebounded strongly in the first five months of 2022, with nearly 250 million international arrivals recorded. In the January-May 2021 period, this number was around 77 million. As can be understood from the statistics, one can say that 2022 is the savior year of tourism.

Fears and different needs have developed in people and state administrations that did not exist before with the Covid-19 pandemic. According to various reports, studies, research, and expert comments, today, even if the spread is eliminated, it is obvious that "many new rules, restrictions, and practices that have emerged due to the Covid-19 pandemic will be permanent in the tourism and travel sectors, and even new ones will be added". It is clear that "even if 2022 will be the year of recovery in the tourism sector compared to the previous two years, the tourism and travel sector can only reach pre-Covid-19 pandemic levels in 2023".

It is quite obvious that "there will be important structural changes in the tourism sector in the following periods according to previous studies on this subject, reports and expert comments". In this sense, "the protection of social distance" and "the need for hygiene" will be among the main elements that shape travel preferences. It can be also stated that "the first reflection of the need to maintain social distance in the tourism sector is expected to be seen in the restructuring of existing accommodation facilities to adapt to the new conditions". It can be told that "studies should be carried out on working with low capacity, separating common areas, maintaining distance and providing necessary hygiene". In addition, as of 2021, it can be pointed out that "more boutique hotels, villa-type facilities with structures located at certain distances will be preferred instead of large hotels, while it is thought that all-inclusive hotels and open buffet system may not be preferred as much as before". Apart from accommodation, it is possible to indicate that "there should be changes that ensure the protection of social distance in transfer, historical and touristic places, restaurants and shopping points". It is also possible to say that "travel should be responsible and sustainable to protect millions of people who depend on tourism". In addition to the above, it should be said that "technological applications and disinfection systems should be used in order to keep the hygiene conditions at the highest level in all service providers of the sector, especially in accommodation". The tour concept will lose its popularity in the coming period and personalized travel planning will come to the fore. Thus, the demand for cruises, where many people travel for a long time in an enclosed space, will decrease significantly.

Lastly, the trend toward other alternative tourism types will increase such as "ecotourism", "gastronomy", "yacht", "diving", "caravan", "tent", etc. which can be done in small groups instead of sea tourism. In addition, it can be stated that "trips to distant geographies will decrease due to the decrease in the desire to travel by air, while road trips from neighboring countries may increase". Although there was an increase in rapid applications such as "electronic visas" and "gate visas" in recent

years, it is still seen that approximately half of the world's population is subject to traditional visa applications. It can be seen that "the trend toward rapid visa applications will increase in the coming period in order to encourage travel". Thus, it is clear that, "digital tourism stands out as a new field that is expected to develop in the sector". In addition, it can be foreseen that "the options that introduce and explain a certain region to users and enable them to navigate in a virtual environment will increase with the help of interactive websites and applications".

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ECONOMIC STRUGGLE AND SOCIAL ENTREPRENEURSHIP IN TOURISM: THE EXAMPLE OF ÇANAKKALE

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Summary

Economic crisis in any country in the globalizing world can significantly and rapidly affect the economies of other countries, as seen in the Covid-19 Pandemic. The main reason for this is that money and asset markets have reached an international dimension. These real states of equilibrium and imbalance are elastic and can cause slipperiness. For this reason, it is not a rational approach to attribute the emergence of economic crises to a single cause and to believe that the exit from the crisis will be solved with the introduction of a single instrument. In this context, dynamic sectors such as the tourism, which is connected with many different sectors, can be useful in overcoming economic crisis. The tourism sector contributes to overcoming the crisis periods, especially since it is a sector that provides opportunities for social entrepreneurship due to its natural structure. Social entrepreneurship emerged as an innovative approach to addressing complex social needs. Social entrepreneurship involves pursuing opportunities, using resource combinations and innovation to catalyze social change and/or meet social needs. This entrepreneurship is a process that integrates economic and social value creation. Therefore, giving importance to social entrepreneurship in the tourism of a particular destination is an important factor that prevents countries from having an economic struggle. From this point of view, in this study, the social entrepreneurship perceptions of tourism employees in Çanakkale, which has an important place in Turkey's tourism sector, were conveyed by associating the Çanakkale destination with its place in the tourism sector. When the results are examined, it is seen that the employees working in the destination of Çanakkale are strong in terms of social entrepreneurship and thanks to this, they both achieve profitability in tourism and make positive contributions to the local people. In addition, it has been seen that economic struggles increase the social entrepreneurship aspects of tourism employees.

Keywords: *Economic Struggle, Social Entrepreneurship, Çanakkale, Tourism.*
JEL: *Z30, Z32, M10*
UDC: *338.48(560)*

Introduction. The Covid-19 epidemic, which emerged in the last months of 2019 in Wuhan, China and turned into a pandemic in March 2020, has begun to show a crisis effect that disrupts the economic balances in Turkey. Especially in the first quarter of 2020, the rapid spread of the pandemic in European countries, where Turkey's commercial relations are intense, has been instrumental. The slowdown in

economic activities and the stopping of activities in some sectors put pressure on cash flows in the real sector and increased the demand for forward-looking liquidity in the economy. One of the main sectors in which sectoral activities came to a standstill was the tourism sector. As in many countries, policy makers in Turkey have taken extensive financial and fiscal measures to limit the negative economic effects of the Covid-19 pandemic. In fact, dynamic sectors such as tourism, which are linked to many different sectors, can be beneficial in overcoming the economic crisis. Although precautions have been taken, the decrease in the activities in the tourism sector and tourist mobility has reached approximately 70% in Turkey. Tourism expenditure also decreased by 89.8% compared to same quarter of previous year and declined to $ 126 million 79 thousand (TSI, 2022).

The tourism sector needs to overcome of this negative picture and gain a new perspective. The negative conditions brought by the pandemic can also be right in opportunities for those looking for a chance to enter in tourism sector. With the entry of new ideas and initiatives into the sector, the sector may also revive and affect other sectors related to it in the direction of development.. In this context, entrepreneurs and especially social entrepreneurs can play an important role. Because social entrepreneurs primarily play important roles in eliminating social problems without prioritizing material benefit and profit, and transforming the sector they are in.

Entrepreneurship in the business sector is about the profit motive. However, social entrepreneurship is an expression of altruism. In other words, altruistic reasons such as personal participation are as important as moral responsibility and ethical motives in social entrepreneurship (Mair & Martin, 2006: 38). Social entrepreneurship has psychological aspects as well as sociological aspects. Social entrepreneurship is of great importance for individuals who try to be beneficial to society and need social satisfaction. Entrepreneurs do not only produce new methods, new technology, new corporate forms, new businesses, and realities simply through the process of pursuing their own profit-making, selfish goals. In addition to all these, they increase social wealth by creating net increases with their economic gains, which in turn provides social welfare (Venkataraman, 1997). Considering the effects of the Covid-19 Pandemic period, it is noteworthy that there are not many scientific studies on social entrepreneurship and the tourism sector. At this point, the purpose of this study is to enrich the literature by considering the economic situation of the tourism sector. In this context, the economic situation of the tourism sector in Çanakkale, which has an important place in the Turkish tourism, and the social entrepreneurship perceptions of tourism employees, and the place of Çanakkale destination in the tourism sector are conveyed.

Literature review. The most negative effect of pandemics is undoubtedly that they threaten human health and result in a large number of deaths. However, it is also stated that the pandemic causes the closure of schools, workplaces, shopping malls, the decrease in production, the crowdedness of the emergency services of hospitals, and the quarantine of daily life, resulting in the morbidity of the society in general (McKibbin & Sidorenko, 2006: 10). Especially pandemics have begun to affect the world economies much more with the effect of the globalization process. Many reasons, such as the removal of the spatial limitations of production and consumption, and the more interrelatedness of countries with export, import and supply chain, make

a global epidemic a serious threat to the world economy. In general, it is emphasized that the economic problems experienced during the pandemic periods include all of the private and public expenditures necessary for the diagnosis and treatment of the pandemic disease.

The COVID-19 pandemic has threatened everyone, regardless of class. However, the virus did not affect all social groups in the same way economically. In particular, the poor, young people, students, women, and those whose jobs are not suitable for digital work have been affected much more negatively by the pandemic (İpekoğlu, 2021). The rate of transmission of the virus, its shape and the fact that one of the important means of protection is social distancing took the service sector to the historical low level. In this context, the most important sector affected within the service sector has been the tourism sector based on face-to-face communication and interaction with people. This situation has created an irreparable effect for countries such as Turkey, which receive serious foreign currency inflows from the tourism sector.

The ongoing process with the entry and exit of destinations into travel permits, the restriction of domestic flights, the closure of international flights, the cancellation of intercity bus services and curfews have minimized domestic and international tourism mobility. This situation has brought about developments that directly affect the tourism sector, such as the cancellation of large-scale international travels and organizations, which are called mass tourism, the closure of hotels, the significant decrease in the sales of new package tours by travel agencies. Aviation, accommodation and food and beverage sectors, which are the carriers of tourism, are among the areas affected by the virus. Situations where it is necessary not to enter crowded environments and to avoid close contact now allow people to do their work through online services. With the spread of online transactions during the pandemic period, it has been seen that digitalization has increased in the tourism sector. National and international meeting, conference, seminar, congress etc. organizations have started to be held more online. In this case, it has brought about a decrease in additional activities in the tourism sector (Boone et al., 2020).

It is thought that the impact of the Covid-19 on the tourism sector may continue throughout the pandemic, and a rapid recovery is expected in 2022 after the decrease in global tourism travels, while the figures for 2019 will not be reached before 2023. In addition, since domestic travel restrictions will be lifted earlier than international restrictions, it will create some substitution (Trimble et al., 2020; Çetin & Göktepe, 2020).

Social Entrepreneurship. One of the most destructive areas of periods such as the Covid-19 pandemic, which deeply affect social structures, is the deterioration of the economic order. To minimize the economic deterioration, investments made especially in areas that concern the society are very important. These investments are not always made by governments or certain areas of public authority. Here, perhaps the most meaningful role is played by entrepreneurs who touch the society with their investments or initiatives in social understanding.

Social entrepreneurship, which can be expressed as the reshaping of entrepreneurship with a new understanding, is essentially to create social value, provide social change, perform services that cannot be provided by the private and the

public sectors, follow opportunities to meet social needs and produce solutions to problems and produce innovations (Austin et al., 2006: 2; Bull, 2008: 268).One of the most basic features that distinguishes commercial entrepreneurs and social entrepreneurs from each other is the commercial entrepreneur creates an organization to make a profit, and the social entrepreneur creates an organization to find a solution to a social problem (Şahin & Çavuş, 2021). Social entrepreneurship finds its place in economic life as an innovative approach to meet complex social needs. While the success of commercial entrepreneurs is measured quantitatively, the success of social entrepreneurs is evaluated with qualitative data and these evaluations are mostly based on observation (Ercan, 2016: 24). Social entrepreneurship involves pursuing opportunities, using resource combinations and innovation to catalyze social change and/or meet social needs. Social entrepreneurship is a process that integrates economic and social value creation. Thus, it can be said that social entrepreneurship is an area that has relations with many disciplines such as sociology, psychology, economy, law, finance, and politics. When the concept of social entrepreneurship is examined in depth, it is seen that this concept is associated with the concept of 'social' in terms of having social outputs, creating social capital, having an organizational structure for social purposes, providing social services, and taking part in the social sector. The reason for its identification with the concept of 'enterprise' is it includes features such as need-orientedness, entrepreneurial personality traits, and innovation that exist in commercial entrepreneurship (Kümbül Güler, 2008: 66-67).

The tourism sector attracts the attention of social entrepreneurs with the many investment and entrepreneurship opportunities it offers due to the multiplicity and nature of the other sectors it is connected to. Social entrepreneurship activities created in the tourism sector can mediate the trust of economic actors to each other. As the trust in the economy increases, the work of social entrepreneurs can progress more easily, and the development of social entrepreneurship can increase confidence in the economy. Social entrepreneurship has an important place in terms of solving the problems regarding the participation of the unemployed and disadvantaged groups in employment and making the workforce better equipped (Biçerli, 2010: 85).

Research methodology. In line with the research purpose, this research was designed with a quantitative method. The reason for choosing the quantitative research method is; to determine the exact boundaries of the variables, to measure the relationships between the variables, and the need for quantitative research, especially in social entrepreneurship studies (Hockerts, 2015). Questionnaire technique was used as data collection technique in this study. In the design of the scales, the 5-point Likert Scale was preferred because of the positive and negative answers are gradually equal to each other and suitable for the scale questions.

Within the scope of the study, the scale developed by Hockerts (2015; 2017) was used to measure the social entrepreneurship behaviors of tourism business employees. The sub-dimensions that make up the scale are; empathy (3), moral obligation (4), social entrepreneurial self-efficacy (3), perceived social support (3), prior experience (3) and social entrepreneurial intent (3). With these dimensions, the scale consists of 19 statements in total. In addition, questions were asked to the employees in order to learn about the local economy and their economic situation.

This research aims to address the perceptions of social entrepreneurship in connection with the economic situation of the tourism employees in Çanakkale, which has an important place in the tourism sector of Turkey, and to help to understand the situation of tourism employees by interpreting the findings. Therefore, the research population of this study consists of employees who work in the tourism destinations of the Çanakkale region.

After determining the research population, another issue is determining the sample size. The sample is a group consisting of a certain amount of elements selected in the research universe and having the characteristics that can represent the universe. The sample of this study consists of those working in tourism enterprises located in the Çanakkale region, who agreed to participate in the research. During the 2021-2022 March, April and summer months, when Çanakkale tourism destinations are intense, data were collected from the employees of the tourism enterprises in the region through face-to-face surveys and additionally online surveys. Data from 387 questionnaires in total were used in the analyses.

Main results. Below are the demographic and employment characteristics of the employees participating in the research, the point at which they see Çanakkale's tourism in a national sense, and the findings regarding the questions of the position of tourism working life in the face of the economic struggle.

Table 1. **Findings Related to Demographic Variables (N=387)**

Variable	Variable Ranges	Frequency	%
Gender	Male	197	50.90
	Female	190	49.10
Marital Status	Married	210	54.26
	Single	177	45.74
Income	5250 TL and below	109	28.16
	5251-6000 TL	115	29.72
	6001-7000 TL	88	22.74
	7001-8000 TL	44	11.37
	8001 TL and over	31	8.01
Age	25 and below	110	28.42
	26 – 35	130	33.59
	36 – 45	82	21.19
	46 and over	65	16.80
How valuable is Çanakkale in Turkish tourism?	None	-	-
	Low	8	2.07
	Moderate	78	20.15
	High	301	77.78
How much were you affected by the economic struggle caused by the Covid-19 pandemic?	None	-	-
	Low	21	5.43
	Moderate	62	16.02
	High	304	78.55

According to the table, the ratio of female and male employees is approximately equally distributed. In terms of marital status, it is seen that the majority of them are married employees (x =54.26). In terms of the income of the employees, it is seen that the majority of them receive wages in the range of 5251-7000 TL (x= 52.46). Considering the age distribution of the participants, it is seen that the majority of them are in the middle age range of 26-45 (x =54.78). It was asked what the importance of Çanakkale destination for the Turkish tourism sector is, and the majority of the answers were shaped as highly important (x =77.78). Employees were asked how much they were affected by the economic struggle caused by the Covid-19 pandemic, and the majority of them answered that they were highly affected (x = 78.55).

Social Entrepreneurship Scale. Social entrepreneurship aspects of tourism employees were evaluated in the titles: 'prior experience, emphaty, moral obligation, social entrepreneurial self-efficacy, perceived social support, social entrepreneurial intent' as Hockerts (2015; 2017) stated. In the table below, the means of the answers given by the tourism employees to the statements that make up the scale, the reliability values (Cronbach's Alphas) of the dimensions of the scale and the standard deviation values are given.

Table 2. **Cronbach's Alphas of the factors, standard deviation and mean**

	Cronbach's α	**sd**	**x̄**
Prior Experience	.820		
I have some experience working with social problems.		1.01	4.04
I have volunteered or otherwise worked with social organizations		.801	3.88
I know a lot about social organizations		1.15	4.54
Empathy	.762		
When thinking about socially disadvantaged people, I try to put myself in their shoes		1.12	4.72
Seeing socially disadvantaged people triggers an emotional response in me.		1.23	4.68
I feel compassion for socially marginalized people.		1.17	4.60
Moral Obligation	.770		
It is an ethical responsibility to help people less fortunate than ourselves.		1.02	4.40
We are morally obliged to help socially disadvantaged people		1.04	4.58
Social justice requires that we help those who are less fortunate than ourselves.		.87	4.38
It is one of the principles of our society that we should help socially disadvantaged people		.79	4.70
Social Entrepreneurial Self-Efficacy	.790		
I am convinced that I personally can make a contribution to address societal challenges if I put my mind to it.		.65	4.12
I could figure out a way to help solve the problems that society faces.		.85	3.34
Solving societal problems is something each of us can contribute to.		.78	4.24
Perceived Social Support	.833		
People would support me if I wanted to start an organization to help socially marginalized people.		1.03	3.33

If I planned to address a significant societal problem people would back me up.		1.11	3.28
It is possible to attract investors for an organization that wants to solve social problems.		1.05	3.15
Social Entrepreneurial Intent	.880		
I expect that at some point in the future I will be involved in launching an organization that aims to solve social problems		1.19	3.48
I have a preliminary idea for a social enterprise on which I plan to act in the future.		1.04	3.60
I plan to start a social enterprise.		1.03	3.72

The Cronbach's alpha coefficient, which is a measure of the internal consistency of the items, is used to explain or question the homogeneous structure of the items in the scale. It is seen that the reliability values (Cronbach's alpha coefficient) of the dimensions that make up the scale are within the acceptable range in terms of social sciences (Tabachnick & Fidel, 1996). When the expressions that make up the scale are examined, it is seen that the employees generally express their opinions in the direction of participation. The dimension of empathy (x= 4.67) received the highest participation. It is seen that the expression ' When thinking about socially disadvantaged people, I try to put myself in their shoes ' in the dimension of empathy is the one with the highest (x= 4.72) participation. Whereas the 'Perceived social support' dimension has received the lowest (x=3.25) participation. It is also seen that the expression 'It is possible to attract investors for an organization that wants to solve social problems' under perceived social support dimension received the lowest (x=3.15) participation.

Discussion and conclusions. Çanakkale province is one of the important tourist destinations for the Turkish tourism sector. In this regard, there are many large and small tourism enterprises in the tourism sector in Çanakkale and employees affiliated with these enterprises. In this study, which aims to measure the social entrepreneurship levels of tourism employees, who were especially negatively affected by the economic struggle created by the Covid-19 pandemic period, it was seen that the employees were at a very positive point in terms of social entrepreneurship. However, it has been observed that a significant part of the employees earn an income slightly above the minimum wage. This situation has made the economic struggle more severe for tourism employees. In addition, it has been seen that economic struggles increase the social entrepreneurship aspects of tourism workers.

Social entrepreneurship aspects of employees may be more positive if their welfare level improves. Considering that the majority of employees are married, tourism enterprises and public authorities can work to improve the income of tourism employees. Considering that the empathy dimension receives the highest participation, it can be evaluated that the employees make positive social contributions to the local people. The holistic nature of social entrepreneurship, which has a wide range from providing welfare in destinations to solving social problems and protecting local people, can be achieved in harmony with local employees and through empathy. Giving importance to social entrepreneurship in the tourism of a

particular destination also is an important factor that prevents countries from having an economic struggle.

This study has some limitations. In the study, only the sub-dimensions and variables of the social entrepreneurship scale were discussed. More detailed information on the subject can be obtained by considering the variables and sub-dimensions of other scales in future studies. More detailed information on the subject can be obtained by conducting the variables and sub-dimensions of other scales qualitative studies in the future.

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FORECAST OF THE ENERGY CONSUMPTION OF TURKIYE COMMERCE SECTOR: M-ESTIMATION MODEL APPLICATION

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Summary

Net electricity consumption use continue to be significant issues. There are various forms of energy use and production. This work uses robust and form of M-estimation by using the grid-search algorithm. Thus, since we use form of Huber M-estimation, the prediction performance can be increased; because, the data is tried to be modelled by using the different values of tuning parameter determined by the grid-search which can be used to carry out the optimization proving the M-estimates of the parameters of regression model. The data sets which are year and the net electricity consumption are modelled by regression model in order to predict and forecast how much electricity consumption will be necessary for the commercial purpose firm used the electricity at the highest amount. The statistical inference for the regression model and its estimators of parameters in the model is also provided. Further, the illustrative results used for the grid-search and the analytical expression of regression model are given. Due to the fact that polynomial regression showing an increment in the polynomial trend can model the dependent variable well, the net electrical consumption in commerce at Turkiye increases and the bandwidths for the forecasting in the year 2021 and 2022 are given to conduct a planning in energy sector.

Key-words: *consumption, economy, electricity, energy, robust estimation, statistics.*

JEL: *Q1, R1, H254*

UDC: *338.45:620.91(560)*

Introduction. Energy is a key indicator in the economical regulation and movement in the applied science. The role of energy which is used and consumed for the different aims which are essential to aware of and interested in the life is an indispensable to drive a smooth life standard in the living organism throughout the economical movement taken in the place where the people need to live in the real life we do currently exist and work. In this principle, we already satisfy these conditions which are put by the reality and necessity of the life on the universe in the space where everything is investigated and circulated how its role is played. If these realities in the life on the universe have to be supported by the people who do try to live in the life where it is originally not well-prepared and suited. In order to conduct the prepared and well-set universe on the life, we have to provide some necessities such

as energy or its relevant things on the life where the people live and drive what it is. In this design of the universe, the energy should be provided for the people (Zhai et al., 2014; Du et al., 2015).

The mathematical and statistical equipment are necessary for us to model the real life derived randomly by people who do try to live and perform the random events which is not predictable in the most cases and so the probabilities occurs in the results of the experiment worked on the life on the universe. Since the random events we come across are occurred whenever the people touch and play with experiment, the observations should be modelled by some functions. The statistical view point show that many mathematical tools exist in the theorical part of the science. We can prefer one of them to conduct an analyzing. In the principle of analyzing, we can make a prediction and forecasting for the real data sets in the applied science (Otranto & Trudda, 2007; Lai & Xing, 2008).

In this study, we perform an estimation for the regression parameters. The real data set for energy in Turkiye will be used to forecast how much degree of the energy for Turkiye is necessary in order to be able to live in the organized life where the people do try to perform the living. Especially, the energy is key factor for us to drive the living process smoothly. The section 1 provides a brief review for the preliminaries given by literature. The research methodology given by section 2 provides a procedure for the Huber M-estimation of parameters of regression model. The main results and forecasting are provided by Section 3. The last section is provided for the discussions and conclusions in the prepared paper.

Section 1: Literature review. In the applied science, ordinary least squares (OLS) estimation method is generally used to estimate the parameters of the regression model. Alternative estimation methods such as maximum likelihood, least squares based on cumulative distribution function, etc. can be suggested to estimate the parameters of the regression model. The most well-known estimation method which plays as a role as a generalization of OLS is M-estimation method which can include the robust version. The robustness of M-estimation method can be guaranteed according to the chosen loss or objective function which is used for modelling the dependent variable of the regression model (Hampel et al., 1986; Maronna et al., 2019).

Energy consumption for the electrical purpose in the commerce is an output which can come across to manage the real life circulation. Turkish statistical institute provides the net electricity consumption in the commerce. The countries should determine the energy in the future to draw its plan and take its actions if it is necessary to do so (TUIK, 2020; San Cristóbal, 2012).

Section 2: Research methodology. The regression model can be used to forecast the energy consumption in the next years. Since there can be a fluctuation in the behavior of the observed variable defined as the dependent variable in the regression model, the polynomial regression model can be used. The polynomial regression model for the degree 2 is given by the following form:

$$y_i = \beta_0 + \beta_1 x_i + \beta_2 x_i^2 + \varepsilon_i, i = 1,2, \dots, n.$$

If the observations from $y_1, y_2, \dots, y_n$ are assumed to be a member of a parametric model such as normal, Student t, etc. distributions, then the statistics

which are functions of random variables are obtained according to these chosen parametric models. In the general setting, the loss or objective function can be given by the following expression:

$$\min_{\boldsymbol{\beta}} \quad \sum_{i=1}^{n} \rho(y_i - x^T \boldsymbol{\beta}),$$

where $\boldsymbol{\beta} = (\beta_0, \beta_1, \beta_2)$ is a vector of parameters β_0, β_1 and β_2 in the regression model. The minimization or alternatively the maximization of the negative version of the function ρ according to the parameters β_0, β_1 and β_2 will produce the M-estimators $\widehat{\beta_0}, \widehat{\beta_1}$ and $\widehat{\beta_2}$ (Hampel et al., 1986; Maronna et al., 2019).

In the framework of M-estimation, the key discussion is that the value of the tuning parameter which controls the robustness of the M-estimators produced by using the M-estimation method should be determined accurately. If a simulation study is performed, then it can be determined by using mean squared error. However, if we apply the M-estimation method for the real data set and we want to estimate the parameters of the regression model, then alternative approach must be necessary; because, in order to compute the mean square error, the true value of the parameters must be known (Çankaya, 2015; Çankaya & Arslan, 2020; Hampel et al., 1986; Casella & Berger, 2021).

Since we perform an application on the real data set, it is impossible to know what the true values of the parameters are. To overcome the problem about determining the tuning constant or tuning parameter in the Huber M-estimation, the distance between the values of the observed variables and the predicted variables must be decreased as far as we can do. In order to accomplish getting the decreased value for this distance, we can arrange the value of the tuning parameter and so we can get the predicted values for the dependent variable of the regression model. The grid-search method which will be introduced algorithmically in the research methodology can be used.

Huber M-estimation includes the tuning parameter k which can help us to determine the robustness of M-estimator. The grid-search algorithm is used to determine the value of k. The grid-search algorithm works when the different values of a constant or a parameter is used. The procedure can be conducted according the following steps given in the order (Woodward etal., 2017; Strickland, 2015; Ghatak, 2019; Maronna et al., 2019):

1. Set values for the constant
2. Have a sequence of values for the constant defined previously
3. Try the values provided by the sequence in the Step 2.
4. Get values of the optimized or the loss (objective) function for the tried values.
5. Determine the value which provides the optimum value for the optimized function.
6. If the minimum or maximum value for the optimized function is reached, then show which value of constant provide a such minimum or maximum value.
7. Terminate the procedure and provide the values for the optimized case and the constant.

Section 3: Main results. The scatter plot, the estimates of parameters of the regression model and the statistically significance of the full model of regression will be given by this section.

Note that the scatter plot between the independent variable representing the "years" and the dependent variable representing "Net Electricity Consumption in Commerce" is an important tool to determine which true model for the regression can be chosen to construct the regressional relationship between the independent and dependent variables (see Figure 1).

After the assumed regression model is chosen, the parameters of the regression model are should be estimated by using the M-estimation method which is robust to outliers. The statistically significance of the M-estimators of the regression parameters should be tested. Further, the statistical validity of the full model of regression equation is also be examined by using the ANOVA (see Table 2).

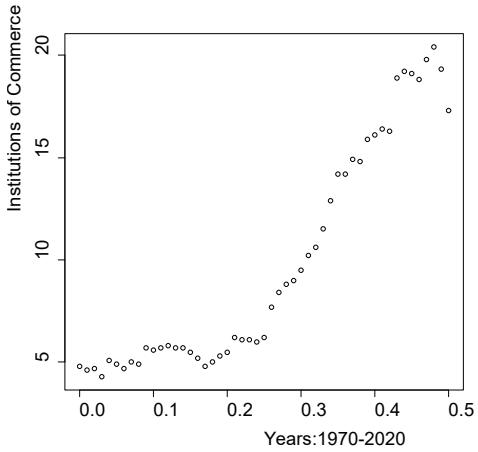

Figure 1. **Years and Institutions of Commerce for the Net Electricity Consumption**

Table 1. **The estimates of regression coefficients and statistical inference**

	The values of estimates	Std. Error of estimates	t statistic	p-value of t statistic
$\widehat{\beta_0}$	9.8686	0.1616	61.0796	5.489302e-46
$\widehat{\beta_1 x}$	35.9126	1.1538	31.1244	7.485174e-33
$\widehat{\beta_2 x^2}$	11.8325	1.1538	10.2549	9.083902e-14

Source: source description, link etc. (Times New Roman 11, justified)

k =4.66636 absolute error is 9.97406. The year 2021 as next value is forecasted to be 31.2617 GWh. The interval of the year 2021 is between two values which are 21.28764 GWh and 41.23576 GWh. The year 2022 is 31.7427 and the interval of year 2022 is (21.76864, 41.71676) GWh, which shows that the years 2021 and 2022 for distribution of net electricity consumption by the commerce sector can be increased when it is compared with previous years; the explanatory variable is increased.

Further, the polynomial movement in the subsequent years in the electricity

consumption can show the increment for the consumption. Note that if we choose a polynomial function with order 2, then we can have a regression model which is statistically significant. This is reason why we choose a regression model with polynomial at the second degree.

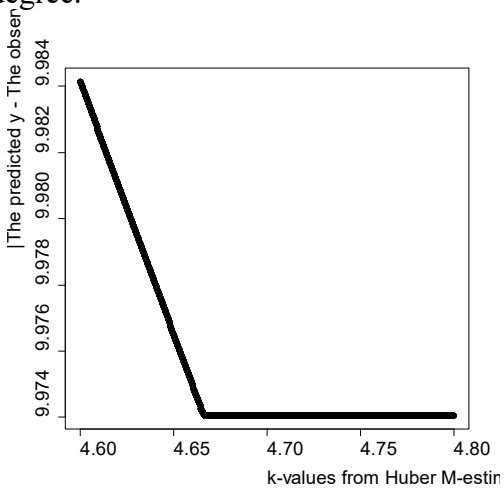

Figure 2. **The absolute value of the distance between the predicted y the observed y when the different values of tuning parameter k are used**

Figure 2 shows the results of gird-search algorithm when it is applied to determine a value for the tuning parameter k in the Huber M-estimation.

Table 2. **ANOVA: The estimates of regression coefficients and statistical inference**

	Degrees of freedom	Sum of Squares	Mean of Squares	F-test and its p-value
Regression	3-1=2	SSR: 1429.7	MSR: 714.86	MSR/MSE: 536.98 and 10^(-33)
Error	51-3=48	SSE: 63.9	MSE: 1.33125	
Total	51-1=50			

Source: source description, link etc. (Times New Roman 11, justified)

Table 2 shows that the full model is statistically significant. It is reasonable to observe the regression equation with polynomial form as given by Figure 1, because when we Figure 1 showing the scatter plot of years and net electricity consumption is examined, it is observed that there can exist a polynomial movement between variables even if the illustrative representation is depicted by the two-dimensions at the cartesian coordinates. A fluctuation or a polynomial movement at the distribution of the dependent variable y can be observed. For this reason, the appropriate regression equation should be chosen.

The correlation based on ANOVA in Table 2 for the polynomial regression model can be computed as the following forms:

$$R^2 = 1 - \frac{SSE}{SST} = 0.9572175$$

And the adjusted form of the correlation given by

$$R^2 = 1 - \frac{MSE}{MST} = 0.9981412,$$

which shows that the polynomial regression model with the estimates of parameters is capable to fit the dependent variable y well.

Discussion and conclusions. The polynomial regression model has been used to predict and forecast the net electricity consumption. The illustrative and inferential procedure have been carried out in order to show the results of research. The parameters of regression equation could be determined by using the M-estimation method. In the M-estimation method, the Huber loss function has been chosen; because, the determination of the tuning parameter is an open issue if we use the real data set for the application of M-estimation method. The proposed methodology which uses the grid-search algorithm provides a method for determining the value of tuning constant of Huber M-estimation. One can preferer to use the grid-search algorithm in computing the values of regression parameters if the value of tuning parameter of Huber M-estimation must be determined when the real data set application will be carried out. The estimates have been used to forecast the years 2021 and 2022 for net electricity consumption in commerce at Turkiye.

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РОЛЬ ГИБРИДНЫХ ФОРМ ОБУЧЕНИЯ В ОБРАЗОВАНИИ В СФЕРЕ ПРЕДПРИНИМАТЕЛЬСТВА [7]

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Summary

Modern trends in technological development, demographic and migration processes affect the emergence of new professions and atypical forms of employment, methods of education and types of vocational education and training. This fact requires the intensification of the actions of state structures and organizations - intermediaries responsible for the formation of career guidance policies based on: a study of the evolution of needs for professional skills in the labor market; forecasting demand for professions that are relevant in the future; developing strategies for the development of educational programs and coordinating the actions of educational service providers (vocational schools, colleges, universities, continuing education and training centers, NGOs, etc.). This study focuses on the analyses of existing business training programs in the region, identifying the most relevant topics in the field of business education. Based on the analysis of the research data, conclusions were drawn about the expediency of including one or another thematic unit in the curriculum of the course on "Business Management" and the levels of complexity of studying the identified topical topics.

Key-words: *entrepreneurship, lifelong learning, hybrid learning.*
JEL: *I25, L86, O35*
UDC: *005.963+37]: 334.7(478)*

Аннотация. *Современные тенденции технологического развития, демографические и миграционные процессы влияют на появление новых профессий и нетипичных форм занятости, способы обучения и виды профессионального образования и подготовки. Данный факт требует активизации действий госструктур и организаций - посредников, ответственных за формирование профориентационных политик, основанных на: исследовании эволюции потребностей в профессиональных навыках на рынке труда; прогнозировании спроса на актуальные в будущем профессии; разработке стратегий развития образовательных программ и координации действий поставщиков образовательных услуг (профтехучилищ, колледжей, университетов, центров*

[7] Данный проект финансируется Национальным Фондом Регионального и Местного Развития, внедряется "Институтом регионального экономического развития" в партнерстве с Комратским государственным университетом в рамках программы, и курируется Агентством регионального развития АТО Гагаузия.

непрерывного образования и подготовки кадров, НКО и т.д.). Данное исследование фокусируется на анализе действующих в регионе программ обучения в области предпринимательства, выявления наиболее актуальных тематик в сфере бизнес образования. На базе анализа данных исследования сделаны выводы о целесообразности включения той или иной тематической единицы в куррикулум курса по «Управлению бизнесом» и уровнях сложности изучения выявленных актуальных тематик.

Ключевые слова: *предпринимательство, непрерывное образование, гибридные формы обучения.*

Введение. Современные тенденции технологического развития, демографические и миграционные процессы влияют на появление новых профессий и нетипичных форм занятости, способы обучения и виды профессионального образования и подготовки. Широкое распространение автоматизации, искусственного интеллекта с одной стороны, способствует производительности и экономическому росту, с другой стороны, заставляет многих людей постоянно повышать квалификацию и адаптировать свои навыки под новые требования рынка труда.

Концепция «работы на всю жизнь» сменилась концепцией «обучения в течении всей жизни». Данный факт требует активизации действий госструктур и организаций - посредников, ответственных за формирование профориентационных политик, основанных на:

- исследовании эволюции потребностей в профессиональных навыках на рынке труда;
- прогнозировании спроса на актуальные в будущем профессии;
- разработке стратегий развития образовательных программ и координации действий поставщиков образовательных услуг (профтехучилищ, колледжей, университетов, центров непрерывного образования и подготовки кадров, НКО и т.д.).

Институциональная база неформального обучения. Данное исследование фокусируется на анализе действующих в регионе программ обучения в области предпринимательства, выявления наиболее актуальных тематик в сфере бизнес образования [1]. Институциональной базой исследования являются следующие отраслевые документы: Стратегия развития образования 2030 (Strategiei de dezvoltare a educației pentru anii 2021-2030 „Educația-2030”); Целевая программа развития сферы образования АТО Гагаузия 2022-2030 и др. [2].

Согласно целям ООН, в области устойчивого развития на период до 2030 г система подготовки кадров должна обеспечивать всем категориям населения равные возможности доступа к профессиональной ориентации и подготовке на протяжении всей трудовой жизни независимо от уровня доходов населения. Однако, в сельской местности РМ, не все категории населения имеют доступ к профессиональным образовательным услугам, что отражается на росте безработицы.

Согласно отчету Национального агентства занятости, на начало 2020 года года зарегистрировано 50200 безработных (в течении года обратилось 25 525 человек), из которых в АТО зарегистрировано более 3000 безработных, из них

51% женщин, около 20% - люди в зрелом возрасте, 61,2% - сельские жители. Уровень бедности в 2019 году в сельской местности составил 34,5% по сравнению с 11,2% в городской местности; в региональном профиле самый высокий уровень бедности наблюдается Южном регионе (40,4%), тогда как в Кишиневе он намного ниже (4,4%) [3].

Настоящий проект преследует цель популяризации процесса непрерывного неформального обучения в области предпринимательства в РМ. Неформальное образование является важной и определяющей составной частью новой роли образования в мире, которое направлено на «Образование во имя стабильного развития», а также является важным компонентом Стратегии ЕС «Образование-2030» - согласно Инчхонской декларации «Обеспечение инклюзивного и справедливого качественного образования, и обучения на протяжении всей жизни для всех» [4].

Помимо возрастающей роли неформального образования в Стратегии развития образования РМ, рекомендуется интегрировать онлайн курсы и в университетские куррикулумы, что доказывает актуальность данного проекта для развития обоих ветвей образования: как формального, так и неформального. Направления решения проблем низкого уровня развития предпринимательской культуры, проникновения современных знаний в бизнес среду, применения информационно коммуникационных технологий (ИКТ) нашли свое отражение в стратегических документах.

Таблица 1. Корреляция тематики неформального образования в области предпринимательства в стратегических документах

Соответствующий документ	**Корреляция с проектом**
Strategie națională de dezvoltare „Moldova 2030”	…2 приоритет: надежный человеческий и социальный капитал: задача 4: гарантия качественного образования для всех и содействие возможности обучение на протяжении всей жизни.
Стратегии развития образования на «Образование-2030»	…интеграция онлайн курсов для развития обоих ветвей образования: как формального, так и неформального.
Стратегия развития отрасли ИТ и цифровой инновационной экосистемы на 2018-2023гг	…повсеместное внедрение информационно-коммуникационных технологий, в т.ч. в сфере образования.
Стратегия социально-экономического развития АТО Гагаузия на 2017-22	…повышение конкурентоспособности деловой среды и сектора МСП Мероприятия, укрепление позиций экономических субъектов Гагаузии.

СРП «Развитие Инфраструктуры поддержки предпринимательства АРР АТОГ на 2017-2022гг	…продвижение образования в сфере бизнеса (Концепт «Центр предпринимательских компетенций»).
СРП «По повышению туристической привлекательности Региона Развития АТО Гагаузия 2025	…повышение квалификации специалистов и качества туристических услуг; технологическое совершенствование индустрии туризма посредством использования ИКТ.

Источник*: разработано автором*

Экономические и образовательные возможности часто сконцентрированы в городах, способствуя высоким темпам миграции из села в город. Поскольку среди мигрантов из сельских районов в города преобладают мужчины, то в основном мужчины чаще всего и пользуются этими возможностями. Кроме того, миграция меняет структуру населения в сельских районах, часто способствуя повышению доли пожилых и очень молодых людей, которые нуждаются в новых знаниях.

Поэтому данный проект нацелен на нивелирование следующих проблем: рост безработных среди молодежи, из которых 60% проживают в сельской местности, в которой уровень жизни значительно ниже; ограниченного доступа к основным услугам и возможностям трудоустройства в сельских районах; нехватки денежных средств для прерывания работы и выезда в другие города на учебу; повышенной временной нагрузкой на женщин, которые, как правило, осуществляют уход за членами семьи и не могут уезжать на учебу на долгий период.

Целевая группа и прямые бенефициары проекта представлена следующими категориями: безработная молодежь, начинающие и действующие молодые предприниматели с низким уровнем знаний о диджитализации бизнес-процессов; взрослое самозанятое население, ориентированное на повышение уровня знаний в предпринимательстве и ИКТ. Косвенные бенефициары представлены: Комратским госуниверситетом (КГУ), Региональным Агентством занятости, Местными инициативными группами, Исполнительным Комитетом АТО Гагаузия.

Методология исследования. Проект направлен на улучшение развитие и распространение практики непрерывного обучения по предпринимательству в сельских территориях АТО Гагаузия посредством гибридных форматов обучения. Данное исследование фокусируется на исследовании действующих в регионе программ обучения в области предпринимательства, выявления наиболее актуальных тематик в сфере бизнес образования и повышения потенциала Комратского государственного университета в разработке и проведении данных курсов.

Для реализации задач проекта была разработана анкета в целях анализа предоставляемых образовательных услуг - курсов обучения в сфере предпринимательства, предоставляемых действующими в регионе организациями:

✓ **Поставщиками образовательных услуг** (ПОУ) – организациями, которые самостоятельно разрабатывают и проводят обучающие тренинги и семинары: Центр непрерывного образования КГУ, Инновационный инкубатор «Инноцентр» КГУ, Центр делового образования при ТПП РМ по Гагаузии, Учебный центр обучения молодежи АТО Гагаузия, Институт регионального экономического развития; Профессиональные училища г. Комрат, Вулканешты, Чадыр-Лунга.

✓ **Инициаторами поставки образовательных услуг** (ИПОУ) – организациями, которые являются посредниками между ПОУ и заказчиками образовательных программ Территориальное Агентство Занятости Населения Гагаузии, Ассоциация NEXT, Ассоциация женщин Гагаузии, Бизнес- Инкубатор Чадыр-Лунга, ПроЕвропа Центр.

Для анализа наиболее актуальных тематик курсов в области предпринимательства были проведены фокус- группы с преподавателями - действующими тренерами в области предпринимательства, имеющими опыт более 10-15 лет в данной сфере. Также большинство тренеров являются действующими практиками в релевантных сферах бизнеса.

Была разработана анкета, проведен сплошной опрос, охватывающий все единицы генеральной совокупности, имеющие отношение к данному вопросу: предприниматели, самозанятые, учащиеся, госслужащие (управление экономического развития и туризма). Респонденты распределились следующим образом: предприниматели (42,2 %), самозанятые (13,7%), учащиеся (21,6%), госслужащие (11,8%), безработные (6,9%), преподаватели (3.9%).

Для принятия рекомендаций на региональном уровне, организованы рабочие встречи экспертов, членов команды проекта и стейкхолдеров, включая представителей региональных властей. Планируется разработка пакета документов для авторизации краткосрочной образовательной программы «Управления бизнесом».

Большинство опрошенных – 66,7% не участвовали в программах обучения по предпринимательству. Из трети респондентов, имеющих опыт участия в образовательных программах, 36% самостоятельно записываются на обучающие онлайн курсы, 21% просматривает обучающие курсы в социальных сетях по чьей- либо рекомендации, 33% периодически просматривают обучающие лекции в YouTube, у 11% опрошенных такой опыт отсутствует. Это достаточно высокий показатель присутствия на образовательном онлайн пространстве, который, безусловно, был простимулирован внедрением карантинных мер в течении почти 2-х лет.

Треть респондентов, имеющих опыт участия в образовательных программах, отметили следующую тематику пройденных курсов:

- 1 группа тем: бизнес- планирование, основы малого бизнеса, построение стартапов и диджитализация;
- 2 группа тем: финансовые аспекты и бухгалтерский учет, социальное предпринимательство, техники эффективных продаж и подготовка менеджеров;
- 3 группа тем: автоматизация и цифровизация процессов, цифровой маркетинг, антикризисный менеджмент и управление персоналом.

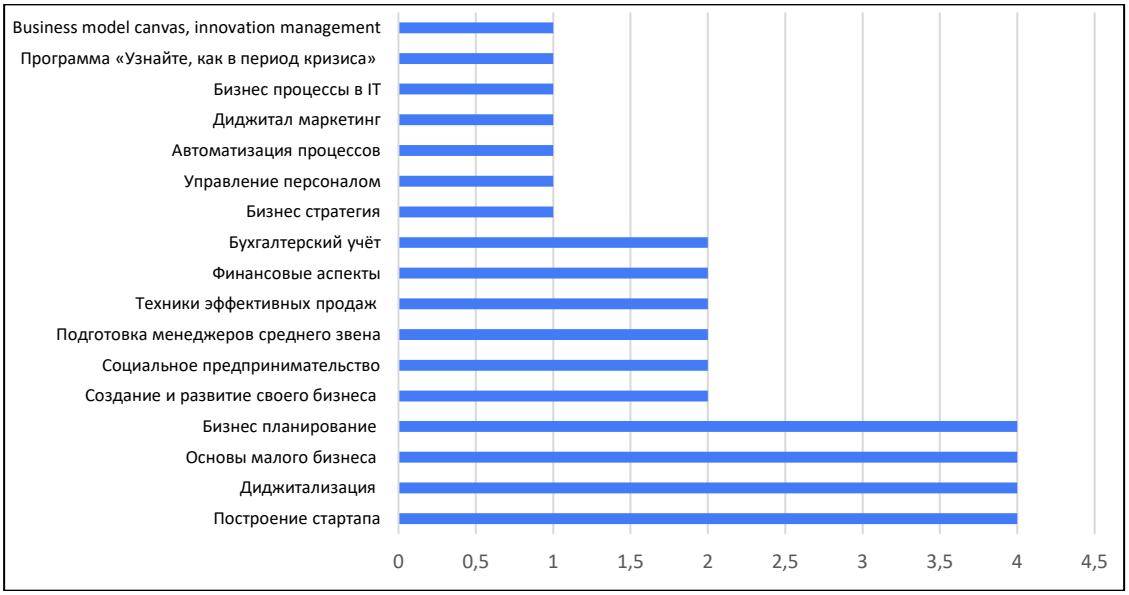

Рисунок 1. **Тематика пройденных курсов и обучающих программ**
Источник*: разработано автором*

Из трети респондентов, имеющих опыт участия в образовательных программах, 71,3% планируют применить полученные знания в будущем, 15,8% развили свои предпринимательские навыки благодаря полученным знаниям, знания не пригодились у 6% опрошенных и только 4% создали свой бизнес.

Данная информация может свидетельствовать о нескольких фактах: во-первых, о нерешительности либо низкой мотивации прошедших обучающие курсы в направлении создания своего бизнеса, во- вторых, о низком уровне тематической актуальности пройденных курсов по развитию бизнеса, и, в - третьих, общей ситуации временной «заморозки» развития малого бизнеса всвязи с внедренными ограничительными мерами из-за пандемии COVID-19.

Из наиболее предпочтительных методов обучения респонденты отметили важность проведения интерактивной лекций и анализа конкретных бизнес кейсов, разработка бизнес-планов и симуляций, презентации опыта успешных предпринимателей и групповые методы работы. Данные рекомендации будут приняты во внимание при разработке графика проведения курсов и включения наиболее эффективных методов преподавания. При анализе удобства онлайн формы обучения большинство респондентов (около 60%) отметили отсутствие потерь времени на перемещение и дополнительных затрат на транспорт, а также возможность выбора удобного графика обучения, что, в целом, делает данный тип обучения (гибридной формы) доступным для жителей сельской местности.

Анализ интервью с преподавателями университета и действующими тренерами- практиками в области экономики позволил выявить наиболее актуальные блоки обучающей программы и конкретные тематики. На основе данного опыта и анализа мнений были выделены следующие блоки Программы по управлению бизнесом:

- Бизнес планирование и финансовый менеджмент,

- Бухгалтерский учет и налогообложение,
- Маркетинг (интернет- маркетинг),
- Цифровизация бизнес- процессов,
- Проектный менеджмент (с акцентом на сферу туризма).

Рисунок 2. **Компоненты образовательной программы**
Источник: разработано автором

На базе анализа данных исследования сделаны выводы о целесообразности включения той или иной тематической единицы в Куррикулум краткосрочной образовательной программы «Управлению бизнесом».

Актуальность гибридных форматов обучения. В настоящее время наблюдается рост следующих проблем: высокий уровень безработных среди молодежи, из которых 60% проживают в сельской местности, в которой уровень жизни значительно ниже; ограниченного доступа к основным услугам и возможностям трудоустройства в сельских районах; нехватки денежных средств для прерывания работы и выезда в другие города на учебу; повышенной временной нагрузкой на женщин, которые, как правило, осуществляют уход за членами семьи и не могут уезжать на учебу на долгий период.

Экономические и образовательные возможности часто сконцентрированы в городах, способствуя высоким темпам миграции из села в город. Поскольку среди мигрантов из сельских районов в города преобладают мужчины, то в основном мужчины чаще всего и пользуются этими возможностями. Кроме того, миграция меняет структуру населения в сельских районах, часто способствуя повышению доли пожилых и очень молодых людей, которые нуждаются в новых знаниях.

Поэтому целевая группа и прямые бенефициары проекта представлены следующими категориями: безработная молодежь, начинающие и действующие молодые предприниматели с низким уровнем знаний о диджитализации бизнес-процессов; взрослое самозанятое население, ориентированное на повышение уровня знаний в предпринимательстве и ИКТ. Косвенные бенефициары представлены: Комратским госуниверситетом, Региональным Агентством занятости, Местными инициативными группами, Исполнительным Комитетом АТО Гагаузия.

Однако авторизированные (аккредитованные) курсы в области развития предпринимательских навыков в регионе отсутствуют. Данный факт делает весьма актуальным реализацию данного проекта, целью которого является разработка курсов краткосрочного профессионального обучения в сфере управления развитием бизнеса и распространение практики непрерывного обучения по предпринимательству в сельских территориях АТО Гагаузия посредством гибридных форматов обучения.

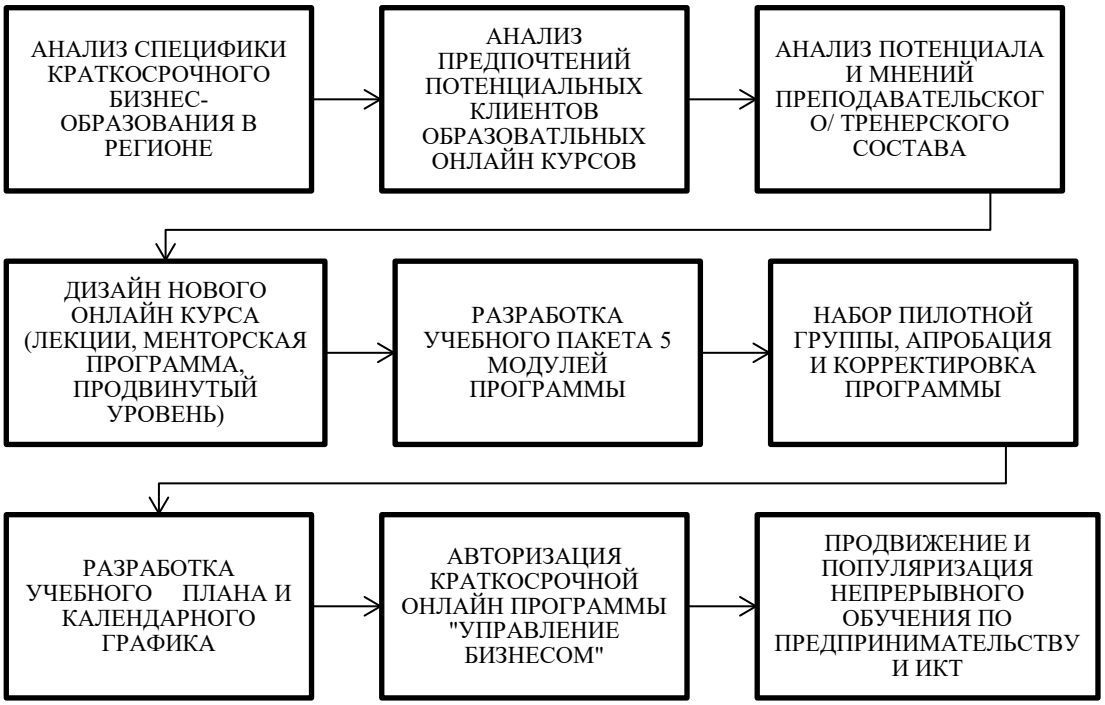

Рисунок 3. **Этапы внедрения проекта.**
Источник: разработано автором

Внедряемый проект соответствует критерию регионального воздействия в области продвижения региональных программы профессиональной (непрерывной) и предпринимательской подготовки в приоритетных отраслях региона (включая обучение в области туризма), а также сфокусирован на поддержке инноваций для частной среды (создание новых услуг и продуктов) в

сельской местности. На рисунке 3 представлены основные этапы внедрения проекта по внедрению непрерывного образования в области предпринимательства посредством гибридных форм обучения.

Промежуточные результаты. Участники менторской программы проекта «Внедрение непрерывного образования в области предпринимательства в сельской местности через гибридные форматы обучения» - представители 14 населенных пунктов АТО Гагаузия, большинство из которых женщины, имели возможность обсудить разрабатываемые ими: бизнес проекты, маркетинговые исследования, инструменты интернет – продвижения своих услуг и продукции с преподавателями – практиками университета.

К каждому участнику применен индивидуальный подход, начиная с анализа идеи или направлений развития действующего бизнеса, до поиска финансирующей разработанный проект организации. 2 проекта туристической направленности, получивших консультационную поддержку в начале сентября были поданы на конкурс грантов в ANTRIM (Национальная ассоциация въездного туризма Молдовы), ряд проектов готовиться к подаче на конкурс грантов Исполнительного комитета АТО Гагаузия и ODA (Programul de Ecologizare a Întreprinderilor Mici și Mijlocii).

Благодаря запуску курсов на базе центра непрерывного образования Комратского государственного университета, постоянно обновляющаяся информация о новых формах маркетинга (е- коммерции), проектного менеджмента, бухгалтерского учета, ИКТ, профессионального обучение в области туризма, будет доступна каждому сельскому жителю посредством сети интернет без отрыва от его основного вида деятельности и физического перемещения.

Запуск данных курсов на постоянной основе компенсирует отсутствие авторизированных (аккредитованных) курсов в области развития предпринимательских навыков в регионе. Данный факт делает весьма актуальным реализацию данного проекта, целью которого является разработка курсов краткосрочного профессионального обучения в сфере управления развитием бизнеса и распространение практики непрерывного обучения по предпринимательству в сельских территориях АТО Гагаузия посредством гибридных форматов обучения.

Образование в течение всей жизни (непрерывное образование) предлагается реализовать посредством информационных технологий, в частности, посредством гибридных форм. Гибридные формы неформального обучения, предполагающие чередование онлайн и офлайн методов обучения, позволяют расширить целевую аудиторию, вовлекая сельское население независимо от места проживания, статуса и могут быть использованы в ответ на современные вызовы, продиктованные пандемией COVID-19.

Выводы и рекомендации. Сфера краткосрочного профессионального обучения представлена в АТО Гагаузия организациями, которые самостоятельно разрабатывают обучающие программы и проходят процедуры их аккредитации и авторизации, а также организациями – инициирующими процесс проведения данных курсов и не занимающихся их самостоятельной разработкой.

Однако авторизированные (аккредитованные) курсы в области развития предпринимательских навыков в регионе отсутствуют. Данный факт делает весьма актуальным реализацию данного проекта, целью которого является разработка курсов краткосрочного профессионального обучения в сфере управления развитием бизнеса и распространение практики непрерывного обучения по предпринимательству в сельских территориях АТО Гагаузия посредством гибридных форматов обучения.

Гибридный формат курсов позволяет: проводить занятия с минимальным присутствием в аудиториях, что влияет, прежде всего, на сокращение затрат как со стороны организатора учебного процесса, так и самих участников; вовлечь в учебный процесс участников из отдаленных населенных пунктов, не имеющих возможность надолго выезжать из дома; быстро и гибко реагировать на актуальность запрашиваемых со стороны участников тематик обучения.

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FACTORS AND CRITERIA FOR ASSESSING THE COMPETITIVENESS OF INDUSTRIAL CLUSTERS IN THE CONTEXT OF THE MAIN COMPONENTS OF THE ORGANIZATIONAL AND ECONOMIC MECHANISM

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Summary

In modern economic conditions, the possibility of ensuring industrial safety is a priority task of state policy, since the issues of competitiveness of the national economy, and sometimes its survival under the influence of external factors, originate directly from it. The ongoing processes and structural changes in industry affect all economic agents, starting from ordinary consumers and small producers of products, ending with big business and the state itself as the central link of industrial policy. The article substantiates the relevance of promising direction of sustainable development of the national economy – clustering – an effective tool for increasing the competitive positions of regional industrial policy in foreign markets based on improving social, economic, investment, innovation, infrastructure, technological and environmental development directions and their components. In this regard, the issues of integration in industrial policy occupy the main place both in business structures and in public authorities, civil institutions. The goal is to develop criteria for assessing the competitiveness management of agro–industrial clusters. The object of research is cooperative–integration (cluster) structures. The subject of the study is the components of the organizational and economic mechanism for managing the competitiveness of cooperative integration (cluster) structures. The main result of the authors' research are groups of factors contributing to and hindering the competitiveness management of regional cooperative productions are identified, contributing to the identification of regional advantages of creating priority industrial cooperative-integration industries.

Keywords: *cooperative-integration (cluster) structures, control mechanism, agro-industrial complex, components, evaluation criteria, regional competitiveness. SWOT and PEST analysis.*

JEL: *O14, O25, R112*

UDC: *332.133.6+339.137.2*

Introduction. Currently, in the context of global economic changes characterized by deepening and expansion of interstate relations, independent access

to the world markets of economic entities. Objective processes of active inclusion of various states, including the Republic of Belarus, in world economic relations make one of the main problems of further development of national economies the choice of priority areas for ensuring competitiveness at various macro, meso, and micro levels. In this regard, a promising direction is proposed – clustering – the process of creating innovative goods and services, attracting investments into the national economy, identifying the potential of business, scientific and educational competencies and regional resources. Which is based on the principles of the development of production associations – economic mechanisms, support and ensuring sustainability at a high technological level of the branches of the industrial complex, taking into account external and internal changes. Such a set of manufacturing enterprises consists of interrelated business entities: industries, auxiliary marketing companies, banking, consulting enterprises, research, educational institutions of science and education [Strategy for the development of an agro-industrial cluster in the Bryansk region for 2019-2022].

Literature review. While writing the article, article authors have used studies of both domestic and foreign scientists, experts and specialists in the field of cluster policy, industry reviews and other sources of information.

Research methodology. The following methods were used in the research process: a systematic approach, comparison, logical generalization, analysis and synthesis.

Main results. In the process of studying organizational and economic conditions, the components that influence the change in the competitive advantages of industrial enterprises in the context of cluster formation are determined. In the event of external and internal hazards and threats to organizations operating in a single integrated system, common strategic programs for sustainable organizational and economic development are developed. The main task in the process of forming cooperation is not only to increase the results of its production activities, stable support of production interconnection, but also to form the most competitive environment for agro-industrial production, taking into account foreign economic risk situations. To implement this condition, the question of establishing the main components in the formation of the organizational and economic mechanism of corporate governance of integration industrial structures is relevant.

Modern approaches to the study of the theoretical, methodological and practical foundations of the creation of industrial cooperatives, especially the essence and processes of the formation of their organizational and economic (economic) mechanism, the development of which is due to the following areas: macro-, microeconomics, lending, insurance, taxation, organization and regulation, a lot of fundamental and applied research is devoted both from the side of science, and from the public. The greatest contribution to the development of this issue was made by such researchers as A.A. Alimbaev, N.N. Balashova, R.A. Baibekova, N.V. Varlamov, Yu.V. Gromyko, N.S. Dalinchuk, T.V. Erofeeva, A.A. Kerashev, A.A. Knyazkina, N.I. Larina, L.S. Markov, M.A. Mitenev, A.A. Polukhin, N.A. Sereda, S.I. Sokolenko, M. Khazan, F.K. Shakirov, N.P. Shilova, V.G. Shumetova, etc.

However, despite the growing interest of scientists and specialists in this area, it should be noted that there is no unified position regarding the meaning of the category

"organizational and economic mechanism" and its content (components), the definition of which differ significantly. That is why the subject under consideration does not lose its importance and is currently increasing interest in further studying modern approaches to clarifying and supplementing the analyzed definition and its components.

Thus, the definition of the components of the economic mechanism is among the most urgent tasks that must be solved while ensuring and increasing the organizational and economic potential of production. It should be noted that the mechanism itself, in turn, reflects the interrelation of economic and managerial instruments regulating material, technological, investment and innovation, labor, foreign economic and other processes of a regional industrial cluster to increase its competitiveness. The results demonstrate *(Figure 1)*.

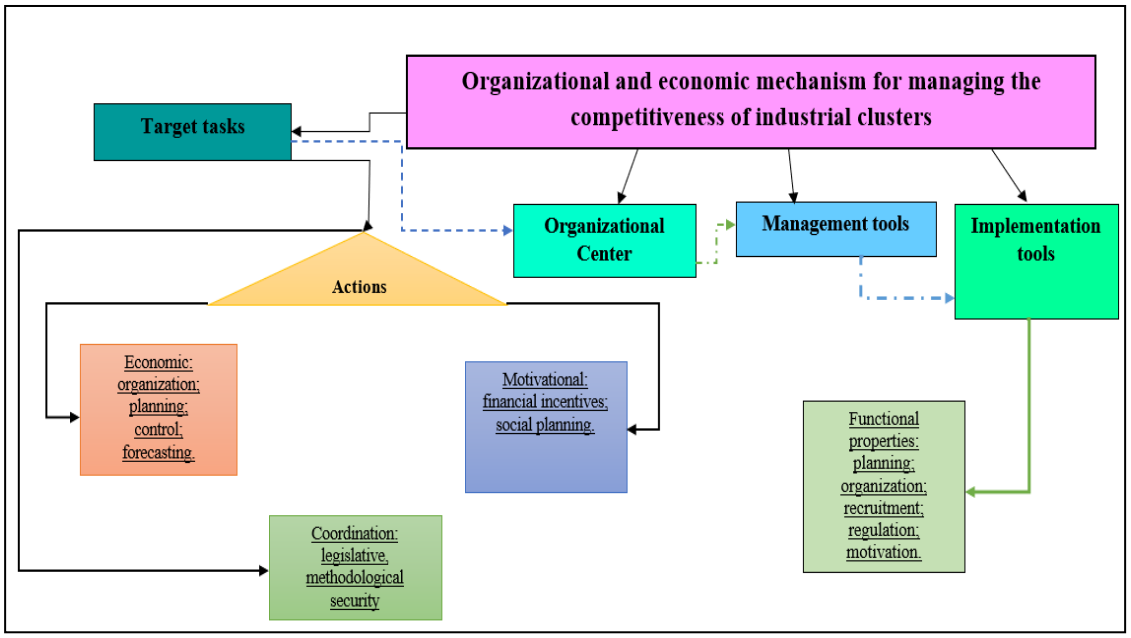

Figure 1. **Structural diagram of the organizational and economic mechanism for managing the competitiveness of industrial clusters**

Source: the authors' self-development

The first block of the presented scheme reflects the management system of economic and industrial processes, taking into account the performance of production indicators. The second element includes tools: organization, management and implementation. In general, the basis of the organizational mechanism of management of cooperative-integrated structures is formed and implemented by management measures that contribute to the improvement of production quality and quantitative indicators of the agricultural industry. In practice, the implementation of this toolkit is mainly carried out in the form of state support through targeted programs for the development of industry and social infrastructure in the region, subsidies, leasing, antimonopoly regulation, and other tools.

Having considered the content of the organizational and economic mechanism and its structure, it is necessary to determine the factors and components that ensure their effective functioning.

At the same time, in modern conditions, the prospects for the development of cluster policy are due to the influence of a number of factors that have both a positive and negative impact on this process, groups of which are shown in Table 1.

Table 1. **Factors that favor and restrain the management of the competitiveness of cluster industries**

Factors that have a positive impact	Factors that have a negative impact
Availability for the production process: materials and raw materials, qualified labor resources and transportability in the use of regional resources; Involvement of the higher research and educational school; The established principled order (traditions) of the industrial cluster structure	Lack of elaboration of tools for the creation and functioning of production cooperation; Insufficient state support; Non-compliance of higher education programs, scientific research with market requirements and industry sectors; The undeveloped relationship of higher and secondary professional educational institutions with business structures; The presence of administrative barriers and the lack of necessary conditions for financial support for the creation and functioning of small and medium-sized businesses in production, additional, as well as in the main types of economic activity; Low competitive positions of some national industries in foreign and domestic markets; Time duration (not earlier than 5-7 years) in obtaining real profit from the creation of clusters; Characteristic qualities (specificity) of the Belarusian mentality

Source: the authors' self-development based on Gross external debt of the Republic of Belarus https://www.nbrb.by/statistics/externaldebt; Economic patterns of formation and principles of development of industrial agglomerations http://mirznanii.com/a/306125/ekonomicheskie-zakonomernosti-formirovaniya-i-printsipy-razvitiya-promyshlennykh-aglomeratsiy; Poloskov, S.S. (2018) Shipbuilding of Russia on the innovative path of development: problems and prospects.

For a more detailed analysis of the external and internal environment of the functioning of industrial clusters, the authors used SWOT and PEST analysis tools.

Table 2. **SWOT-analysis of industrial clusters of the Republic of Belarus**

Strengths	Weaknesses
1. Development of the innovative component, the scientific support of which is carried out by research institutes; 2. Good reputation of domestic manufacturers; 3. Relatively favorable fiscal policy; 4. The Republic of Belarus is the «historical» base of industrial clusters, in particular clusters of mechanical	1. High degree of depreciation of fixed assets – more than 70%; 2. Domestic enterprises are not so powerful as to compete with transnational organizations that operate in the Belarusian and Russian market, which is a priority for us, and have great dumping opportunities;

engineering: some sub-sectors of mechanical engineering were highly developed during the Soviet period; 6. The high level of attractiveness of economic factors of the investment climate for the inflow of foreign direct investment (FDI) due to the high level of qualification of the workforce of technical specialties, access to the CIS market, low labor costs, high level of development of informatization and telecommunications, as well as the quality of quality infrastructure and logistics.	3. High energy and material consumption of production; 4. A significant degree of dependence on imports of raw materials and components (usually Russian); 5. Labor productivity in the Republic of Belarus is at least 2-3 times lower than in the leading countries; 6. Insufficient qualifications of specialists engaged in market research and product promotion; 7. Imperfection of the product sales system, often modern management is simply absent; 8. Slow work on the creation of intellectual property objects in the framework of; 9. Advertising and branding development remains a bottleneck for Belarusian manufacturers; 9. Weak development of market institutions; 10. The deepening technological and technical separation of the industry of developed countries, which determines the decline in competitiveness and the loss of market positions in the world market.
Opportunities	**Threats**
1. Use of licensed solutions, cooperation with world-class organizations to maintain leading positions; 2. The use of a more modern management system, a quality system developed by foreign partners to save money; 3. Introduction of the technology of modeling and control of structural steels at the nanoscale (10-9); 4. More active use of computer testing of future performance qualities of machines to reduce the cost of real testing and fine-tuning of safety equipment; 5. Identification of reserves for improving the efficiency of energy use at industrial enterprises and the use of energy-saving technologies due to the strong dependence of the industrial complex on fuel and energy resources (this is where a significant share of fuel and energy resources is consumed - more than 8% of their total value); 7. Stimulating R&D and technology transfer development in order to increase competitiveness; 8. Strengthening integration ties within the framework of cooperation with partners in the Common Economic Space (CES) ; 9. Great opportunities for exporting products due to the growth of the Russian market; 10. Elimination of tax barriers affecting the development of trade and economic relations between the EAEU member states. Already today, the EAEU allows for integration based on the idea of "open	1. The lag of the industrial complex in technological development; 2. The focus on imported components negatively affects the growth of labor productivity and the level of competitiveness of manufactured products; 3. Insufficient use of market (marketing) tools leads to overloading of finished goods warehouses; 4. Further decrease in labor productivity due to the deterioration of the material and technical base (technological component) and inefficient use of labor resources and excessive employment (i.e. the number of employed, without which, with these technologies, the same volume of output can be obtained - the organizational component);

regionalism", which, unlike «closed» integration models such as the European Union (EU), does not imply the establishment of restrictions on the freedom of movement of capital, labor and goods between the integrating region and the "outside world". On the contrary, open regionalism is considered as a stage on the path of integration into the world economy, which allows countries to participate simultaneously in several integration groupings. 11. Formation of an institutional environment favorable for innovative and venture development, the transition of production to higher technological structures, the implementation of «technological breakthroughs»; 12. Active cooperation of the state with business structures, development of public-private partnership; 13. Increase public funding to reduce the technological gap, compared with developed countries, and support research projects associated with high expected social benefits; 14. The development of «mesostructures» - new integrated structures that could perform the functions of "archaic" sectoral management, in order to concentrate public administration efforts on a specific group of organizations; 15. Economically justified import substitution that does not reduce the quality of products, which will reduce the level of costs and reduce the price growth of both producers and households; 16. Stimulation of import substitution of final products: creation of new production facilities, pursuing the production of products in demand on the domestic market; 17. Strengthening integration ties within the EAEU, in particular, the development of the institution of legal support for the participation of subnational level in economic integration and the development of interregional and cross-border relations of the EAEU member states; the development of a supranational institute for regulating interregional and cross-border relations of the EAEU member states, as well as a mechanism for institutionalizing economic integration at the subnational level, which should ensure the implementation of the principle of multilevel management. 18. Formation and formation of digital culture as a combination of high intensity of information flow, rational organization of data arrays (Big Data), corporate and personal digital culture.	

Source: the authors' self-development

Table 3. **PEST-analysis of industrial clusters of the Republic of Belarus**

Political factors	**Economic factors**
1. High level of state support for industrial enterprises (application of tax incentives, customs preferences, direct state financing, inclusion in public procurement programs); 2. The creation of a Single Economic Space leads to lower costs in trade between its member countries and the emergence of new opportunities for cooperation; also, a single customs tariff creates barriers for foreign suppliers of machine-building products, increasing the demand for import-substituting products of enterprises of the bank's member states; 3. After Russia's accession to the WTO, measures are continuing to jointly create regulations for the scientific and technical activities of manufacturers of industrial products of the Union State and the CES; 4. Increased competition among manufacturers in the Russian market of both Russian origin and foreign productions; 5. Globalization of the global industrial market in the form of large manufacturing giants with a full production base (chain) and huge sales opportunities; 6. Strengthening of intercultural conflicts in the Middle East; 7. Advantageous geographical location and availability of transit potential.	1.The obvious advantage is enjoyed by manufacturers who combine high quality of production at an optimal price; 2. Strong dependence on the macroeconomic situation in the Republic of Belarus and the Russian Federation as the largest consumer of Belarusian engineering products; 3. The emphasis on the use of preferential state financing of large industrial enterprises led to problems with the renewal of production assets of medium-sized and small enterprises of the machine-building complex, which were inaccessible to investment resources of both the public and private sectors; 4. Sharp fluctuations in the exchange rate of the national currency; 5. Chronic negative foreign trade balance and current account deficit; 6. Wages are set by the government regardless of the profitability of organizations and their economic results.; 7. Global economic crisis; 8.Strong emphasis on the production of high-quality import-substituting products and ignoring the fact of future significant costs for product promotion and efforts to "win" the customer; 9. The decline in economic growth in Russia, tougher competition (due to Russia's accession to the World Trade Organization); 10. Limited access to financial resources and low level of financial intermediation; 11. Increase in the cost of credit resources;
Social factors	**Technological factors**
1. The global consumer has become more demanding, which forces manufacturers to produce diversified products; 2.Special requirements are imposed by consumers on reliability and resource; 3. The loss of the target audience of engineering products of the middle and lower-middle price segment (the development of solvent demand and the transition of the main consumers to a more expensive price segment).	1. Limited own material and raw material base; 2. High prices for fuel and energy resources (TER); 3. Due to the orientation of domestic products mainly to the Russian market, the prospects for the development of Belarusian industrial enterprises in the medium term will be determined by the level of competitiveness in comparison with similar Russian enterprises; 4. The depreciation policy of the Republic of Belarus has mainly a tactical orientation, i.e. it is aimed at fulfilling the current tasks of those who ensure survival in crisis conditions or solve the tasks of preserving the business as a whole (solving the problems of permanent shortage of working capital and reducing the cost of production). Therefore, the depreciation policy is not progressive, because its strategic purpose,

	aimed at solving long-term tasks of an innovative orientation, associated with timely technical re-equipment of production and the creation of competitive products, is practically not being developed and is not being developed. As a result, such tactics doom mechanical engineering to technological dependence on foreign suppliers of production equipment and technologies; 5. The industrial complex needs constant innovative development for successful functioning; 6. The development and formation of «competence centers» as a set of knowledge, skills and experience accumulated in the region, as well as the material and technical base for their acquisition and implementation, are determined by the established specialization of research, educational and industrial spheres;

Source: the authors' self-development based on Alexandrovich, Ya.M. (2010) Conceptual foundations of the strategy of sustainable socio-economic development of the Republic of Belarus; Bogdan, N.I. Innovative development of Belarus and policy objectives https://elib.psu.by/bitstream/123456789/20104/1/Богдан_с7-10.pdf; Danilchenko, A.V. (2019) Economics of knowledge in the context of post-industrial development of the Republic of Belarus.

Discussion and conclusions. Thus, clusters are complex integrative structures, the formation of which is influenced by factors of both the external and internal environment. Currently, taking into account the post-industrial trends in the socio-economic development of society, classical factors (natural resources, capital, labor) cease to play an important role in the development of the competitiveness of regions, their subjects of industrial cooperation. To a greater extent, the territorial potential is revealed by the level of formation of such components as: economic infrastructure, qualifications of the population, information and management technologies.

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IMPLEMENTATION OF STRATEGIC PLANNING METHODS FOR THE DEVELOPMENT OF THE INDUSTRY

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Summary

The article considers the roadmap method as one of the most effective tools for the implementation of strategic planning in the field of innovative development of sectors of the national economy. Today certainly, the transport sector occupies a special place in the rapid and comprehensive development of the country's economy. This sector covers activities in the field of production, distribution, and consumption of goods (services) and plays an undeniable role in all areas of economic activity.

The expansion of economic ties between the countries of the world and the acceleration of integration processes have confirmed that the transport system is one of the main pillars of the national economy of each country. Specifying the socio-economic nature of transport services, researchers have long proved that this system is an important condition for large-scale reproduction. In this regard, in the current conditions of large-scale radical reforms in the economy, it is very important to formulate and implement a policy that takes into account the specifics of transport, and its role in economic and social processes. Therefore, for the sustainable development of the transport system, large-scale capital investments, the construction, and reconstruction of a large number of large transport hubs are required. The author presents the scheme and stages of development of an industry roadmap for air transport in Azerbaijan.

The study also carried out a STEEP analysis of the main factors of development, problems, and trends in the field of air transport and proposed a diagram of the relationship between them.

Keywords: *economic efficiency, strategic planning, road maps, air transport, STEEP analysis.*

JEL: *O1, O21, R42*

UDC: *338.47(479.24)*

Introduction. At present, the problem of developing and applying new approaches to foreseeing the future in terms of the severity of the uncertainty of forecasts is very relevant (Harrison, 2007). Management practice gives many examples when strategies are not adapted to the changing conditions of the external and internal environment, which does not give the desired results. Strategic management requires well-planned and carefully considered decisions.

We also observe the fact that existing methods and tools, accumulated information and knowledge are not always used in the sectors of the economy to analyze and take into account the uncertainty, complexity and speed of ongoing changes. The current stage of the formation of an economic model in Azerbaijan is characterized by the desire to create an effective competitive economic system, taking into account progressive trends and directions in the global world economy.

Literature review. To formulate a solution and implement the strategic objectives of economic development for 2017-2025, the government chose the method of road mapping. The road maps for the national economy and the main sectors of the economy, developed by the decree of the President of Azerbaijan I. Aliyev, are designed to ensure the concentration of material, labor and information resources to ensure the sustainability and progressive development of various sectors of the economy, increase their competitiveness and innovation activity (President of the Republic of Azerbaijan, 2016).

Research methodology. One of the main directions of the country's development concept is the accelerated development of transport infrastructure, which will ensure the growth of business and employment, as well as the improvement of the transportation management mechanism. Azerbaijan's civil aviation and its integration into the global air transport system play a special role in the emerging market infrastructure.

The most important strategic objective of the industry is to implement a safe, environmentally sustainable mode of transport in order to provide the economy and society with high-quality air travel. Given the importance of this type of transport for the development of the national economy, in providing employment, developing such areas as tourism and international trade, it seems appropriate to apply road maps in the management of this area.

Of all the features of roadmaps (Pavlov, 2016), we would like to emphasize, in our opinion, the most important ones, those that clearly distinguish them from the traditional constructions of strategic plans:

- the measures provided by the roadmap link together the business strategy, market data and technological innovations;
- the roadmap allows, at the stage of intermediate results, to make adjustments to the process of implementing the map using risk management and alternative scenarios.

Roadmaps are among the Foresight mixed methods tools, i.e. combine the signs of both quantitative and qualitative methods for predicting the prospects for scientific, technical and socio-economic development. In world practice, the road mapping method is known as one of the most effective methods for planning and managing the activities of economic sectors and large economic structures.

Main results. As you know, stimulating such an industry as air transport requires significant investment. At the industry level, the use of the roadmap makes it possible to focus investments on key technologies and products, link government measures for the development of the industry in time, and accelerate

strategic processes at all levels of the industry. In addition, strategic and tactical tasks and actions are linked to each other in the cards, alternative measures are provided in case. Also, a necessary element of the roadmap is risk assessment and the development of alternative development paths.

In the process of developing roadmaps in the analysis of the current state of the industry and the main trends in its development, traditional tools are used, such as SWOT analysis, the Delphi method, brainstorming, building alternative scenarios, etc.

The result of our study is the definition of the stages of development of the roadmap for the development of air transport in Azerbaijan and their content (see Figure 1).

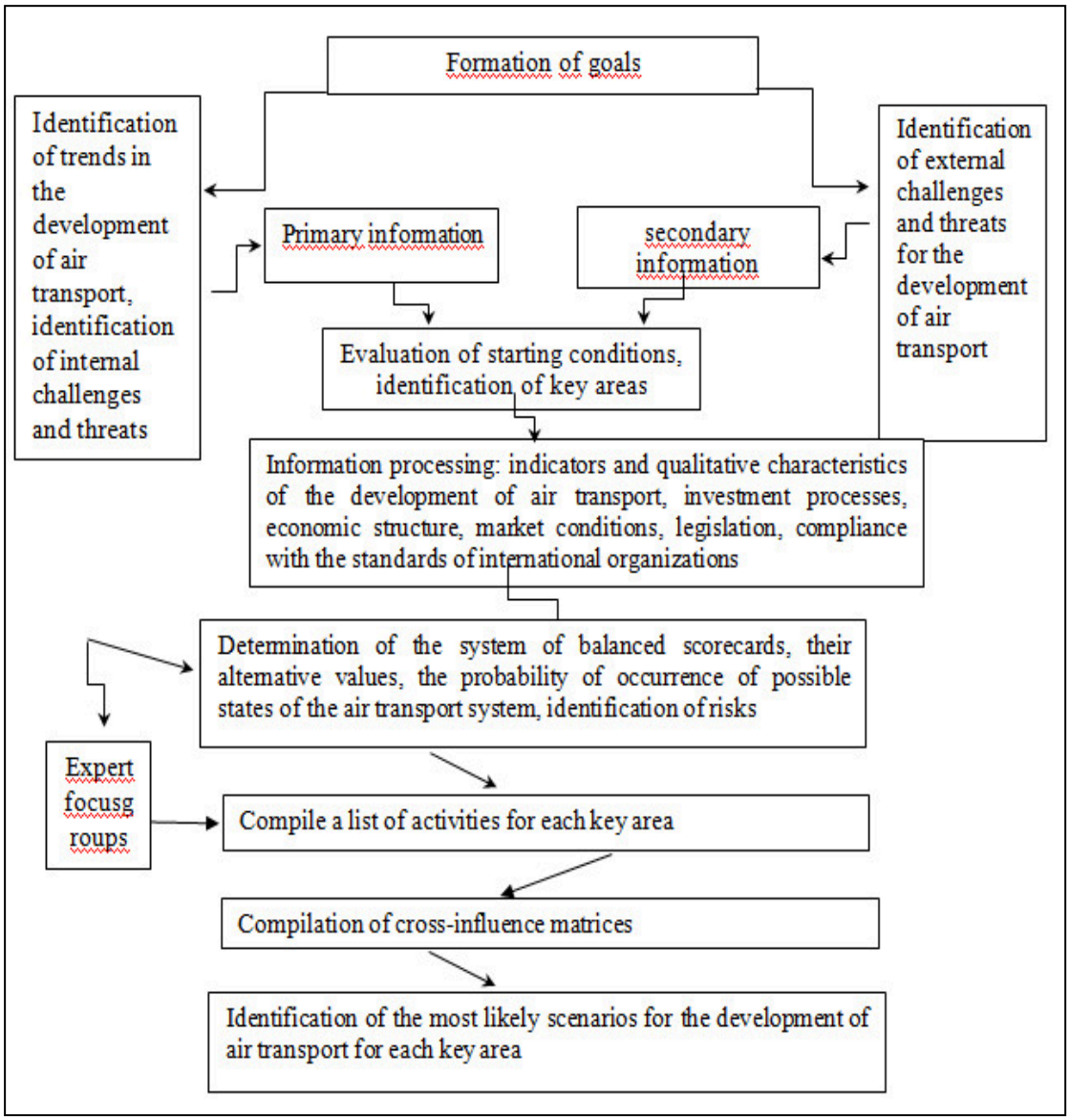

Figure 1. **Stages of the roadmap development process for air transport**
Source: made by the authors

At the first stage, it is necessary to identify key areas, the so-called “nodes” of the map, where we expect the main results, having previously determined the industry development trends, external challenges and threats, etc.

The result of the second stage is the definition of a balanced scorecard (in the areas of prospects for internal business processes, finance, the relationship of the system with consumers and areas of training and development of labor resources). Risks are also determined here and the probability of deviations of the system from the predicted states is calculated.

At the third stage, a list of specific activities and alternative scenarios are compiled for the key areas of the plan. Of particular interest is the cross-influence matrix. In the ongoing study, a method based on STEEP analysis (Pavlov, 2016) was used to construct this matrix.

Table 1. shows the trends and conjuncture-forming factors in the sphere of air transportation.

Table 1. **Factors of the external and internal environment of the air transport sector**

s Society	t Technology	e Economy	eco environmental protection	p Politics
s_1-training of personnel certified in accordance with international requirements s_2-changing consumer preferences	t_1-renewal of the aircraft fleet and aircraft equipment t_2-infrastructure renewal (airports, air navigation, etc.) t_3-ensuring flight safety and aviation security t_4-obtaining ICAO certificates for all types of activities	e1-growth of costs e2 - increased competition in the industry e3-joining global aviation alliances	eco1-compliance with standards related to environmental requirements for aircraft	p1 - limited participation of private capital in industry development p2 deregulation p3 - providing market access for new airlines

Source: made by the authors

The factors influencing the sustainable development of air transport identified by the results of the STEEP analysis were studied by an expert group in order to identify mutual cross-links between them.

The results are shown in Figure 2.

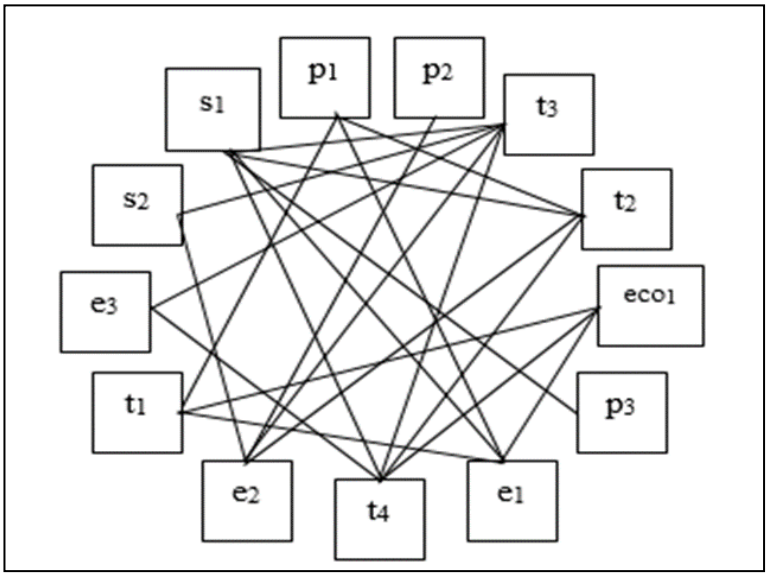

Figure 2. **Relationship between trends and factors influencing the development of air transport**

Source: made by the authors

Discussion and conclusions. The formation and implementation of road maps requires an analysis of the state of the object based on a large amount of information, the use of various forecasting methods and significant amounts of labor and financial resources.

The results of the STEEP analysis are used in the process of developing the roadmap and its plans and activities, by formulating the key factors influencing the increase in the competitiveness of the industry (Szigeti, Messaadia & Majumdar, 2011). They also provide an opportunity to interconnect factors and trends in the external environment, which should be taken into account in the future.

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CURRENT STATE OF COOPERATION BETWEEN REPUBLIC OF MOLDOVA AND REPUBLIC OF BULGARIA AND OPPORTUNITIES FOR ITS EXPANSION

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Summary

The Republic of Bulgaria recognizes the independence of the Republic of Moldova on December 28, 1991. On February 5, 1992, diplomatic relations are established between both countries. Soon after, the economic and cultural cooperation between them begins. With the signing of the Association Agreement between the European Union and the Republic of Moldova in 2014, cooperation between the two countries is expanding.

This report's main object is to present the current state of cooperation between both countries and give guidelines for its expansion. Quantitative methods are used to collect secondary information (statistical data, normative and strategic documents from national and international institutions and organizations, scientific and media publications, reports and presentations, etc.). Qualitative, analytical, comparative, synthetic, inductive, deductive, etc. methods are used for data processing and analysis. The results of the study are presented in text and tables. After analyzing the results, conclusions are made about the current state of cooperation between Moldova and Bulgaria. Recommendations are given on the possibilities for expanding and improving cooperation between the two countries.

Key-words: *economy, trade, international commerce, international economic relations, bilateral cooperation, Moldova, Bulgaria.*

JEL: *F15, F20, F50*

UDC: *339.9(478:497.2)*

Introduction. The Republic of Bulgaria recognizes the independence of the Republic of Moldova on December 28, 1991. On February 5, 1992, diplomatic relations are established between the two countries. Soon after, the economic and cultural cooperation between them begins. The Bulgarian state has its Embassy in Chisinau and Consulate in Taraclia. An embassy of the Republic of Moldova operates in Sofia and there is a separate honorary consulate with headquarters in the city of Plovdiv, with a consular district covering the territory of the regions of Plovdiv, Stara Zagora and Haskovo.

The following bilateral visits and meetings have taken place in recent years:

- November 15-16, 2016 – official visit to the Republic of Moldova by the President of the Republic of Bulgaria Rosen Plevneliev. Within the framework of the visit, the president also visited the Taraclia region;

- October 4 - 6, 2017 - working visit to the Republic of Moldova by the Vice President of the Republic of Bulgaria Iliana Yotova;

- October 30 – 31, 2017 – working visit to the Republic of Moldova of the Deputy Prime Minister for Justice Reform and Minister of Foreign Affairs of the Republic of Bulgaria Ekaterina Zaharieva to participate in the official opening ceremony of the Bulgarian consulate in the city of Taraclia;

- April 4 - 5, 2018 - working visit to the Republic of Bulgaria of the Deputy Prime Minister for European Integration of the Republic of Moldova Iurie Leancă.

The contractual legal framework between republics of Bulgaria and Moldova covers sixteen bilateral documents, as well as the Association Agreement between the EU and the Republic of Moldova.

Literature review. On June 27, 2014, an **Association Agreement** is signed between the European Union and the Republic of Moldova, within which a commercial part, the so-called deep and comprehensive free trade area, is included. The Republic of Bulgaria ratifies this Agreement on July 24, 2014. The agreement establishes a Deep and Comprehensive Free Trade Area (DCFTA) between the EU and Moldova, including elimination of import duties on most goods traded between the EU and Moldova and broad mutual access to trade in services for both partners. The parties commit to cooperate and converge economic policy, legislation and regulation in a wide range of areas, including equal rights for workers, exchange of information and personnel in the field of justice, modernization of Moldova's energy infrastructure and access to the European Investment Bank. The parties committ to regular summits, and meetings between ministers, other officials and experts. The agreement commits Moldova to economic, judicial and financial reforms to bring its policies and legislation closer to those of the European Union.

The Agreement for Economic Cooperation between the Government of the Republic of Bulgaria and the Government of the Republic of Moldova in force since April 23, 2007 guarantees that the contracting parties shall assist in the development of extensive bilateral economic cooperation, guided by the principles of equality and mutual benefit and in accordance with their legislation in the following areas: industry (mechanical engineering, metallurgy, processing industry, electronics and electrical engineering, chemical and oil refining industry, pharmaceutical and cosmetic production, light industry, other industries and sectors of industry representing mutual interest), agriculture (plant breeding and animal breeding, food industry), forestry, energy, research and development activity, construction and construction industry, telecommunications, computing, informatics, transport and logistics, environmental protection, standardization, metrology and conformity assessment, tourism, investment assistance, science and technology.

The Agreement between the Republic of Bulgaria and the Republic of Moldova for the avoidance of double taxation on income and property in force since March 24, 1999 guarantees avoidance of double taxation on: income from real estate, income from real estate transfer, profit from business activity, international transportation, dividends, interests, copyrights and royalties, income from

independent professional and other personal services, income from an employment relationship, incomes of directors, athletes and artists, incomes of pensioners, civil servants, students, teachers, professors and others.

The Agreement between the Government of the Republic of Bulgaria and the Government of the Republic of Moldova on cooperation in the field of tourism in force since July 3, 2001 contributes to the development and strengthening of cooperation in the field of tourism and to the increase of tourist exchange between both countries. The contracting parties encourage and facilitate the development of tourism in various forms adopted by international practice - organized group and individual tourism, youth tourism, balneo-climatic and medical tourism, tourism with scientific purposes, educational tourism, business tourism, tourist trips to participate in exhibitions, fairs, cultural and sports events, etc. Both countries cooperate in creating the necessary conditions favourable to the conclusion and implementation of cooperation contracts between tourist companies and organizations, paying particular attention to the issues related to the design and construction of new tourist sites, as well as the modernization of existing ones, the creation of a modern hotel infrastructure, diversification of tourist and transport services. Cooperation within the framework of this contract is carried out through: creation of mixed companies with a subject of activity in the field of tourism, development of cooperation between business organizations in the field of tourism, exchange of specialists, groups and delegations of experts in the field of tourism, organization of bilateral exhibitions, congresses, conferences, symposia, press conferences, round tables, seminars, implementation of joint music and art programs, provision of consulting services in the field of hospitality and catering, training of tourist personnel, etc. Bulgaria and Moldova cooperate in the preparation and improvement of personnel in the field of tourism, and for this purpose mutually provide opportunities for specialization and improvement of management personnel and specialists from the state authorities in the field of tourism, from tourist companies and organizations, as well as those working in hotels, restaurants and other categories of specialists providing tourist services. The contracting parties, with a view to increasing the tourist flow, cooperate in opening informational and touristic representative offices in Bulgaria and Moldova, respectively. Each of both parties, in accordance with the legislation in force on the territory of its country, assists in simplifying the formalities of border control for tourists from the other country. The contracting parties cooperate in stimulating the exchange of experience and information on issues related to construction activities of tourist sites, scientific research work in the field of tourism, privatization of tourist sites and participation in it, participation in international tourist governmental and non-governmental organizations and in other areas, related to the development of tourism. The contracting parties form a interdepartmental working group which: examines the issues of implementation of this contract, proposes solutions designed to contribute to the expansion of tourist exchange, indicates additional opportunities for the expansion of cooperation in the field of tourism, studies the problems that would arise in the process of implementing this contract, and develops corresponding recommendations to eliminate the difficulties that have arisen in the tourist activity. The joint interdepartmental working group holds its meetings once a year - alternatively in each of the countries of the contracting parties.

The contractual legal framework between republics of Bulgaria and Moldova covers also the following important documents:

- Agreement between the Government of the Republic of Bulgaria and the Government of the Republic of Moldova on promotion and mutual protection of investments - in force since June 11, 1997;
- Agreement between the Government of the Republic of Bulgaria and the Government of the Republic of Moldova on mutual travel of citizens - in force since December, 2000
- Agreement between the Government of the Republic of Bulgaria and the Government of the Republic of Moldova for international carriage of passengers and goods by road;
- Agreement between the Government of the Republic of Bulgaria and the Government of the Republic of Moldova on cooperation in the field of air communications;
- Agreement between the Government of the Republic of Bulgaria and the Government of the Republic of Moldova on the principles of cooperation in the field of railway transport – in force since October 29, 1999;
- Veterinary-sanitary convention between the Government of the Republic of Bulgaria and the Government of the Republic of Moldova;
- Agreement between the relevant ministries of the Republic of Bulgaria and the Republic of Moldova on cooperation in the field of agriculture and food industry;
- Agreement on cooperation between the Commission for the Protection of Competition of the Republic of Bulgaria and the Ministry of Economy and Reforms of the Republic of Moldova;
- Protocol on cooperation between the Chambers of Commerce and Industry of Republics of Bulgaria and Moldova;
- Agreement between the Government of the Republic of Bulgaria and the Government of the Republic of Moldova on mutual administrative assistance in the customs area – in force since June 24, 2003;
- Agreement between the Government of the Republic of Bulgaria and the Government of the Republic of Moldova on the regulation of labour migration in force since September 11, 2018;
- Agreement between the Government of the Republic of Bulgaria and the Government of the Republic of Moldova on cooperation in the field of standardization, metrology and certification – in force since September 18, 2001;
- Agreement between the Government of the Republic of Bulgaria and the Government of the Republic of Moldova on disaster cooperation - in force since September 24, 2012.

Bulgaria and Moldova participate together in the **Organization of the Black Sea Economic Cooperation**. Its main goal is to promote economic prosperity and friendly and good-neighbourly relations between the member countries - Albania, Armenia, Azerbaijan, Bulgaria, Georgia, Greece, Moldova, the Republic of North Macedonia, Romania, Russia, Serbia, Turkey and Ukraine. The organization also has

a number of specialized bodies, such as the Parliamentary Assembly, the Black Sea Bank for Trade and Development, the International Centre for Black Sea Studies and the Business Council. Among the main areas of cooperation within the organization are banking and finance, combating organized crime, culture, customs affairs, education, energy, environmental protection, exchange of statistics and economic information, health and pharmaceuticals, information and communication technologies, institutional renewal and good governance, science and technology, small and medium enterprises, tourism, trade and economic development, etc.

Bulgaria and eight other countries along the Danube will develop joint projects with Ukraine and Moldova. For the first time, the countries will have access to more than 6 million Euro from the European Neighbourhood Instrument of the Transnational Cooperation Programme **Danube 2014-2020**. In Bulgaria, it is coordinated by the Ministry of Regional Development and Public Works. A budget of 1.4 million Euro is planned for the EU member states that are within the scope of the Danube Programme. Funds in the amount of 2.48 million Euro have been earmarked for Ukraine from the European Neighbourhood Instrument, and 2.33 million Euro for Moldova. Each project can be financed with up to 230,000 Euro, with the condition that the projects are completed by June 30, 2023. The leading partner in the joint projects must be a country from the territorial scope of the Danube Programme: Austria, Bulgaria, Croatia, Czech Republic, Hungary, Germany (federal states of Bavaria and Baden-Württemberg), Romania, Slovakia and Slovenia. The purpose of the European Instrument is to strengthen the cooperation of the countries along the Danube and to encourage Ukrainian and Moldovan institutions to develop transnational projects that are supported by the Danube Programme 2021-2027.

Research methodology. Quantitative methods are used to collect secondary information (statistical data, normative and strategic documents from national and international institutions and organizations, scientific and media publications, reports and presentations, etc.). Qualitative, analytical, comparative, synthetic, inductive, deductive, etc. methods are used for data processing and analysis. The results of the study are presented in text and tables. After analyzing the results, conclusions are made about the current state of cooperation between Moldova and Bulgaria. Recommendations are given on the possibilities for expanding and improving cooperation between the two countries.

Main results. In 2021, bilateral trade between Bulgaria and Moldova reaches USD 152.4 million, which is 28.6% more than the previous year. Bulgarian exports to Moldova for the period amounts to USD 80.7 million, having increased by 15.4%, and imports from Moldova to Bulgaria reached USD 71.7 million, maintaining the volume, having increased by 47.8% compared to the previous year. In 2020, in the conditions of the COVID-19 pandemic, trade with Moldova decreased by 9.4%, compared to the previous year. Despite the negative trend, Bulgarian exports increased by 11.3%. Imports from Moldova decreased by 28.2%, compared to the previous year.

Table 1. **Trade (in millions of USD)**

Period	Trade	Bulgaria to Moldova	Moldova to Bulgaria
2011	96.1	75.3	20.8
2012	117.6	89.6	28.0
2013	126.3	93.0	33.3
2014	143.7	102.9	40.8
2015	85.2	55.9	29.3
2016	132.2	59.3	72.9
2017	161.4	80.4	81.1
2018	128.3	67.9	60.4
2019	132.5	63.3	69.2
2020	120.2	70.5	49.7
2021	152.4	80.7	71.7

Source: Ministry of Economy and Industry of the Republic of Bulgaria

Leading goods in Bulgarian exports to Moldova in 2021, as well as in the previous year, are petroleum oils, medicines and plastic monofilaments. The export of petroleum oils increases by 56% compared to the previous year, and the export of medicines is 27.9% less than in 2020. When importing to Bulgaria from Moldova in 2021, the leading goods are sunflower seeds, wires, cables and other insulated wires and wire rod. The import of sunflower seeds increases by 77%, compared to the previous year, and of cables and wire rod - by 42.5% and 11.5%, respectively.

Table 2. **Leading goods in Bulgarian exports to Moldova in 2021**

Goods	Relative share in %
Petroleum oils and oils from bituminous minerals, other than crude	31.1
Medications	5.5
Plastic monofilaments, rings, rods and profiles	3.5
Float glass and ground or polished glass	3.3
Tiles, slabs or mosaics for paving or facing, of ceramic, not varnished or enamelled	2.8

Source: Ministry of Economy and Industry of the Republic of Bulgaria

Table 3. **Leading goods in Bulgarian imports from Moldova in 2021**

Goods	Relative share in %
Sunflower seeds	37.1
Wires, cables and other insulated electrical conductors, fiber optic cables	14.2
Wire rod (rolled wire) of iron or non-alloy steels	9.3
Rapeseed or canola seeds	9.1
Cane or beet sugar and chemically pure sucrose, in solid form	5.2

Source: Ministry of Economy and Industry of the Republic of Bulgaria

According to data from Bulgarian National Bank, at the end of 2021, the flow of Moldovan investments in Bulgaria amounted to 0.2 million Euro, and the total value of direct Moldovan investments at the end of 2020 is 13.4 million Euro. For the period 1996-2015, the Republic of Moldova invested 8.7 million Euro in our Bulgaria. Of the total amount of investments from Moldova, the largest amount is those in the field of finance.

Table 4. **Direct investments from Moldova in Bulgaria (million Euro)**

Period	Stream (net transactions)	Amount (balance at the end of the reporting period)
2014	0.3	5.6
2015	1.2	8.5
2016	0.4	9.1
2017	1.1	11.2
2018	1.0	13.1
2019	0.7	14.2
2020	-0.9	13.4
2021	0.2	n/a

Source: Ministry of Economy and Industry of the Republic of Bulgaria

In recent years, the number of Moldovan tourists visiting Bulgaria is gradually increasing. In 2021, Moldova ranks 12th in terms of the number of tourists who visited Bulgaria. There are 84,291 tourist visits by Moldovan citizens to Bulgaria, which is 137.6% more than those made in the transition year, the most affected by travel restrictions related to COVID-19.

Table 5. **Citizens of Moldova visited Bulgaria for the purpose of tourism**

Period	Citizens of Moldova visiting Bulgaria for the purpose of tourism
2011	55669
2012	74110
2013	71784
2014	126999
2015	149357
2016	179034
2017	208594
2018	232103
2019	256754
2020	35482
2021	84291

Source: Ministry of Economy and Industry of the Republic of Bulgaria

With its affiliation to the European Union, Bulgaria makes important commitments to participate in the Common Foreign Policy of the Union, including the development policy, which importance for security is growing more and more. Consolidating the EU leading role as the world's largest donor in international development cooperation remains one of the most important priorities in the EU

Foreign Policy Strategy. Bulgarian development assistance successfully complements our participation in the EU common external action instruments for assisting neighboring countries and regions, developing countries and providing humanitarian aid. In the period 2020-2024, Bulgarian development aid will be directed to countries from the following geographical priority regions: Western Balkans (Albania, Bosnia and Herzegovina, Kosovo, Republic of North Macedonia, Serbia and Montenegro), Eastern Partnership (Armenia, Azerbaijan, Belarus, Georgia, Republic of Moldova and Ukraine), Middle East and North Africa (Iraq, Yemen, Jordan, Lebanon, Morocco, Palestine, Syria and Tunisia), Sub-Saharan Africa (Angola, Ethiopia, Namibia and Nigeria), Asia (Afghanistan, Vietnam and Mongolia). Sector priorities for the Eastern Partnership (including Moldova) are good governance and civil society, quality education, healthcare, economic sector and services, production sector. Some of the most important projects realized by Bulgaria within the last 5 years are as follows:

- Youth Leadership for the Development and Implementation of the Sustainable Development Goals – geographic coverage: Albania, Bosnia and Herzegovina, Kosovo, Macedonia, Serbia, Armenia, Georgia, Moldova and Ukraine, Iraq and Afghanistan; main objectives: to facilitate the exchange of experience in promoting democracy, protecting human rights and supporting civil society in the development of evidence-based youth policies and programs, by building capacity and empowering young people from partner countries in the Western Balkans, the Black Sea region and countries characterized by internal instability and sources of migration flows; to contribute to building the administrative capacity for improving the health and education of young people and for achieving the Sustainable Development Goals and the 2030 Development Agenda in the Western Balkans, the Black Sea region and countries characterized by internal instability and are sources of migration flows; to promote the Bulgarian Development Aid during the Presidency of Bulgaria of the European Union. Total budget: 96,500 Euro, paid by Bulgaria: 81,142 Euro.
- Bulgarian development aid: support for a better future – Taraclia – project *Clean water* project, providing for the construction of eight facilities for water purification in eight settlements and repair of the roof of the dormitory of the university Grigoriy Tsamblak in the town of Taraclia. The financing of the projects is 275,000 Euro. Village of Corten – new kitchen unit for the kinder garden. Village of Stoyanovka - new heating system is built in the high school (50,100 Euro).
- Building institutional capacity of a structure dealing with training and public activity at the Ministry of Foreign Affairs and European Integration of the Republic of Moldova - building administrative, managerial, expert, technical and informational capacity of a structure dealing with educational and public activity at the Ministry of Foreign Affairs and European Integration of the Republic of Moldova through exchange of expertise, training of trainers, co-organization of public events, provision of a material and technical base and information-analytical resources, which will support the Republic of Moldova on its way to the realization of such a structure, the potential for

improvement and development of which will help it take its established place in the partner network of diplomatic schools and institutes in the region, following modern European good practices.

- Project *Introduction to the theory and organization of statistical research* - according to EU standards for collection, processing, analysis and publication of statistical information on participants from Ukraine, Armenia, Azerbaijan, Belarus, Georgia and Moldova, organized by the National Statistical Institute of the Republic of Bulgaria. In support of the initiative, funds in the amount of 54,058 Euro are spent in order to increase the qualification of junior specialists in the field of statistics in the respective countries.

Discussion and conclusions. Bulgaria and Moldova maintain very friendly relations. The cooperation between both countries is in the fields of economy, trade, culture, education, security, etc. There is a potential for its deepening in the sectors of tourism, transportation, light industry, agriculture, etc.

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ALTERNATIVE DE FINANȚARE A AFACERII ÎN REPUBLICA MOLDOVA

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Summary

Financing business activities represent one of the pressing issues. In current conditions of digital transformation and difficulties in accessing traditional financing, alternative sources of finance acquire a special importance. At the same time, the knowledge regarding alternative finance market in the Republic of Moldova is yet in its infancy. Therefore, the article aims at exploring modern trends, issues and opportunities of alternative finance in the Republic of Moldova. In order to achieve the objective of the study, a mixed research approach, based on both primary and secondary data, was used: analysis of statistical data, international rankings, comparison, synthesis, deduction. There was determined the impact of different sources of finance on entrepreneurship development. The alternative finance market in the Republic of Moldova was analysed, showing that despite a rise in recent years, alternative sources of financing are still poorly developed.

Keywords: *alternative finance, business, crowdfunding, finance, Fintech, venture capital.*

JEL: *G20, G30, O16, L26*

UDC: *336.648:334.722(478)*

Introducere. Asigurarea activității și dezvoltării afacerii necesită resurse financiare. Totodată, accesul la finanțare rămâne a fi una din constrângerile principale pentru IMM-urile autohtone. Dificultățile fluxului de numerar, lipsa de expertiză financiară și accesul insuficient la finanțare au constituit provocări de lungă durată pentru IMM-uri.

IMM-urile deseori întâmpină bariere în accesul la finanțare externă. Acestea sunt percepute ca fiind cu profil de risc mai ridicat, gradul mai mari de informalitate, mai puține opțiuni colaterale, capacități mai reduse de management financiar (OECD et al., 2015).În condițiile, când întreprinderile se confruntă cu dificultăți în accesarea creditelor de la bănci, instrumentele alternative de finanțare sunt surse valoroase de finanțare externă a activității IMM-urilor. Sursele alternative de finanțare reprezintă rezultatul digitalizării ecosistemului finanțelor antreprenoriale (Bertoni et al. 2021). În același timp, sursele alternative de finanțare sunt încă slab dezvoltate în Republica Moldova. Prin urmare, dificultățile de acces la finanțare reprezintă provocări semnificative pentru IMM-uri, care devin foarte pronunțate din cauza crizei actuale, dovedind relevanța temei de cercetare.

Scopul cercetării constă în explorarea tendințelor, problemelor și oportunităților moderne ale finanțării alternative în Republica Moldova.

Revizuirea literaturii. IMM-urile au mai puține posibilități să acceseze resurse financiare bancare comparativ cu întreprinderile mari. Conform estimărilor Corporației Financiare Internaționale, 65 mil. de firme, sau 40% din întreprinderile formale micro, mici și mijlocii din țările în curs de dezvoltare, au o nevoie de finanțare nesatisfăcută de 5,2 tril. USD în fiecare an, ceea ce este echivalent a 1,4 ori nivelul actual global al creditării întreprinderilor date. Conform datelor SME Finance Forum (SME Finance Forum, 2022), procentul întreprinderilor micro, mici și mijlocii, care sunt constrânse din punct de vedere financiar constituie 30,74% din numărul total al întreprinderilor micro, mici și mijlocii.

Odată cu digitalizarea, au apărut oportunități pentru dezvoltarea serviciilor financiare digitale, care perturbă pieţele financiare tradiționale și oferă noi oportunități de afaceri. Ele sunt în general percepute ca fiind mai rapide, mai eficiente și, de obicei, mai ieftine decât serviciile financiare tradiționale (Sahay et al. 2020). În comparație cu instrumentele financiare tradiționale, Fintech este mai incluzivă, oferind oportunități suplimentare pentru depășirea constrângerilor financiare ale IMM-urilor (Gao 2022). În prezent, sursele alternative de finanțare online sunt încă slab dezvoltate, dar înregistrează o creștere rapidă.

Metodologia cercetării. Cercetarea se bazează pe o abordare mixtă, folosind atât date primare, cât și date secundare. Studiul se bazează pe datele primare colectate prin realizarea chestionarului, care oferă date despre impactul surselor alternative de finanțare asupra dezvoltării antreprenoriatului în Republica Moldova. Chestionarul a fost conceput pentru întreprinderile mici și mijlocii. Numărul total de respondenți a fost de 106 antreprenori din întreprinderi micro, mici și mijlocii din diferite regiuni ale țării. Adițional, au fost utilizate următoarele metode științifice: analiza datelor statistice, clasamentele internaționale, compararea, sinteza și deducția. Pentru efectuarea cercetării au fost utilizate datele din bazele de date ale Biroului Național de Statistică, Băncii Mondiale, Centrului Cambridge pentru Finanțe Alternative, Forumului Economic Mondial și Organizației pentru Cooperare și Dezvoltare Economică.

Principalele rezultate. Sursele principale de finanţare a activităţii investiționale a întreprinderilor reprezintă mijloacele proprii – 59,8% din totalul investiţiilor în active imobilizate în 2020 (BNS, 2022). Totodată, aceste surse nefiind suficiente, întreprinderile apelează la sursele externe de finanțare. Principalii furnizori de finanțe pentru întreprinderi sunt bănci - peste 80% din oferta totală de credit este acoperită cu surse financiare bancare, sursele alternative de finanțare fiind încă slab dezvoltate (figura1).

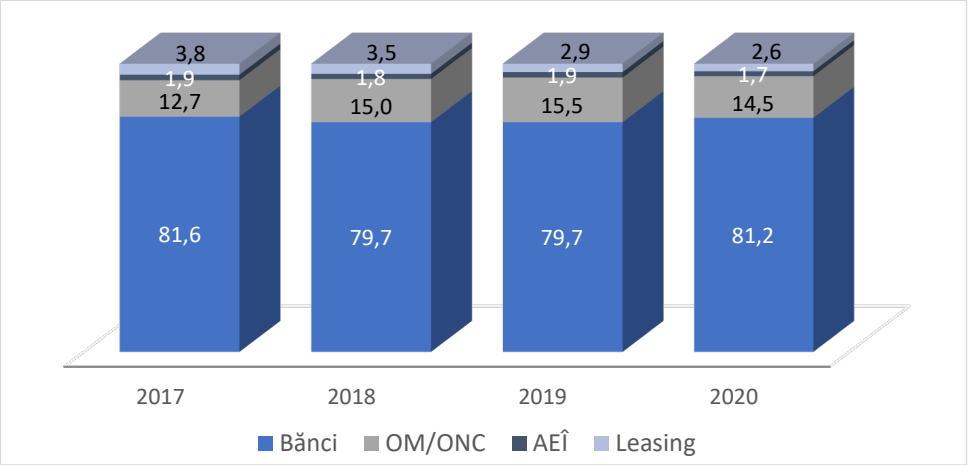

Figura 1. **Structura sectorului de creditare în Republica Moldova în perioada 2017-2020, % (soldul creditelor nediminuate cu provizioanele pentru pierderi la acestea).**

Sursa: elaborat în baza Raportului CNPF (2021)

Până în anul 2021 se atesta o dinamică pozitivă de reducere a ratelor dobânzilor la creditele cu 6,7 p.p. comparativ cu anul 2015 (constituind 7,40% în 2021), acestea devenind mai accesibile pentru întreprinderi. Totodată, odată cu procesele inflaționiste din 2021, rata dobânzilor la credite a fost în creștere, constituind 13,16% în luna august 2022 (BNM, 2022). Inflația, care conform prognozelor va continua să crească, și majorarea ratelor dobânzilor la credite vor avea un efect negativ asupra accesibilității resurselor financiare și capacității întreprinderilor de plată.

Ponderea împrumuturilor în PIB acordate de organizațiile de creditare nebancară (OCN) a fost în creștere de 2 ori de la 2,36% în 2015 la 4,66% în 2020. În structura sectorului de creditare ponderea acestora a constituit 14.5% în 2020, ceea ce reprezintă cu 1 p.p. mai puțin decât în anul precedent. Ponderea împrumuturilor în PIB acordate de asociațiile de economii și împrumut (AEÎ) a constituit 0,46% în 2020, sau cu 0,1 p.p. mai mult față de anul 2015. În total, ponderea stocului de credite acordate de sectorul de creditare nebancară în PIB a înregistrat o valoare de 5,14% în 2021.Organizațiile de creditare nebancară și asociațiile de economii și împrumut se dezvoltă lent ca surse alternative de finanțare pentru IMM-uri, în special în zonele rurale, primordial din cauza cerințelor ridicate de garanții bancare. În același timp, trebuie de menționat, că 80,6 % din împrumuturi OCN sunt acordate persoanelor fizice și doar 19,4% revin persoanelor juridice în 2021, ceea ce este de 1,6 ori mai puțin decât în 2015 (30,7%). Alte surse de finanțare precum leasingul, business angels, crowdfunding, capital de risc (venture) sunt încă slab dezvoltate.

Gradul de acces la finanțare a întreprinderilor în Republica Moldova se oglindește prin pilonul *Sistemul financiar* în clasamentul internațional *Global Competitiveness Report* (Schwab, 2019). Este de remarcat că în 2021, Banca Mondială a decis să înceteze publicarea Raportului, totodată, în cadrul acestui studiu, datele din Raport au fost utilizate dat fiind relevanța acestora. Astfel, conform raportului din anii 2015/'16 – 2019, la pilonul *Sistemul financiar* Republica Moldova a coborât în clasament cu 9 poziții, ocupând locul 124 în 2019. Cu toate că țara a urcat

în clasament cu 4 poziții în comparație cu anul precedent, situația nu s-a schimbat esențial, Republica Moldova fiind plasată pe ultimele locuri în clasament. În cadrul clasamentului, indicatorul, care nemijlocit relevă accesibilitatea finanțării IMM-urilor este *Finanțarea IMM-urilor*. În 2019 valoarea acestui indicator a crescut cu 0,3, constituind 3,6, ceea ce totuși reprezintă doar jumătate din valoare maximă, Republica Moldova plasându-se pe locul 93.

Unul din pilonii din clasamentul *SME Policy Index*, elaborat de OCDE, reprezintă *Accesul la finanțare,* care permite evaluarea eforturilor guvernului de a facilita accesul IMM-urilor la resursele financiare. La pilonul dat, Republica Moldova se plasează pe locul 3 din țările Parteneriatului Estic (PaE), cu un scor de 3,61 (din max. 5), depășind ușor media țărilor PaE (3.57) și înregistrând un progres ușor (cu 0,21 mai mult) în comparație cu anul 2016.

Tabelul 1. **Scorul pilonului Accesul IMM-urilor la finanțare în Republica Moldova**

Indicator	Moldova, 2016	Moldova, 2020	Deviere	Media PaE, 2016	Media PaE, 2020	Deviere
Acces la finanțare	**3.40**	**3.61**	**0.21**	**3.28**	**3.57**	**0.29**
Cadrul legal și de reglementare	***3.73***	***4.10***	***0.37***	***3.72***	***3.99***	***0.27***
Drepturile creditorului	4.52	5.00	0.48	3.84	4.11	0.27
Registru (de garanții asupra bunurilor mobile)	4.60	4.47	-0.13	3.89	4.31	0.42
Biroul de credit	3.78	3.88	0.1	4.27	4.40	0.13
Reglementări bancare	2.00	4.00	2	3.08	3.67	0.59
Bursa de valori	2.53	2.43	-0.1	2.91	2.83	-0.08
Finanțare bancară	***2.67***	***2.79***	***0.12***	***2.48***	***2.69***	***0.21***
Statistica	2.70	2.70	0	2.92	2.92	0
Scheme de garantare a creditului	2.63	2.92	0.29	1.83	2.35	0.52
Finanțare non-bancară	***3.52***	***3.79***	***0.27***	***3.31***	***3.55***	***0.24***
Instituții de microfinanțare	4.33	5.00	0.67	3.94	4.22	0.28
Asociații de economii și împrumut	5.00	-	-	3.67	-	-
Leasing	2.42	1.00	-1.42	2.78	1.00	-1.78
Factoring	2.33	3.67	1.34	2.83	3.74	0.91
Capital de risc	***1.50***	***1.53***	***0.03***	***1.74***	***2.26***	***0.52***
Cadrul legal	1.33	1.22	-0.11	2.06	2.11	0.05
Proiectarea și implementarea activităților guvernamentale	1.86	2.00	0.14	1.82	2.83	1.01
Monitorizare si evaluare	1.00	1.00	0	1.00	1.22	0.22
Alfabetizarea financiară	***3.97***	***2.67***	***-1.3***	***2.74***	***3.46***	***0.72***
Planificare, proiectare și implementare	4.05	3.09	-0.96	2.72	3.79	1.07
Monitorizare si evaluare	3.67	1.00	-2.67	2.78	2.11	-0.67

Sursa: elaborat în baza (OECD et al., 2015; OECD et al., 2020)

Scoruri mai bune Republica Moldova a obținut la sub-dimensiunile: Cadrul legal și de reglementare (4,1) și Finanțare non-bancară (3,79), depășind media țărilor

PaE cu 0,11 și 0,24 respectiv. Republica Moldova dispune de un cadrul legal și de reglementare dezvoltat.

Adoptarea Legii nr. 1 cu privire la organizațiile de creditare nebancară din 16.03.2018 a constituit un pas important în diversificarea surselor de finanțare, inclusiv consolidarea reglementărilor în domeniul leasingului, dar utilizarea surselor alternative este încă limitată. După cum a fost prezentat anterior, ponderea leasingului în structura sectorului creditar din Republica Moldova a scăzut cu 1,2 p.p. de la 3,8% în 2017 la 2,6% în 2020. În domeniul factoring-ului, există o reglementare corespunzătoare, care ar putea fi îmbunătățită în continuare. În același timp, nu sunt disponibile statistici pentru a evalua penetrarea pe piață a acestui instrument. Cele mai scăzute scoruri țara a obținut la sub-dimensiunile *Capital de risc (*1,53) și *Alfabetizare financiară* (2,67), fiind mai mic cu 0,73 și 0,79 respectiv comparativ cu media țărilor EaP.

Una din sursele de finanțare reprezintă granturile. Majoritatea programelor naționale de stat destinate antreprenorilor sunt gestionate de Organizația pentru dezvoltarea antreprenoriatului. Distribuția geografică a proiectelor investiționale este reprezentată în figura 2.

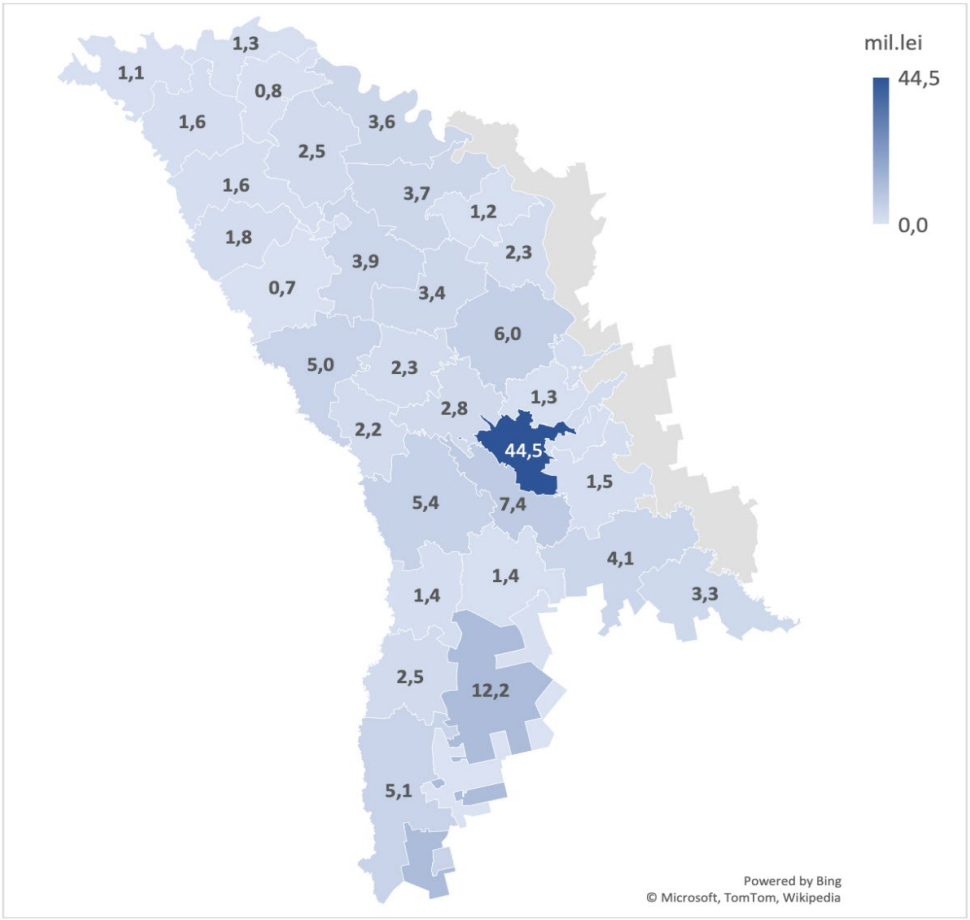

Figura 2. **Distribuția geografică a proiectelor investiționale în Republica Moldova după suma totală a granturilor aprobate, 2020**

Sursa: elaborat de autor în baza Raportului anual al ODIMM (2020)

Beneficiarii programelor sunt din diferite regiuni ale țări, totodată unele localități se atestă a fi mai active: Chișinău – 314 de afaceri (cu o valoare a granturilor de 44,5 mil. lei), ATU Găgăuzia – 63 (12,2 mil. lei), Orhei – 43 (6,0 mil. lei), Ialoveni – 40 (7,4 mil. lei), Hâncești – 34 (5,4 mil. lei), Cahul – 33 (5,1 mil. lei). Mai puțin activi sunt beneficiarii din localitățile: Taraclia – 3 beneficiari (0,3 mil lei), Basarabeasca – 4 (0,9 mil. lei), Dondușeni – 5 (0,8 mil. lei), Fălești – 5 (0,7 mil. lei).

În municipiul Chișinău își desfășoară activitatea circa 34,8% din întreprinderi, care obțin 31% din finanțare (figura 3). Celelalte proiecte investiționale sunt implementate în regiunile țării: Centru – 29,2%, Nord – 16,4% și Sud – 19,5%, inclusiv ATU Găgăuzia – 7,0%.

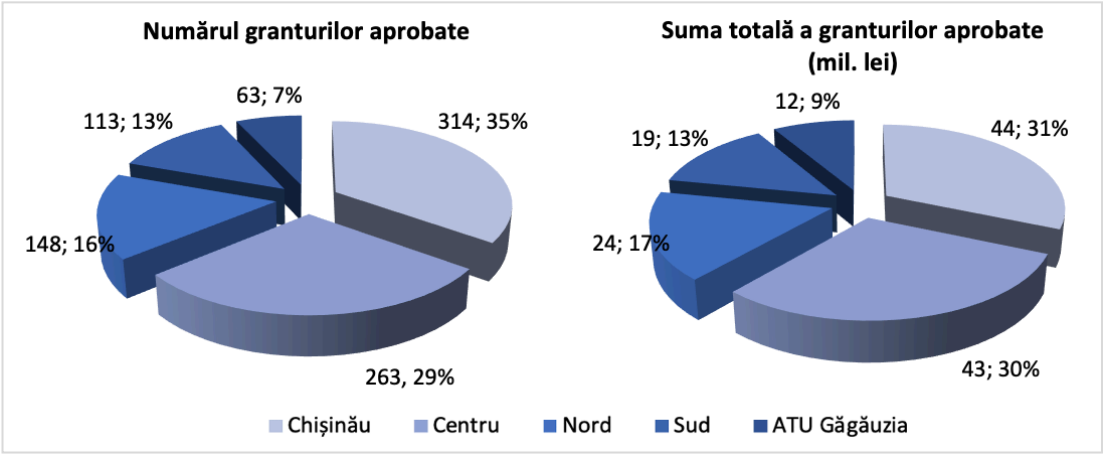

Figura3. **Numărul și valoarea granturilor aprobate de către ODIMM în profil teritorial, 2020**

Sursa: elaborat de autor în baza Raportului anual al ODIMM (2020)

Este de menționat, că o sursă alternativă de finanțare a activității este crowdfundingul (finanțarea participativă). Crowdfundingul reprezintă un instrument financiar nebancar relativ nou. Există diferite tipuri de crowdfunding, în special: peer-to-peer, equity, bazat pe recompense, pe donații, pe partajarea profitului, cu titluri de creanță. Pentru a determina evoluția acestui instrument financiar, au fost analizate datele privind volumele de afaceri ale platformelor de crowdfunding prin sondaje anuale furnizate de Cambridge Center for Alternative Finance (CCAF). Ele reprezintă date pentru această finanțare alternativă sub formă de creditare digitală (împrumut bazat pe bilanț, peer-to-peer, tranzacționare pe cont) și atragerea capitalului digital (crowdfunding).

Crowdfundingul este încă o piață mică, dar este în creștere rapidă. În Republica Moldova piața de crowdfunding a fost în creștere de la valoare de 0,4 mil. USD în 2017 la 178,4 mil. USD în 2019. Dar din cauza incertitudinii de pe piață condiționată de pandemia Covid-19, suma a scăzut dramatic cu 47,9% în 2020, constituind 93,0 mil. USD (Ianioglo, 2022).

Datele comparative privind piața instrumentelor alternative de finanțare online din Republica Moldova și țările de referință sunt reprezentate în figura 4.

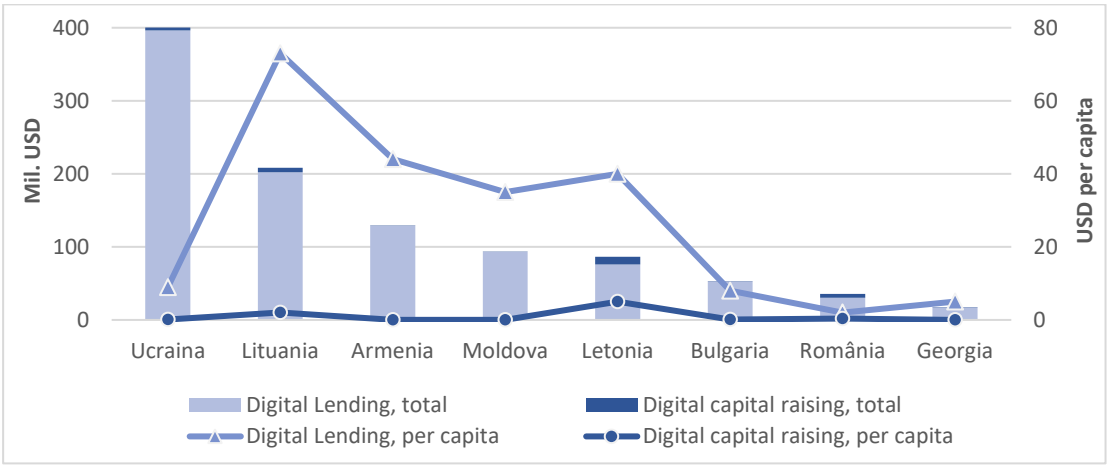

Figura 4. **Piața instrumentelor alternative de finanțare online în Republica Moldova și țările de referință, 2020**

Sursa: elaborat de autor în baza Ziegler et al. (2021)și CCAF (2022)

Cu toate că a fost înregistrată o scădere semnificativă a pieței de crowdfunding, Republica Moldova se află pe locul patru în ceea ce privește finanțarea alternativă online pe cap de locuitor în rândul țărilor de referință, după Lituania, Armenia și Letonia.

Rezultatele chestionării. În baza chestionarului realizat, au fost analizate accesul la sursele alternative de finanțare și impactul acestora asupra dezvoltării antreprenoriatului și a ecosistemului antreprenorial. Un coeficient important este coeficientului evaluării ecosistemului antreprenorial (K_{EA}), care arată evaluarea medie ponderată a ecosistemului antreprenorial la un indicator specific. Valoarea coeficientului variază între „-2" –indicatorul analizat reprezintă un obstacol semnificativ pentru dezvoltării ecosistemului antreprenorial, până la „+2" –indicatorul analizat reprezintă un avantaj substanțial pentru dezvoltarea ecosistemului antreprenorial, valoarea zero înseamnă un impact neutru.

Analiza surselor alternative de finanțare din Republica Moldova arată că întreprinderile întâmpină cele mai mari provocări în accesarea capitalului de risc (K_{EA} = -0,96) și finanțare pe piața valorilor mobiliare (K_{EA} = -0,58) (figura 5). Accesul la capital de risc a fost evaluat negativ de 75% dintre antreprenorii care au evaluat indicatorul dat, iar accesul la finanțare pe piața valorilor mobiliare - de 62%, ceea ce reflecta un grad relativ slab de dezvoltare a acestor instrumente de finanțare în țara. Peste jumătate dintre respondenți consideră că acești indicatori împiedică semnificativ dezvoltarea antreprenoriatului (58,3%, respectiv 50,0%).

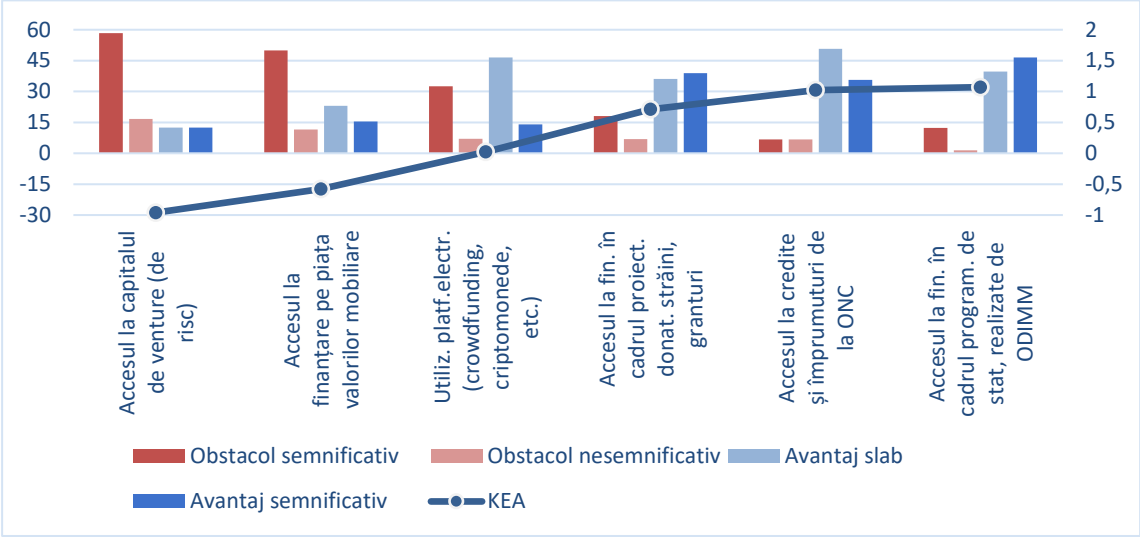

Figura 5. **Evaluarea accesului la sursele alternative de finanțare a IIMM-urilor, % respondenți care au evaluat indicatorul**

Sursa: elaborat în baza datelor chestionarului

Cu toate acestea, utilizarea platformelor electronice pentru a atrage finanțare (crowdfunding, criptomonede etc.) are un impact aproape neutru, K_{EA} = +0,02, mulți antreprenori au indicat că se confruntă cu dificultăți în accesarea acestora (obstacol pentru 39,5% dintre respondenții care au evaluat acest indicator). Accesul la finanțare în cadrul proiectelor donatorilor străini, inclusiv organizațiilor internaționale, și granturi (K_{EA} = +0,71) a fost evaluat pozitiv de peste 70% dintre respondenți. În același timp, pentru 1/4 dintre antreprenori, accesul la aceste surse reprezintă o problemă. Ceilalți doi indicatori, referitori la accesul la finanțare în cadrul programelor de stat implementate de ODIMM (ODA din 2022) (K_{EA} = +1,07) și accesul la împrumuturi de la organizațiile de microfinanțare (K_{EA} = +1,02), sunt percepuți de antreprenori ca un avantaj potențial pentru întreprinderile lor.

Concluzii. Accesul la resurse financiare rămâne a fi una din problemele stringente, care afectează activitatea IMM-urilor. Băncile sunt principalii furnizori de finanțare externă pentru întreprinderi, inclusiv IMM-uri. Până în anul 2021 se atesta o dinamică pozitivă de reducere a ratelor dobânzilor la creditele cu 6,7 p.p. comparativ cu anul 2015, acestea devenind mai accesibile pentru întreprinderi. Totodată, odată cu procesele inflaționiste din 2021, rata dobânzilor la credite se măresc, constituind 13,16% în luna august 2022. Majorarea ratelor dobânzilor la credite va avea un efect negativ asupra accesibilității resurselor financiare și capacității întreprinderilor de plată.

Indicatorul, care nemijlocit relevă accesibilitatea finanțării IMM-urilor în Global Competitiveness Index este *Finanțarea IMM-urilor*, scorul căruia constituia 3,6 în 2019, ceea ce reprezintă doar jumătate din valoare maximă, Republica Moldova plasându-se pe locul 93 din 141 țări. Totodată, surse alternative de finanțare precum leasingul, business angels, crowdfunding, capital de risc (venture) sunt slab dezvoltate. Printre indicatori care rămân a fi slab dezvoltați se enumeră:

Capital de risc, Leasing, Alfabetizarea financiară, Soliditatea băncilor, Credite neperformante, etc.

Odată cu dezvoltarea digitalizării în ultimele decenii, un număr crescut de inovații a apărut în sfera produselor și serviciilor financiare. Apariția de noi surse de finanțare a crescut substanțial opțiunile de finanțare disponibile întreprinderilor, dar sunt încă slab dezvoltate și necesită atenție specială. De-a lungul anilor, piața de crowdfunding a fost în creștere în Republica Moldova, ajungând la 178,4 mil. USD în 2019. Dar din cauza incertitudinii de pe piață condiționată de pandemia de Covid-19, suma a scăzut dramatic cu 47,9% în 2020. În timp, experiența europeană arată că sumele pentru finanțarea IMM-urilor (prin utilizarea crowdfunding) au crescut constant în ultimii ani, finanțarea afacerilor reprezentând 35% din volumul total în 2019 și 52% în 2020.

Unele din recomandări privind facilitarea accesului IMM-urilor la finanțare includ: reducerea ratelor dobânzilor la credite, simplificarea condițiilor de garantare a creditelor, simplificarea procedurilor de aplicare, diversificarea surselor de finanțare, promovarea surselor alternative de finanțare (capital de risc, crowdfunding, etc.) și ajustarea legislației, extinderea activităților de informare și coaching, elaborarea și realizarea programelor de educație financiară

Astfel, menționăm necesitatea facilitării accesului la finanțare, dezvoltarea Fintech și a surselor alternative de finanțare (crowdfunding, capital de risc, business angels etc.). Pe lângă promovarea surselor tradiționale de finanțare și asigurarea accesibilității acestora, e important să fie luate măsuri în vederea dezvoltării finanțării alternative, să fie ajustată legislația, să fie promovate sursele alternative de finanțare și alfabetizarea financiară.

Notă: *Articolul a fost elaborat în cadrul Proiectului aplicativ din cadrul concursului "Program de stat" (2020-2023): 20.80009.0807.38 „Evaluarea multidimensională și dezvoltarea ecosistemului antreprenorial la nivel național și regional în vederea impulsionării sectorului IMM în Republica Moldova”, finanțat din bugetul de stat al Republicii Moldova.*

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ASSESSMENT OF INFRASTRUCTURE AS A COMPONENT OF THE ENTREPRENEURIAL ECOSYSTEM IN THE REPUBLIC OF MOLDOVA: THE OPINION OF ENTREPRENEURS

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Summary

The entrepreneurial ecosystem of the Republic of Moldova is still at the stage of formation. The observed trend of growth in the number of small and medium-sized enterprises is not accompanied by a qualitative growth of enterprises. This indicates the underdevelopment of key components of the entrepreneurial ecosystem, one of which is the infrastructure. In this study, infrastructure as a component of the entrepreneurial ecosystem is considered as a set of elements of physical infrastructure, as well as services to support entrepreneurship.

The purpose of this article is to assess the state of the entrepreneurship support infrastructure in the Republic of Moldova, including based on the results of a survey of entrepreneurs, which was carried out in 2021 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 results of the study showed that the infrastructure component of the entrepreneurial ecosystem of Moldova has mainly positive evaluations by entrepreneurs. Overall in the component, access to IT resources and services was most highly rated by entrepreneurs. The indicator with the most negative impact on the entrepreneurial ecosystem is the condition (quality) of the roads. Also, access to crisis resolution and business insolvency services is a significant obstacle for over a quarter of respondents, which reflects insufficient contribution from support organizations to overcome business insolvency issues.

Keywords: *infrastructure, entrepreneurial ecosystem, entrepreneurship support infrastructure, Republic of Moldova*

JEL: *L26, H54, L84*

UDC: *338.1, 338.4*

Introduction. One of the key factors to maintain the growth rate of the quantitative and qualitative contribution of enterprises to the country's economy is the development of infrastructure that ensures the stable functioning of the business. Adequate infrastructure includes the combination of physical infrastructure and

business support services In our study, we consider the impact of these two elements of infrastructure on the development of the small and medium-sized enterprises (SME) sector, since namely these enterprises make up the vast majority (98.4% in 2021) of the total number of enterprises in Moldova and represent the main catalyst that helps to overcome periods of crisis, through their flexibility and adaptability.

Literature review. Entrepreneurial activity plays a key role in the socio-economic development of the country: enterprises produce goods and services, create working places, generate income for the state budget, ensure economic growth and improve the well-being of citizens. The development of entrepreneurship in the country and its competitiveness are directly dependent on external conditions, which include a wide range of components and are usually determined by such concepts as the business environment, investment climate, and, more recently, the concept of the entrepreneurial ecosystem. The term "ecosystem" in economics became widespread after the publication of a scientific article by James F. Moore in 1993 (Moore, 1993). In the work “Predators and prey: A new ecology of competition” Moore introduced a new for his time concept of “business ecosystem”, by which he understood a system that includes companies that evolve together, focusing their capabilities around certain innovations. According to Moore, such companies cooperate and compete to develop new products, meet the needs of their customers and create new innovative mechanisms (Moore, 1993).

In recent years, there has been an increase in interest in entrepreneurial ecosystems from politicians (Mazzarol, 2014; ANDE, 2013), researchers (Cohen, 2006; Foster et al., 2013; Isenberg, 2011), and international organizations (World Bank, World Economic Forum, OECD, etc.) (World Economic Forum, 2014; Mason, C. & Brown, R., 2014; Cruz et al, 2022).

The literature on entrepreneurial ecosystem presents a large number of approaches to understanding its structure and main elements. In various sources, you can find different quantitative and qualitative indicators, among which infrastructure stands out in one form or another. According to Schick et al. (2002), to support the sustainable entrepreneurial ecosystem, a variety of specialty advisers who understand and value sustainability principles should be present to overcome barriers from traditional advisers who do not understand the challenges faced by these ventures (Schick et al., 2002). H.M.Neck singled out 4 components of the entrepreneurial ecosystem, among which there was a physical infrastructure, as well as services of business support. According to Neck (2004), the physical infrastructure is defined as the tangible components of the county’s infrastructure such as roads, traffic, office space, housing, and real estate; but professional and support services as a component include entrepreneurial tax and legal support, and consultants, as well as the existence of organizations that provide other inputs, some of which go into the finished product (Neck et al., 2004). Further studies by Cohen (2006) considered the entrepreneurship support system as a separate element of the entrepreneurial ecosystem, which is also part of the entrepreneurship development infrastructure. But at the same time, the physical infrastructure was attributed by this researcher to an element of the entrepreneurial ecosystem "Formal networks". According to Cohen, the physical infrastructure of a community plays a role in the growth of an entrepreneurial ecosystem in a geographic location (Cohen, 2006).

According to the concept of D.Isenberg (2011), which became the starting point for further research in this direction, the main domains of the entrepreneurial ecosystem are policy, finance, human capital, culture, markets, and support. Each of them individually contributes to the development of entrepreneurship, and together they provide a comprehensive development of the entrepreneurial ecosystem. In particular, the support domain includes the following factors:

- infrastructure (including telecommunications, transportation and logistics, energy, incubation centers, and clusters, etc.),
- support professions (legal, accounting, investment bankers, technical experts, advisors),
- non-government institutions (business associations, conferences, business plan contests, etc.) (Isenberg, 2011).

Thus, researchers clearly distinguish such factors as physical infrastructure and business support infrastructure as integral element of the entrepreneurial ecosystem. According to the World Bank entrepreneurial ecosystem assessment methodology (Cruz, et al., 2022), physical infrastructure is the backbone of the economy. Infrastructure can enhance connectivity and links that facilitate the recognition of entrepreneurial opportunities and the ability of entrepreneurs to actualize those opportunities.

The empirical results suggest that startup activity is positively linked to infrastructure in general, but that certain specific types of infrastructure, such as broadband are more conducive to infrastructure (Audretsch et al., 2015). Most existing studies show a strong positive relationship between infrastructure development and economic growth (Timilsina et al., 2020). In particular, a recent study by the World Bank (2021) found that infrastructure has a greater impact in developing economies than in developed economies (Timilsina et al., 2021).

Brief description of the state of the physical infrastructure in the Republic of Moldova. In the last 20 years, the economic evolution in the Republic of Moldova has not been accompanied by substantial and geographically uniform increases in the access of people and businesses to physical infrastructure and public utilities (Parlamentul Republicii Moldova, 2022). According to the 2020 "Household Budget Research" (NBS, 2021), 98.5% of the urban population and 72.8% of the rural population have access to the aqueduct. About 88.5% of the urban population and 45.6% of the rural population have access to hot water. Approximately 81.3% of urban households have access to modern heating sources (central heating or individual heating installations), but 88.7% of the rural population is heated with the help of stoves, fireplaces, and other heating installations.

The Republic of Moldova also has a major deficit in ensuring a modern, safe and efficient transport infrastructure. The share of public roads evaluated as "excellent" and "good" decreased from 36.8% in 2015 to 30% in 2020, while the state of "bad" and "very bad" roads increased from 25.4 up to 46.8% of the total (ASD, 2020). The decrease in the quality of the infrastructure is also accompanied by an increase in the average age of the means of transport, with dire consequences both for the comfort and safety of people, as well as for the quality of the environment. By

reducing the internal mobility of people, capital, and labor, poor infrastructure is a major constraint on private sector development.

According to the Global Competitiveness Report 2019 (World Economic Forum, 2019), the Republic of Moldova ranked 86th out of 141 evaluated states (at the same time, according to Infrastructure Pillar in general, Moldova ranks 76th). As for Transport infrastructure, the best position in Moldova is Railroad density (rank 27); the worst position is in Quality of road infrastructure (2.6 scores of 7.0, 129th place). The underdevelopment of transport infrastructure affects trade; the Republic of Moldova accumulates one of the lowest scores in Central and Eastern Europe for the logistics performance index (2.46 out of 5 possible points). These constraints undermine the country's level of competitiveness, which is a major challenge for an economy that is vitally dependent on foreign trade. According to Utility infrastructure, Moldova is in 84th place out of 141 countries: in this section, against the background of 100% Electricity access of the population, there is an extremely low Electricity supply quality (110th place), as well as Reliability of water supply (88th place) and Exposure of population to unsafe drinking water (82nd place). At the same time, the Republic of Moldova has achieved important progress in terms of access to information and communication technologies: in 2020, the penetration rate of fixed broadband Internet access services per 100 households was 81.7% with an increase of 22.5 percentage points in the last 5 years (World Economic Forum, 2019).

Brief description of the contribution of the associative and business consulting sector to business development. As was said above, in our study business support services are considered as one of the elements of the infrastructure of the development of entrepreneurship as a component of the entrepreneurial ecosystem.

The assistance of *development service providers* for SMEs includes accounting, tax, and legal consultancy, as well as concrete solutions for product promotion and personnel management. Currently, the consulting sector in the Republic of Moldova can by right be associated with institutions supporting the business environment. The consulting market is made up of an impressive number of small and medium-sized companies (Lobanov & Zubco, 2016), only on the official page of the Organization for the Development of Entrepreneurship (ODA, formerly ODIMM) in the category of business service providers, there are approximately 100 of institutions that specialize in providing business consultancy services, accounting, and financial audit. In the Republic of Moldova, there are both domestic companies, whose activity is concentrated in the area of small and medium clients and projects, as well as representatives of foreign companies with an international reputation.

The participation of *business associations* in the development of cooperation and entrepreneurial support projects increases the competitiveness of the SME sector both in the domestic and foreign markets. A business association is a multifunctional institution that brings together entrepreneurs to join efforts within the locality, region, or sector, or on the product or service value chain (Eu4Business, 2018). At present, business associations have proven their maturity, excluding the competitive struggle to attract new members, but instead, cooperate to achieve common goals. Associations promote the exchange of information, and ideas between members; joint

monitoring of the quality of manufactured products; creation of personnel training programs; organizing the exchange of raw materials in industry; creating of standards for products offered on the market. Also, one of the functions of business associations is related to the propagation of its needs, with subsequent adoption of state decisions by initiating new laws in favor of associations (lobby) and modifying existing ones (regulatory impact assessment). A current example is a development by a group of professional Associations of a package of support measures to reduce the constraints faced by the business community during the COVID-19 epidemic, proposing intelligent solutions to support entrepreneurship activity (AIM, 2019).

If the mission of business associations is to promote the standards of good governance of the business environment, thus promoting the interests of the associated enterprises, then in the case of the cooperation of enterprises with related activities, from the same geographical area, the mission becomes different, namely the stimulation of entrepreneurial activities in the region respective. In this sense, cluster-type economic agglomerations form a new institution aimed at supporting SMEs located in geographical proximity and operating in the same economic sector or related economic sectors. For the Republic of Moldova, the process of *association of enterprises in clusters* is just gaining momentum, being supported by the adoption by the Government of the Republic of Moldova, in 2013, of the Concept of cluster development in the industrial sector (INCE, 2018). Even though several cluster models have been launched over the years (e.g. the electronics industry, the equipment industry, the textile and innovative industry), for now, there are no concrete policies and mechanisms to support the creation and development of clusters. Anyway, the launch of the new cluster models expresses the recognition of their importance, because the cluster is a free form of association and collaboration between companies, universities, research institutions, suppliers, customers, and competitors located in the same geographical area (local, national, transnational). SMEs play a primary role in the activity of the cluster. Small and medium-sized enterprises provide services for all actors of the cluster: research institutions, large industrial enterprises as well as the exchange of services between enterprises in the same sector. By providing these services, SMEs form internal communication between actors: industrial enterprises focus on their core activity related to the creation and production of a product, and outsourcing activities are transferred to SMEs.

The creation and development of a network of *business incubators* is one of the priorities of the Government of the Republic of Moldova to support the needs of the business environment and the entrepreneurial ecosystem, especially in rural areas. The legislative basis, which stipulates the legal conditions for the activity and support of business incubators, is represented by the Strategy for the development of the small and medium-sized enterprises sector for the years 2012-2020 and Law no. 179 of 2016 on the support of the small and medium-sized enterprises sector. Currently, 11 business incubators are active in the Republic of Moldova, 10 of which are part of the Network of Business Incubators from Moldova (RIAM) and an academic business incubator created within the Moldovan Academy for Economic Studies. The contribution of business incubators depends on stimulating economic growth at the regional level, generating jobs, supporting local entrepreneurs, promoting the

development of new technologies and industrial sectors, or increasing the competitiveness of existing ones. Business incubators are the optimal solution for new - registered enterprises because it is through business incubators that the growth and support of small and medium-sized enterprises is accelerated.

Research methodology. 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" a methodology was developed and a survey of entrepreneurs was carried out to evaluate the components of the entrepreneurial ecosystem (Stratan et al., 2021), one of which is the Infrastructure.

To assess the impact of the component and its 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.

In the framework of our research, the Infrastructure was considered one of the components of the entrepreneurial ecosystem, which was evaluated by entrepreneurs according to several factors. The list of factors and sub-factors within the component, which was included in the questionnaire for entrepreneurs, was the following:

1) Physical infrastructure:

a) Condition (quality) of roads.
b) Access to the water supply system.
c) Access to energy resources.
d) Access to transport services (passenger transport, goods transport).
e) Access to the telecommunications system, IT technologies, as a whole,...
f) ...including access to the Internet, social networks.

2) Business support services:

a) Access to educational services/training for entrepreneurs.
b) Access to entrepreneurship consultancy, information.
c) Access to accounting and auditing services.
d) Access to export promotion services.
e) Access to staff recruitment and personnel evaluation services.
f) Access to services for the purchase and use of innovations.
g) Access to services on overcoming crises and business insolvency.
h) Access to services on the use of digital methods of doing business (creation of web pages, promotion of goods in the web).
i) Access to services for businesses/entrepreneurs that require special support (youth, women, people with disabilities, operating in rural areas).
j) Access to business incubators' services.
k) The existence and activity of business associations, clusters.

Based on the results of assessing each of the two generalized factors and the component in total, we calculated the Coefficient of the entrepreneurial ecosystem's assessment (Kee), which shows the weighted average assessment of Infrastructure factors and its sub-factors. ***Kee*** is calculated according to the formula (1):

$$\textbf{Kee} = \frac{(-2) * \%\ \text{sign.obst.} + (-1) * \%\ \text{ins.obst.} + (+1) * \%\ \text{ins.adv.} + (+2) * \%\ \text{sign.adv.}}{100\%} \quad \textbf{(1)}$$

where:
Kee - coefficient of entrepreneurial ecosystem's assessment;
% sign.obst. - the share of responses, which indicated the significant obstacle;
% ins.obst. - the share of responses, which indicated the insignificant obstacle;
% ins.adv. - the share of responses, which indicated the insignificant advantage;
% sign.adv. - the share of responses, which indicated the significant advantage.

The Coefficient of the entrepreneurial ecosystem's assessment changes from „-2" (minimum, if absolutely all respondents indicate a significant negative impact of the factor on the development of entrepreneurship) to „+2" (maximum - if 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.

The questionnaire took place in April-May, 2021. There were 106 entrepreneurs from the micro-, small and medium-sized enterprises sector, participated in the survey. *Table 1* provides information about the characteristics of the respondents (as well as enterprises) participating in the survey.

Table 1. **Characteristics of the sample**

Indicator	Meanings	Share, %
Respondents' characteristics		
Gender	Male	50,9
	Female	49,1
Age	<25 years old	1,9
	25-34 years old	21,7
	35-44 years old	25,5
	45-54 years old	22,6
	55-64 years old	23,6
	>64 years old	4,7
Residence	Urban area	72,6
	Rural area	27,4
Education level	Secondary education	7,5
	Higher education/ vocational studies	92,5
Status at the enterprise	Owner/co-owner	76,4
	Hired Manager	15,1
	Other	8,5

Enterprises' characteristics		
Size	Micro (1-9 pers.)	68,9
	Small (10-49 pers.)	27,4
	Medium (50-249 pers.)	3,8
Types of activity	Agriculture	17,0
	Industry	14,4
	Trade	15,2
	Services	50,0
	Construction	3,4
Activity period	<1 year	1,9
	1-2 years	9,6
	3-5 years	18,3
	>6 years	70,2

Source: own elaboration.

Main results. As the survey showed, the infrastructure turned out to be a component of the entrepreneurial ecosystem of Moldova, rated relatively high by entrepreneurs. Among the entrepreneurs who rated the component as an advantage or an obstacle, positive ratings prevail: 78.8% of respondents said that the state of the infrastructure in the country is an advantage for the development of the particular enterprise and the business as a whole *(Figure 1)*. But, of course, it should be noted that for 21.2% of entrepreneurs, the infrastructure is presented as an obstacle, while this mostly concerns the state of the physical infrastructure, and less - support services *(Figure 1)*.

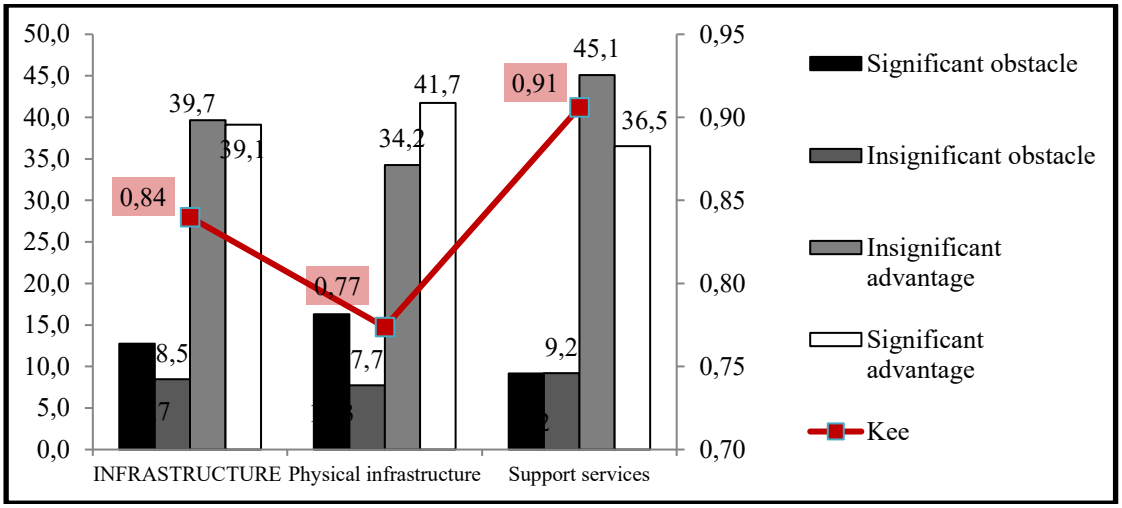

Figure 1. **Assessment of the impact of Infrastructure factors on the development of entrepreneurship**

Source: own elaboration.

Within the Physical infrastructure factor, as well as in general for the Infrastructure component, the indicator with the most negative impact on the entrepreneurial ecosystem is the condition (quality) of the roads: more than half of respondents (54.3%) noted the negative influence of this indicator on business (Kee =-0.30). For three indicators of this factor – access to the water supply system; to

transport services (passenger transport, goods transport), and energy resources – weak positive assessments of the impact on the development of the entrepreneurial ecosystem prevail (respectively, Kee=+0.61; +0.75 and +0.9). The best scores within the factor were obtained for such indicators as access to the telecommunications system, and IT technologies, including access to the Internet, and social networks. According to them, significantly positive evaluations of the impact prevail (respectively, Kee =+1.33; +1.35) (*Figure 2).*

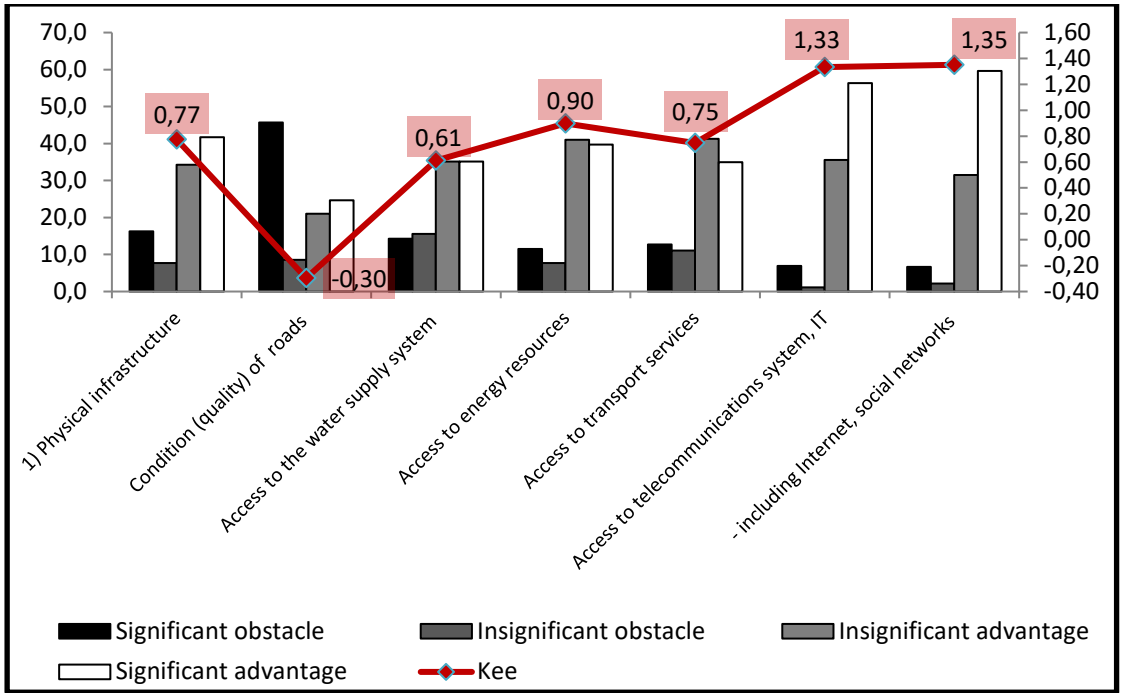

Figure 2. **Assessment of <u>Physical infrastructure</u> factor and its impact on the development of entrepreneurship**

Source: own elaboration.

According to all indicators of the *Organization of support* factor, he share of respondents who gave a positive assessment of the impact on business exceeds the share of respondents who gave a negative assessment, respectively, for this factor Kee=+0.91. According to the indicator "Access to services on overcoming crises and business insolvency", more than a quarter of respondents (25.9%) noted a significant obstacle, which reflects the insufficient scope of support services for business insolvency problems (Kee=+0.41). Also, more than a quarter of the responding entrepreneurs noted the obstacle related to access to export promotion services (29.6% noted the obstacle, Kee=+0.54); to staff recruitment and personnel evaluation services (28.8%, Kee=+0.58), as well as services for businesses/entrepreneurs that require special support (26.2%, Kee=+0.79), which reflects the unmet need in support in these spheres. The best situation within the analyzed factor is observed for such types of indicators as "Access to accounting and auditing services" (Kee =+1.26) and " Access to services on the use of digital methods of doing business (creation of web pages, promotion of goods in the web)" (Kee =+1, 27) *(Figure 3).*

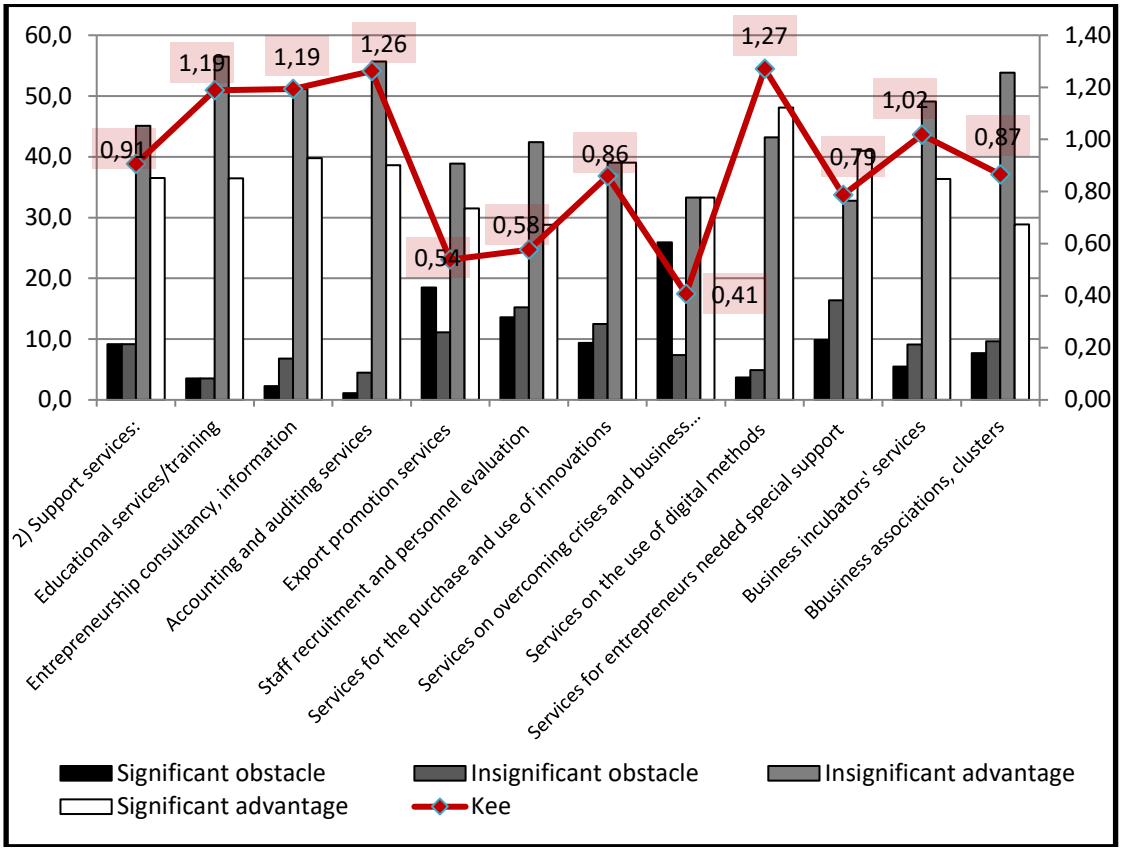

Figure 3. **Assessment of Support services factor and its impact on the development of entrepreneurship**

Source: own elaboration.

Depending *on the type of activity* of the respondents, their assessments were distributed quite evenly over the component in general: for all analyzed types of activity in the "Infrastructure" component Kee is more than +0.5 and less than +1.0. Within the framework of individual factors, the "scatter" of responses is more significant.

Thus, according to the Physical infrastructure factor, construction enterprises (41.1% noted obstacle, Kee=+0.35) and industrial enterprises (33.7% noted obstacle, Kee=+0.54) face the greatest difficulties. This factor represents a relatively greater advantage for enterprises from trade sphere (75.0% noted advantage, including 60.5% - significant advantage; Kee=+0.93) and services (78.0% noted advantage, Kee =+ 0.84).

According to the Business support factor, construction companies also face the greatest difficulties (40.0% noted obstacles, Kee=+0.45). This factor represents a relatively greater advantage for industrial enterprises (80.3% noted advantage, including 51.8% - significant advantage; Kee=+1.00) and agriculture (85.2% noted advantage, Kee=+ 0.95).

Discussion and conclusions. An entrepreneurial ecosystem is a totality of participants in the business environment (legal entities and individuals from various sectors, different in their activities), who interact with each other, and conditions that ensure the creation of enterprises and the development of entrepreneurial activity". The empirical data, on which most of the existing studies of entrepreneurial ecosystems are based, comes from countries with developed market economies. The nature, structure, and trends of entrepreneurial ecosystems in transition economies, including Moldova, remain relatively poorly studied. Thus, the results of our empirical study of the entrepreneurial ecosystem assessment of the Republic of Moldova are of scientific and practical novelty.

The literature on entrepreneurial ecosystems presents a large number of approaches to understanding their structure and main elements. In various sources, different quantitative and qualitative indicators are mentioned, among which infrastructure stands out in one form or another. Most often, this element of the entrepreneurial ecosystem includes the physical infrastructure and available services for business development and support. This is exactly the structure of this component that we used in our study.

A survey of entrepreneurs carried out in 2021 as part of the applied research project "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" showed that Infrastructure as a component of the entrepreneurial ecosystem of Moldova is assessed relatively high by entrepreneurs. Within the Physical infrastructure factor, as well as in general for the Infrastructure component, the indicator with the most negative impact on the entrepreneurial ecosystem is the condition (quality) of the roads. Overall, for the component, access to IT resources and services was most highly rated by entrepreneurs.

Note: *This article has been elaborated within the 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" (State Program 2020-2023), financed from the state budget of the Republic of Moldova.*

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THE RECOGNITION OF LEASING: THE CASE OF AIRLINES COMPANIES

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Summary

On November 2017, the IASB (International Financial Reporting Standards) sets out a new rule for the recognition and measurement of the lease. This is the IFRS 16, replacing the old IAS 17. The new standard removes the lessee's distinction between operating and financial lease and it will have a substantial impact for companies have previously kept a large proportion of their financing off balance sheets. At the same time, the FASB announced the new ASC Topic 842, replacing the old ASC Topic 840 for the same reasons.

IFRS 16 purpose is to remove the so-called bright lines companies used to avoid capitalisation of leases and turns any attempt to hide lease liabilities off the balance sheet into a futile exercise to improve transparency of information. The new principles IFRS 16 and ASC Topic 842, the balance sheets will provide a more faithful representation of leases. According to an appreciation, in leasing contracts, world companies have about USD 3.3 trillion on its balance sheets.

In these sectors, let's see another advantage of IFRS 16 and ASC Topic 842, is also a better management of company resources, that increase the concept of the "supply chain management", so helping managers to make better decisions in the aim of the firms.

Keywords: *leasing, airlines companies, IFRS, IAS, FASB, financial accounting*
JEL: *D22, R40, G32, M4*
UDC: *339.187.62:629.735.33*

Companies affected by changes in lessee accounting. The IASB compared the balance sheet leases to the total assets of these 1,022 companies. That analysis indicated that the prevalence of balance sheet leases is very different for different industries. Off balance sheet lease financing numbers are substantial. However, the use of balance sheet leases is highly concentrated within some industry (like airlines, retails, transports) and less in other sectors (like information technology, healthcare and media).

The motivations are linked to the development of air transport and also to the growing incomes in emerging markets, which are leading to an ever-expanding middle class, which has similar consumption and travel needs to the population in the developed world. Against this backdrop, demand for aircraft will continue to grow. The new aircraft must not only be produced and operated, but also financed. In recent years, the proportion of aircraft purchased not directly from airlines but by leasing

companies has increased sharply. This also provides financing from the leasing company, which then leases the aircraft to the airlines.

The motivations are linked to the development of air transport and also to the growing incomes in emerging markets, which are leading to an ever-expanding middle class, which has similar consumption and travel needs to the population in the developed world. Against this backdrop, demand for aircraft will continue to grow.

Table 1: **Sector analysis.**

Industry sector	Number of companies	Total assets (in millions of US$)	Future payments for off balance sheet leases *(undiscounted)* (in millions of US$)	Future payments for off balance sheet leases / total assets	Present value of future payments for off balance sheet leases *(estimate)* (in millions of US$)	Present value of future payments for off balance sheet leases / total assets
Airlines	50	526,763	151,549	28.8%	119,384	22.7%
Retailers	204	2,019,958	571,812	28.3%	431,473	21.4%
Travel and leisure	69	403,524	115,300	28.6%	83,491	20.7%
Transport	51	585,964	90,598	15.5%	68,175	11.6%
Telecommunications	56	2,847,063	219,178	7.7%	172,644	6.1%
Energy	99	5,192,938	400,198	7.7%	287,858	5.5%
Media	48	1,020,317	71,743	7.0%	55,764	5.5%
Distributors	26	581,503	31,410	5.4%	25,092	4.3%
Information technology	58	1,911,316	69,870	3.7%	56,806	3.0%
Healthcare	55	1,894,933	72,149	3.8%	54,365	2.9%
Others	306	13,959,223	401,703	2.9%	306,735	2.2%
Total	**1,022**	**30,943,502**	**2,195,510**	**7.1%**	**1,661,787**	**5.4%**

Source: Effects Analysis IFRS 16, International Financial Reporting Standard

The motivations are linked to the development of air transport and also to the growing incomes in emerging markets, which are leading to an ever-expanding middle class, which has similar consumption and travel needs to the population in the developed world. Against this backdrop, demand for aircraft will continue to grow. The new aircraft must not only be produced and operated, but also financed. In recent years, the proportion of aircraft purchased not directly from airlines but by leasing companies has increased sharply. This also provides financing from the leasing company, which then leases the aircraft to the airlines.

This also means increasing tourism and increasing the internationalisation of trade. In addition to income trends, further liberalisation of air transport will also be a key growth factor in global air transport. In particular, the Open Skies agreement (an international agreement for reciprocal liberalisation based on the market of the respective civil aviation sector - embodied by civil airlines) will accelerate the pace of liberalisation[8].

[8] BIERMANN; BRAUNINGER; GRIESE. Aircraft leasing. Hamburg Institute of International Economics (HWWI)

Unlike IAS 17, for all leases (including former of balance sheet leases), IFRS 16 requires a company to recognise interest on lease liabilities separately from depreciation of lease assets. A company is expected to present interest expense as part of finance costs, and depreciation within a similar line item to that in which it presents depreciation of property, plant and equipment. Applying IAS 17, lease payments for off balance sheet leases were generally presented within operating expenses. To test the effect on the income statement of recognising and presenting depreciation of lease assets separately from interest on lease liabilities for off balance sheet leases, the IASB used the same sample described earlier in this document[9].

Applying IFRS 16, EBITDA will be notably higher compared to IAS 17 for companies with material off balance sheet leases. This is because EBITDA applying IFRS 16 does not include expenses related to leases as EBITDA applying IAS 17 included the entire expense related to off balance sheet leases. EBITDA is a profit measure that is often used by investors and analysts in assessing financial leverage.

Profit measures before interest and tax, such as EBIT or operating profit, will also increase applying IFRS 16. This is because those measures applying IFRS 16 exclude interest on lease liabilities whereas, applying IAS 17, they included the entire expense related to off balance sheet leases.

The IASB is aware that, when assessing the operating performance of a company or determining enterprise value, investors and analysts often use profit measures before interest and tax in their analyses. This is because they often wish to assess the performance of a company, independently of its financing or ownership structure.

The IASB noted that, for some industry sectors, such as healthcare, the increase in profit margin is not very significant. However, for industry sectors that use significant amounts of balance sheet leases, such as airlines, retailers and travel and leisure, the increase in profit margin is expected to be significant.

To better assess the variation in effects on individual companies within an industry sector, the IASB analysed the effects of applying IFRS 16 for airlines from one region, taking data from previous tables (1,36% increases in profit margin and 22,7% off balance sheet leases).

The analysis for these airlines shows that IFRS 16 is expected to have relatively little effect on the reported assets and liabilities for some airlines. In contrast, the reported assets and liabilities for some other airlines are expected to change significantly.

[9] IASB sample described in Section - Companies affected by changes in lessee accounting.

Table 2: **EBITDA of different sectors**

Industry sector	EBITDA (in millions of US$)		Profit before interest and tax / total revenue		Increase in profit margin % before interest and tax (percentage points)
	Reported (IAS 17)	If all leases on balance sheet (IFRS 16)	Reported (IAS 17)	If all leases on balance sheet (IFRS 16)	
Airlines	51,624	73,849	6.33%	7.69%	1.36 (=136 basis points)
Retailers	270,403	347,716	6.01%	6.66%	0.65
Travel and leisure	50,299	63,279	11.80%	13.15%	1.35
Transport	71,177	87,580	10.00%	10.70%	0.70
Telecommunications	399,328	434,452	13.18%	13.80%	0.62
Energy	688,370	745,273	8.11%	8.42%	0.31
Media	118,156	128,959	17.70%	18.29%	0.59
Distributors	29,350	35,047	3.70%	3.94%	0.24
Information technology	298,655	312,392	18.28%	18.50%	0.22
Healthcare	254,616	265,181	15.41%	15.63%	0.22
Others	1,162,512	1,228,643	10.63%	10.83%	0.20
Total	**3,394,490**	**3,722,371**	**10.19%**	**10.58%**	**0.39**

Source: Effects Analysis IFRS 16, International Financial Reporting Standard

The airline sector. As already mentioned, the reasons of the development of air transport are mainly linked to the development in emerging markets, which are leading to an ever-expanding middle class. In recent years, the percentage of aircraft purchased not directly by airlines, but by leasing companies has increased significantly. This provides financing from the leasing company, which then leases the aircraft to the airlines. The table shows the sources of financing of Boeing deliveries in 2013, which essentially reflect industry trends. More than 50% of the financing is provided by bank (28 %). Export credits (23%). A further 14% is financed by the capital market and 30% by the own resources of airlines or leasing companies. The shares of equity and debt have been relatively stable over the last decade. In terms of equity financing, leasing companies had a significantly higher share until the 2008/09 financial crisis. In the future, Boeing expects bank and export credits to become more expensive and available for a smaller number of companies (see Boeing 2013a). For this reason, an increasing number of aircraft will continue to be financed through leasing companies in the future, continuing a trend from recent decades.

Financing leasing and operating leasing have to be distinguished. In the case of the lease, the present value of the lease payments is at least 90% of the aircraft market value and at the end of the lease there is a better purchase option for the aircraft. The lease time is more than 75% of the economic life of the aircraft. As this is considered an acquisition, the aircraft will appear on the lessee's balance sheet.

Operating leasing usually involves a lease period of between six and ten years, depending on the age of the aircraft. Usually, an aircraft can be missed 4 to 6 times in its life cycle. So far, the aircraft has not appeared on the lessee's balance sheet,

according to IAS and ASC Topic 840 accounting, and then provided by the new IFRS 16 and ASC Topic 842.

Since 1981, the aircraft leasing market share has risen steadily from 2% of the globally operated aircraft fleet to about 40% in 2013. In absolute terms, this means a 60% of increase. The majority of the leasing fleet consists of the popular and liquid aircraft (Airbus A320 and Boeing 737 families).

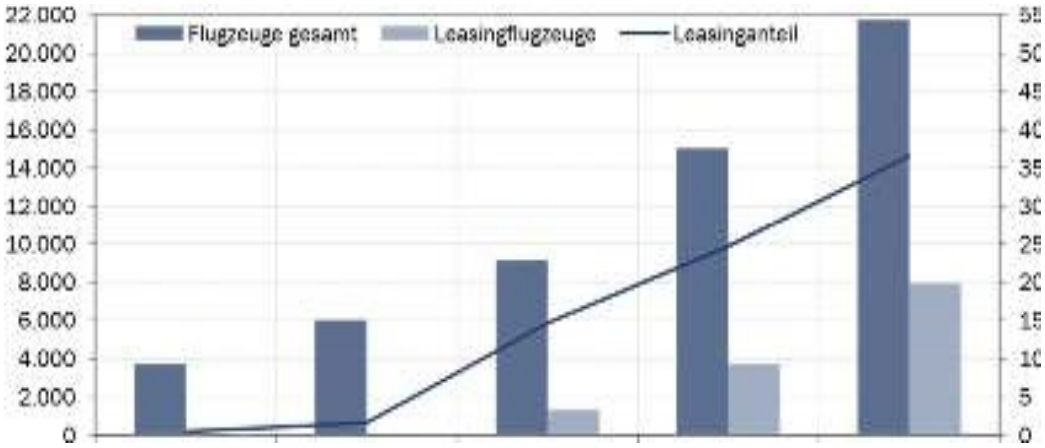

Figure 1. **Development of operating leasing.**
Source: Investec (2013); HWWI.

The growth is mainly attributable to 3 factors:

1) Leasing allows airlines that do not have direct access to capital to purchase new or new aircraft;
2) Leasing is also an important element of a diversified fleet financing strategy for airlines, which can find financing on the capital markets;
3) It gives airlines the flexibility to adapt changes in demand to the fleet in the medium term, which would not be possible with aircraft in possession or through loan debt financing. This is particularly important for older aircraft, where short lease maturities are chosen. For younger aircraft, longer lease maturities are usually selected, so that the flexibility of the fleet increases only to a limited extent[10].

The next figure shows the ten largest leasing companies. The fleet of the largest company GECAS comprised more than 1,750 aircraft at the end of 2011, worth a bit of $34.6bn. ILFC's fleet was 1,000 aircraft with a Valued at $27.8 billion. Behind the two dominant societies follow the Company AerCap, BBAM and CIT Aerospace, which have grown strongly in recent years and now have over 325 aircraft (AerCap, BBAM) and 263 aircraft (CIT), respectively. Aerospace) own.

[10] BIERMANN; BRAUNINGER; GRIESE. Aircraft leasing. Hamburg Institute of International Economics (HWWI).

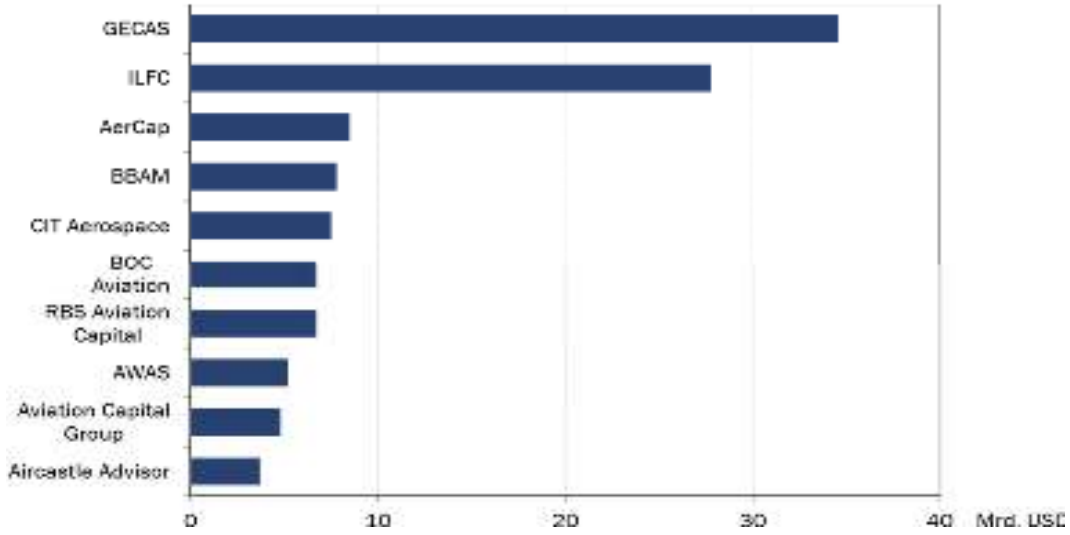

Figure 2. **Top 10 leasing companies by fleet value 2011.**
Source: Flight global (2012); HWWI.

Airlines and investors rate aircraft and their use as economic unit. However, the respective utility value of an aircraft differs considerably between these. Airlines make the investment decision according to an analysis of the value of the aircraft. This analyses the profitable potential of an aircraft, with the aircraft value being the planned, expected present value of the aircraft's operating results within its lifetime. There are several market and performance factors that determine the preservation of the value of an aircraft and the earnings prospects for resale.

Unlike the airlines, aircraft investors, such as aircraft leaseholders, make an investment decision based on the expected present value of income (leasing income) and the expected resale value of the aircraft at the end of the Life. Since the residual value is an essential part of the total return on an aircraft, the Low depreciation of aircraft is another advantage. The latter can be achieved by acquiring easily reseller aircraft. Aircraft have the advantage of being transferred from one user to another in an active, liquid and global market.

For older aircraft, there are various options for recovery: Used sales, leasing for second or third operators, passenger on cargo equipment and ultimately the removal of engines and other orbits for separate sale. Traditionally, aircraft leave the service after about 25 years, after which they were either disposed of or used for the sale or recycling of the parts (see PwC 2013). Typically, after the first years of use, aircraft are sold on established airlines to newly established, smaller airlines and those with lower creditworthiness. In doing so, changes in financing options can lead to market changes. Improved financing opportunities for subordinated airlines could lead to more frequent purchase of new aircraft, while deteriorated financing options are more likely to push them into the secondary market[11].

The effects on balance sheet, income statement and cash flow. This example illustrates the estimated effects of IFRS 16 by comparing the reported financial

[11] Ackert 2012

information applying previous accounting requirements (IAS 17) to the information that is expected to result from applying IFRS 16 and the FASB model (US GAAP).

The company is an airline. Applying IAS 17, the company reports approximately 80 per cent of its aircraft fleet on the balance sheet (ie around 80 per cent of the company's aircraft fleet is owned or leased under finance leases). The company leases (under former balance sheet leases) approximately 20 per cent of its aircraft fleet as well as various buildings.

The example includes some common ratios used by investors and analysts in assessing financial leverage and performance[12]. Debt to EBITDA and interest cover are the most common ratios used in debt covenants according to an academic study.

Various assumptions needed to be made when preparing the estimated effects applying IFRS 16 and the FASB model illustrated in this appendix. The assumptions made are the following:

a. a discount rate of 5 per cent applies to all former balance sheet leases;

b. applying IFRS 16, lease assets are depreciated on a straight-line basis;

c. applying the FASB model, leases are classified in the same way as they were applying previous lease accounting requirements;

d. leases of low-value assets and short-term leases are not material; and

e. the examples do not include (i) any possible difference in lease liabilities recognised applying IFRS 16 and the FASB model relating to the reassessment of inflation-linked payments; and (ii) any effects on tax.

In addition, to provide more realistic information, estimates have been prepared on the basis that all companies hold a 'rolling' portfolio of leases. Average lease terms have been estimated based on information disclosed in the financial statements.

[12] The information in this example has been prepared using reported information for a number of companies. and should be used with a degree of caution. The information has been prepared for illustrative purposes only—the actual effect of IFRS 16 on specific companies and industries could differ materially from those presented here.

Table 3: **EBITDA of different sectors**

Balance sheet	IAS 17	IFRS 16	US GAAP
Property, plant and equipment	27,886	27,886	27,886
Lease assets	12,030	25,430	12,030 14,923
Other[20]	9,114	8,952	8,952
Total non-current assets	49,030	62,268	63,791
Total current assets	21,152	21,152	21,152
Total assets	**70,182**	**83,420**	**84,943**
Borrowings	9,430	9,430	9,430
Lease liabilities	10,516	25,277	10,516 14,761
Other liabilities	34,818	34,818	34,818
Total liabilities	**54,764**	**69,525**	**69,525**
Equity	15,418	13,895	15,418
Total liabilities and equity	**70,182**	**83,420**	**84,943**

Source: Effects Analysis IFRS 16, International Financial Reporting Standard

Between IFRS 16 and IAS 17: there is an increase in lease assets and lease liabilities.

Unlike IAS 17, for all leases (including former balance sheet leases), IFRS 16 requires a company to recognise interest on lease liabilities separately from depreciation of lease assets.

A company is expected to present interest expense as part of finance costs, and depreciation within a similar line item to that in which it presents depreciation of property, plant and equipment.

Between IFRS 16 and US GAAP: lease assets and equity are higher applying US GAAP and lease assets and liabilities relating to former on and balance sheet leases required to be presented in separate line items applying US GAAP. (Neither IFRS 16 nor US GAAP requires presentation of lease assets and liabilities on the face of the balance sheet). Profit for the year is only marginally different between IFRS 16 and IAS 17 / US GAAP because the company holds a portfolio of leases starting and ending in different years. In the income statement, net profit is not expected to change much for most lessees, but sub-totals such as EBITDA will change.

The main difference is that with the new rules the burden will be shared between operating management (for the share relating to the amortization of the right of use) and financial management (for the share relating to implicit interest expense) for all leases and no longer just for financial ones. As a result, companies that previously had off-balance sheet leases, after the application of IFRS 16, will be affected by an improvement in operating profit as a result of the shift of part of the cost to the company's financial statement prospectus. On the other hand, pre-tax operating income should remain broadly unchanged on the other terms.

Table 4: **EBITDA of different sectors**

Income statement	IAS 17	IFRS 16	US GAAP
Revenue and other income	67,272	67,272	67,272
Operating costs[21]	(60,893)	(58,340)	(60,893)
EBITDA	**6,379**	**8,932**	**6,379**
Depreciation and amortisation	(3,908)	(5,674)	(3,908)
Operating profit	**2,471**	**3,258**	**2,471**
Net finance costs	(865)	(1,656)	(865)
Profit before tax	**1,606**	**1,602**	**1,606**
Income tax	(285)	(285)	(285)
Profit for the year	**1,321**	**1,317**	**1,321**

Source: Effects Analysis IFRS 16, International Financial Reporting Standard

Applying IFRS 16, EBITDA will be notably higher compared to IAS 17 for companies with material off balance sheet leases. This is because EBITDA applying IFRS 16 does not include expenses related to leases as EBITDA applying IAS 17 included the entire expense related to off balance sheet leases. We remember that EBITDA is a profit measure that is often used by investors and analysts in assessing financial leverage. Operating profit is also higher under IFRS 16 because it includes only a portion of the costs related to leases, as explained above.

Profit for the year is only marginally different between IFRS 16 and IAS 17 / US GAAP because the company holds a portfolio of leases starting and ending in different years. Let's see about cash flow statement:

Table 5: **EBITDA of different sectors**

Cash flow statement	IAS 17	IFRS 16	US GAAP
Operating activities	6,265	8,026	6,265
Investing activities	(5,190)	(5,190)	(5,190)
Financing activities	(851)	(2,612)	(851)
Total cash inflow	**224**	**224**	**224**

Source: Effects Analysis IFRS 16, International Financial Reporting Standard

IFRS 16 vs IAS 17 and US GAAP, total cash flow does not change, but the mix will change applying IFRS 16 because operating cash flows are higher and financing

cash flow are lower compared to IAS 17 and US GAAP. Operating cash is also higher under IFRS 16 because it includes only a portion of the costs related to leases, as explained above.

Net cash flows from operating activities is higher applying IFRS 16 (with corresponding increase in cash outflows from financing activities).

The amount of money that must be transferred from the lessee to the lessor for rent payment and other lease obligations is not changed and therefore, in any other condition, the total amount of cashflow exit from financial management is not affected in any way. What will have to change after the implementation of IFRS 16 is how the total cashflow coming out of the lessee's cash is represented in its financial statement prospectus. To provide a clear and correct representation of the business reality it is important that there is a link between the various accounting schemes that make up the balance sheet, so the new standard requires that the overall cashflow is divided into a principal share due as a "repayment" of the financed capital that flows into the section of the statement dedicated to the financial assets and a share paid as an interest that will have to be classified in a way similar to the interest. This means that, in the transition from IAS 17 to the new standard.

- An increase in the cash flow of operating activities, which will no longer be burdened by the release of financial resources for rent payments that, under the current provisions, are included precisely in the operational management;

- A marked reduction in the cash flow of the financial asset, because the main share of outflows for leasing will always be included in the management of the financing activities and the minority share of interest will instead fall into the category for all companies in which they are supported as compensation for obtaining sources of financing.

Conclusions. The aim of this work is to investigate the lease before and after the issuing of the IFRS 16. Moreover, a comparison between the international accounting standards and the US GAAP is performed to highlights if the convergence process between FASB and IASB was taken into account when IFRS 16 was issued.

The analysis proposed in this report has shown that new accounting models for leasing have been adopted in the international and American accounting panorama, which guarantee greater transparency and reporting of the financial statements of leasing operations that were not previously fully and clearly shown in the financial statements. It should also be noted that at the national level the current accounting treatment has not been changed but the capital method for the representation of both financial and operating leases has been maintained.

As regards the comparison between the new International Accounting Standard IFRS 16 and its predecessor IAS 17, there are important differences with regard to the classification of leases, the scope of application and the new model for determining the value of the asset and the related financial liability. In particular, in the classification of leases, IAS 17 distinguished between operating and finance leases. In the new IFRS 16, however, this distinction is repealed to introduce a single definition of leasing based on the concept of "right to use the underlying asset" which translates into two

main components: the right to benefit from the use of the underlying asset; and the right to decide on the use of the asset.

The second aspect modified with respect to the previous version of the standard is the scope of application and in particular the so-called "grounds for exclusion" which in IAS 17 were not provided for, while in the new standard IFRS 16 the possibility is given not to apply the rules contained therein in the case of short-term or low value leasing operations.

The aspect that has undergone a greater level of change is the accounting method applied to the lessee for leasing operations and the relative model to be used for the valuation of assets and liabilities. IAS 17 provided for two different accounting methods depending on whether the lease was financial or operational. In particular, the finance lease method was adopted and, therefore, the financial asset and financial liability were presented on the balance sheet with borrowing costs being charged to the income statement on the basis of the expiration dates of the liability repayment schedule. The model for the valuation of assets and liabilities governed by IAS 17 required that these be valued at the lower of the fair value of the asset leased and the present value of the periodic instalments determined at the date of commencement of the contract.

As regards the provisions of IFRS 16, on the other hand, it emerged that for the lessee the accounting method to be applied for all leasing operations (both financial and operational) is the financial method. Consequently, for the lessee the relative model for determining the financial asset and liability has also been modified; in fact, the so-called "right of use model" will have to be applied.

The new international accounting standard IFRS 16 will have a significant impact on the financial statements of companies that operate mainly with capital goods (like vehicles and aicrafts) obtained through operating leases. In fact, if, with the previous version, these transactions were represented only in the income statement with the allocation to operating costs of the full value of the periodic instalments, with the new version of the principle the companies will simultaneously increase their assets and liabilities in the balance sheet and will be limited to recording the financial charges, representing the interest rate, and the amortization of the right of use in the income statement. As a result, the gross operating margin (EBITDA) will improve compared to what was previously envisaged in IAS 17.

Applying previous lease accounting requirements, the criteria for determining whether a lease was either a finance lease or an operating lease were similar applying IFRS and US GAAP; however, US GAAP provided explicit five quantitative classifications that defined when some of these criteria were met.

In calculating the residual value, the regulation of the FASB for a better transparency of the classifications of the lease, makes recourse to the ASC Topic 606, revenue from contracts with customers for less revenue recognition on the lessee, guaranteeing when this is a financial lease and when operating. This highlights how the same principles, at times, can be connected among themselves, to define specific situations of particular importance.

It should be noted that the ASC Topic 842 (Leases) provides for only one case of exemption, ie the case of short-term leasing. The leasing accounting model for the lessee instead provides for a double recognition model depending on whether the

leasing transaction is a financial or an operating one. The different accounting treatment is pertinent to the sole method of imputation to the income statement of the costs related to the transaction. In fact, at the date of signing the contract, the lessee will recognize the asset and the related financial liability for both types of leases in the balance sheet. Subsequently, for the financial lease the amortization cost of the right to use the underlying asset and the cost of the loan among the financial charges will be charged to the income statement. For operating leases, on the other hand, the costs associated with the transaction are charged to the income statement through a single cost throughout the lease term and divided into straight lines.

The two institutes IASB and FASB have worked together to reach the same purposes to unify the accounting principles, there are considerations that confirm what has been done together.

The first step to a collaboration between the two institutes was the problem of accounting for off- balance sheet agreements prior to the entry into force of the new IFRS 16 and ASC TOPIC 842. In fact, many leasing transactions were often classified as operational, although the contract allowed for the all the risks and benefits associated with the ownership of the asset. In this way, the representation of the company given by the balance sheet was somewhat "false" because it failed to present in the user's financial position two important elements: the asset for the right to use the asset (or better yet, directly the material immobilization given by the tangible asset) and the liability given by the commitment to the payment of future fees plus any residual value of the asset and final option of purchase.

Since 2005, the International Committee for Accounting Standardization (IASB) and the Financial Accounting Committee (FASB) have examined and solicited the views of interested parties on clarity regarding the accounting of leases. The estimated $ 3.3 trillion imbalance lease commitments are within the public company books that have used International Financial Reporting Standards (IFRS) and US GAAP.

However, 85% of these communications were off-balance sheet lease contracts. So this shows the lack of news and disclosures fed by what is extremely difficult for users of the financial statements to obtain accurate information on the activity in the leasing of the functions and subjected to comparative checks with analogy and accurately calculate the insurance of off-balance sheet charges.

In fact, all stakeholders who had any interest in the company and needed to know its value or assess its solvency, in order to carry out significant analyses and proceed to adjust its values based on the additional information in the Notes.

On the other side instead, we have to underline how much the two standards still operate on different roads, as evidenced by the classification of the leasing in 5 quantitative criteria reported in the FASB, not included in the IASB.

Despite the work undertaken by the two accounting bodies for the purposes of accounting convergence between IFRS and US GAAP, even in the new version of the principles under analysis in this report there are still slight differences. In particular, the differences found concern the following issues: a) the exemption clauses; b) the accounting entry model for the lessee; and c) the presentation in the financial statements of the transaction. Despite the contact points and the differences that still exist between the IASB and FASB, the thesis can state that today the aim is to

improve the collaboration in order to achieve unity of purpose from an accounting point of view, even if this will take time and resilience.

It would also be interesting to understand the economic and strategic impact that the new changes made to the new international accounting standard IFRS and US GAAP have had and will have in the different business sectors and in their strategic and investment decisions, also considering that in some business sectors the procurement of capital goods through the contractual form of leasing appears to be a fundamental aspect for the normal management of business activities.

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THE THIRD SECTOR AND SOCIAL ENTERPRISE IN ITALY

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Summary

The contribution provides an initial reading of the regulatory provisions of Delegated Law No. 106 of May 2016, by which the areas of competence of the Third Sector were formally unified, and of Legislative Decree No. 117 of July 3, 2017 (so-called Code of the Third Sector) as well as Legislative Decree No. 112 of July 3, 2017, on Revision of the Discipline on Social Enterprise. The reflection focuses mainly around the social, economic and legal consequences arising from the introduction of the Code of the Third Sector, addressed in its most relevant aspects and as far as this is necessary for the correct and exhaustive analysis of the main object of this work, paying attention to the principle of horizontal subsidiarity, by virtue of which a channel of shared administration is established between public entities and Third Sector entities, alternative to that of profit and the market. In addition, this paper contains a special reference to the services of "insertion or reintegration into the labor market of workers and disadvantaged or disabled persons" falling within the new activities of general interest of social enterprise. Lastly, there is reference to the Guidelines for the implementation of regional projects aimed at experimenting with outreach facilities for the implementation of which the involvement of Third Sector entities has been envisaged.

Keywords: *Third sector, reform, laborlaw, social enterprise, subsidiarity, disability, inclusion.*

JEL: *L31, L39*

UDC: *005.35:334.72(450)*

Introduction. Since the 1993 publication of the European Community White Paper on "Growth, Competitiveness and Employment" (European Commission 1993)–which was intended to fuel reflection to make decentralized, national, or community decisions that would lay the foundations for "sustainable" development–the idea that the Third Sector, i.e., the set of non-profit organizations, can contribute to the creation of new employmenthasbecomewidespread. In Italy, over the past thirty years, nonprofit institutions have been strongly established in the pursuit of solidaristic objectives for the benefit of "weak" categories of society: according to the latest ISTAT census (2020), nonprofit institutions active in Italynumberabout 360,000 and, overall, employ 861,919 employees, with encouraging data even for areas in southern Italy–notoriously marked by periods of strong economic depression–with a growth trend that has been confirmed to be positive for a decade (Riccobono, 2020). In the face of the growth in the number of employees in nonprofit institutions, there

can only be a real boom in employment to which, however, with the reform, it was not intended to devote a specific discipline, thus equating, in this way, employee employment in the Third Sector with that of the First and Second Sectors (Pareo, 2017; Visonà, 2018).

However, although the Third Sector presents a multifaceted system, i.e., consisting of social enterprises, social cooperatives, voluntary organizations, mutual aid societies, etc, it is possible to trace it back to a unified framework in its role of advocacy, that is, "the activity of promoting and protecting rights through voluntary actions to plead the cause of individuals, families, and groups in a state of marginality and need, and to urge equalizing and restorative reforms vis-à-vis the authorities charged with redistributive functions of the social product"(Ardigò, 2003; Rossi, 2009).

1. Legal recognition of the Third sector in Italy and the enablingreformlaw

With the crisis of the Italian welfare state model in the 1970s (Borzaga&Santurari, 1999), there was a downsizing of direct state intervention in the management of activities aimed at satisfying collective needs and, at the same time, the conferring of increasingly incisive roles on private organizations that, originating from motivations other than that of "increasing wealth," initiated and managed economic activities directed at satisfying the needs of specific individuals or the entire community (Najam,1996). It was during the 1990s that there was a progressive legal and political recognition of the role of Third Sector organizations in the direct and autonomous production of welfare services, which was accompanied, moreover, by changes in their relations with public agencies. This is a reality that has contributed increasingly incisively to providing answers to the state welfare crisis through the elevation of participatory welfare, consisting of broad community governance in constant support of the state in meeting collective needs.

Following the growth of the sector, the Italian legal system has gradually adapted its body of law to the need for regulation of the different social aggregates that have emerged in civil society. This resulted in a "tangle" of regulation that the reform of the Third Sector aimed to reorder by offering a unified framework within which Third Sector entities can move in search of common rules of behavior (Montanini & D'Andrea, 2020).

In Italy, the turning point was marked with the enactment of DelegatedLawNo. 106/2016 (Borzaga&Defourny, 2001; Gori & Rossi, 2016), which delegated the government to issue legislative decrees to reform the Third Sector (Legislative Decree No. 117/2017. On this profile see Boschetti, Clarich, 2018), social enterprise (Legislative Decree No. 112/2017) and the regulation of universal civil service (Legislative Decree No. 40/2017), through which it was intended, moreover, to promote work as a factor of social inclusion (Garofalo, 2018).

The main guidelines of the reform of the Third Sector can be found in the legislator's desire to establish a more organic regulatory framework for the entire Third Sector, reserving ad hoc legislation for social enterprise; in the establishment of the Single National Registry of the Third Sector with the task of carrying out administrative control functions over Third Sector entities and ensuring a system of legal publicity; and in the provision of facilitative regulations (Iasiello, P., 2018).

Through these regulatory innovations, it intended to encourage a change in the economic-productive method in a more ethical and social sense, for which the social balance sheet (Bani, 2018) becomes the privileged tool for relating a dimension other than the merely economic one, well attentive to the welfare of workers and the community in which they work**.**

2. Subsidiarity and the Third Sector. The decision of the Constitutional Court n. 131 of 2020

Solidarity, subsidiarity, inclusion and full development of the person, and enhancement of the potential for growth and employment, are the general principles with which the Code of the Third Sector opens, which, through the purposes indicated in the first article, aims to implement articles 2, 3, 4, 9, 18 and 118, fourth paragraph, of the Constitution. Indeed, in order to trace the legitimacy of Third Sector entities, as expressions of civil society aggregations, it would have been sufficient just to refer to the norms set forth in Articles 2 and 118, fourth paragraph, of the Constitution, from the reading of which in conjunction it is already possible to infer the fundamental dimensions in which the Third Sector operates: on the one hand, in fact, the value of the person indicated by Article 2 of the Const. as a social value (Perlingieri, 2009) makes it possible to see in social aggregations the value and social function of the Third Sector as a tool for the development of the personality; on the other hand, the pursuit of civic, solidaristic and socially useful purposes, including through forms of collaboration with the state, regions, provinces and local authorities (Amato, 2021), makes it possible to recognize the Third Sector also an active role in the planning, design and evaluation of interventions, declining in welfare policies the principle of horizontal subsidiarity referred to in Art. 118, fourth paragraph, Const. (Montanini & D'Andrea 2020). The focus here is on Article 55 of the Third Sector Code, which "realizes for the first time in general terms a true proceduralization of subsidiary action" (Constitutional Court no. 131/2020; on this profile see Gori, 2020; Rossi, 2020; Galdi, 2020; Arena, 2020). In the interpretation of the constitutionaljudge, Art. 55 CTS constitutes "one of the mostsignificantimplementations of the principle of subsidiarity" by virtue of which "a channel of sharedadministration, alternative to that of profit and the market, isestablished: *co-programming*, *co-design*[...] are configuredasphases of a complex procedure thatis an expression of a differentrelationshipbetween the public and the private social sphere, notbasedsimply on a synallagmaticrelationship." The reference to the principle of subsidiarityisfurtherexplicated in the overcoming of the idea "wherebyonly the action of the public system isintrinsicallysuited to the performance of activities of general interest and it has been recognized that such activities well may, instead, also be pursued by an autonomousinitiative of citizens," a consequence of the "recognition of the profound sociality that connotes the human person and itspossibility of realizing a positive and responsible action" (Constitutional Court no. 131/2020). Ultimately, in the interpretation of the constitutional judge, "third sector entities in so far as they are representative of *solidarity society* [...] oftenconstitute a capillary network of proximity and solidarity on the territory, sensitive in real time to the needsthat come from the social fabric, and are thereforeable to make available to the public body both valuable information data [...] and an important organizational and intervention

capacity: what often produces positive effects, both in terms of saving resources and increasing the quality of services and benefits provided in favor of the *society of need*.'"

The role of Social Enterprise for the inclusion and reintegration into the labor market "of workers and people with disadvantages or disabilities"

Among the benefits provided for the "society of need" are those new activities of general interest of "services aimed at the insertion or reintegration into the labor market of workers and disadvantaged or disabled persons" (Art. 2, paragraph 1, letter p. Legislative Decree No. 112/2017). It is legitimate to question the meaning of the expression "disadvantaged people or people with disabilities" which–while clearly presenting two alternative categories (disadvantaged people or people with disabilities) as if to imply that people with disabilities are not also disadvantaged and vice versa –come to be lumped together by the perception of some form of weakness. On this point, the provision in Paragraph 4 of Article 2 of Legislative Decree No. 112/2017 - through the reference to Article 112, Paragraph 2, of Legislative Decree No. 50/ 2016 - clarifies the scope of the "alleged" distinction: thatis, "persons with disabilities" are considered to be thosereferred to in Article 1 of Law No. 68/1999 i.e., "persons of working age suffering from physical, mental or sensory impairments and to the intellectuallydisabled, resulting in a reduction in the ability to work of more than 45 percent [...]; personsdisabled for work with a degree of disability of more than 33 percent [...]; blind or deaf-mute persons [...]; personsdisabled by war, civilianinvalids of war and disabled for service [...]."While "disadvantaged" are considered to be the people specified in Article 4 of Law no. 381/1991, namely, "the physically, mentally and sensorydisabled, formerinpatients of psychiatric hospitals, includingjudicialones, personsundergoingpsychiatric treatment, drugaddicts, alcoholics, minors of working age in situations of family difficulties, personsdetained or interned in penitentiary institutions, convicts and interneesadmitted to alternative measures to detention and outside work pursuant to Article 21 of Law No. 354 of July 26, 1975, asamended." In essence, what seems to be inferred from reading the above-mentioned regulations is that the category of disadvantaged persons should be considered as a broader category into which persons with disabilities can also be included. The distinction arises again in reference to the conventional instrument referred to in Articles 11-12 and 12 bis of Law No. 68/99 and those under Article 14 of Legislative Decree No. 276/2003 (Garofalo, 2008), where, while in the latter provision we refer to the job placement of "disadvantaged workers and disabled workers," in Law No. 68/99 the references only to "disabled workers." Therefore, the distinction of the protected categories "persons with disabilities" and "disadvantaged persons" is confirmed, but the question that constitutes a qualifying point on the subject of occupational well-being and sustainable development is: can the intervention of the social enterprise or, in any case, of the Third Sector entities, also concern persons who are disadvantaged and disabled and, who, instead, maybe involved among the variables related to the effects for the person and for the work organization such as: presenteeism; burnout; mobbing/straining; (in)job satisfaction, etc.? Indeed, with the epidemiological emergency, there has been a form of experimentation with outreach facilities, which has involved through forms of shared administration Third Sector entities for health promotion and prevention, as well as

for the care and rehabilitation of frail people (Article 1, paragraph 4 bis, DecreeLaw No. 34/2020 converted into law No. 77/2020). What should be pointed out is that the objective of the aforementioned experimentation is to "promote the well-being, quality of life and autonomy of all people with particular reference to fragile people," meaning by the latter "those suffering from chronic diseases, disabled, with mental disorders, with pathological dependencies, non-self-sufficient" (p. 2 "Guidelines for the implementation of regional projects on the experimentation of outreach facilities"). If, on the one hand, once again, the perimeter of the categories of people targeted by the "outreach services" does seem to be clear, since, for example, the category of "disadvantaged people" is not counted among the protected fragile ones (even if it is nevertheless intended to promote welfare "to all people" and, therefore, also to disadvantaged ones, albeit "with particular reference to the fragile ones"); on the other hand, an unequivocal factis represented by the entrusting of care services to Third Sector entities. In the latter perspective, even the DelegatedLaw on Disability No. 227/2021 (Ferri, 2021), entrusts Third Sector entities with an active role in the elaboration of the life project of the person with disabilities in order to ensure their social and labor inclusion.

Literature review. Essential bibliography on Third Sector and social enterprise law treated from a labor law perspective.

Research methodology. Due to the complexity of the subject matter, the research was conducted using qualitative survey techniques with the aim of describing and interpreting social norms and cultures and offering descriptive models of behavior, organizations, and social dynamics. The research was developed in three phases:

1) Normative analysis. With the Delegated Law No. 106/2016 "Delegation to the Government for the reform of the Third Sector, social enterprise and for the regulation of universal civil service," a path of reform of the Third Sector was started and is still ongoing. According to the provisions of the delegation, the government has adopted:

- on the subject of Universal Civil Service, Legislative Decree No. 40/2017 on "Establishment and discipline of Universal Civil Service, pursuant to Article 8 of Law No. 106 of June 6, 2016."
- in the field of 5 per thousand, Legislative Decree No. 111/2017 bearing "Discipline of the Institute of 5 per thousand of personal income tax in accordance with Article 9, paragraph 1, letters c) and d) of Law No. 106 of June 6, 2016"
- in the field of social enterprise, Legislative Decree No. 112/2017 on "Revision of the regulations on social enterprise, pursuant to Article 2, paragraph 2 of Law No. 106 of June 6, 2016.
- in the field of a general revision of regulations on Third Sector Entities, registers, tax treatment, supervision of Third Sector Entities, Legislative Decree No. 117/2017 bearing "Code of the Third Sector, pursuant to Article 1, paragraph 2, letter b) of Law No. 106 of June 6, 2016."

- The Delegated Law also provided, within one year after the entry into force of each legislative decree, for the possibility of issuing supplementary and corrective provisions to the decrees. They were, therefore, issued:

- Legislative Decree No. 43 of April 13, 2018, containing supplementary and corrective provisions to Legislative Decree No. 40 of March 6, 2017;

- Legislative Decree No. 95 of July 20, 2018 on supplementary and corrective provisions to Legislative Decree No. 112 of July 3, 2017;

- Legislative Decree No. 105 of August 3, 2018 on supplementary and corrective provisions to Legislative Decree No. 117 of July 3, 2017.

- Law No. 68 of March 12, 1999, "Regulations for the right of the disabled to work". Legislative DecreeSeptember 10, 2003, No. 276 "Implementation of the delegations on employment and labor market, referred to in Law No. 30 of February 14, 2003. Law No. 77 of July 17, 2020, "Conversion into law, with amendments, of Decree-Law No. 34 of May 19, 2020, containing urgent measures on health, labor and economic support, and social policies related to the epidemiological emergency from COVID-19.

1) Doctrinal analysis. The following scholarly contributions are to be considered particular doctrinal reference points for the development of this scientific texts:

- Consorti, P., Luca, G., & Rossi, E. (2018). Law of the Third Sector, Società editrice il Mulino spa.

- Iasiello P. (2018). The social enterprise, Cendon Book-Civillaw.

- Montanini, L., & D'Andrea, A. (2020). The reform of the Third Sector. The impact on accountability tools. Giappichelli Editore.

- Riccobono, A. (2020). Employment law and the third sector. Employment and partnership welfare after d. lgs. n. 117/2017, Edizioni scientifiche italiane.

2) Jurisprudentialanalysis. Decision of the Constitutional Court n. 131 of 2020

Discussion and conclusions. The question arises as to whether the promotion of welfare for "weak" categories entrusted to the intervention of Third Sector entities should walk hand in hand with corporate welfare, of whose development the Third Sector itself is a potential provider of services with a high social impact. The question arises in the absence of a specific regulatory provision that legitimizes the Third Sector'sintervention in promoting the welfare of workers who, while not falling into the protected categories (frailty, disadvantage, disability), are nevertheless still bearers of general interests to be protected.

In other words, in the face of the (non-similar) cases of "disability," "disadvantage," and "frailty," the proactive intervention of Third Sector entities is desirable to protect that residual sphere of categories of workers (not assimilated to the aforementioned categories) whose work well-being could have a significant impact on the organization's productivity performance.

In particular, the direct and active involvement of Third Sector entities in promoting the “welfare” of workers could be very significant in revitalizing the corporate welfare system as well. The latter is, in fact, inextricably linked to

occupational welfare: two aspects that Third Sector entities must be able to unitedly protect.

Ultimately, thanks to the model of shared administration implemented by Third Sector entities being able to incisively contribute to the implementation of the principle of horizontal subsidiarity, it is possible to create aggregative forms that open up the prospect of new professionalism by offering a service not only for the benefit of the disadvantaged, fragile and/or disabled but towards all workers involved in the company in which the welfare to be protected becomes a flywheel for sustainable development in terms of social and labor inclusion.

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SUSȚINEREA ANTREPRENORIATULUI ȘI A POLITICII PRIVIND IMM-URILE ÎN ROMÂNIA CU AJUTORUL FONDURILOR EUROPENE

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Summary

Evidence suggests that the development of entrepreneurship is a fundamental ingredient of endogenous economic growth and a prerequisite for sustainable local and regional development and for social cohesion.

The role of education in promoting entrepreneurial attitudes and behaviors is now universally recognized.

In other words, in this article, we propose to present the concrete way in which a project, co-financed from European funds, supported entrepreneurship and SMEs in Romania. Specifically, we refer to the 40Ready Interreg Europe project, "Strengthening the capacities of SMEs to engage in Industry 4.0". Within this project, a research tool, a survey was developed and applied, aimed at providing relevant information in the field of Industry 4.0 and also providing thematic solutions (a new support criterion SME digital skills through the OPHC; a new evaluation criterion for the "Digital skills for SME employees" call, intended to support the MA OPHC in the evaluation and, in the respective pledges, to help SMEs to recognize the main I4.0 areas to focus on their digitization path in general and in particular for the development of employees' digital skills).

This paper, the result of an exploratory research, aims to present the relevant characteristics and trends in supporting entrepreneurship and SME policy in Romania, with the help of European funds, a topic that generated the need to start and, implicitly, to operationalize such a study.

Therefore, in the configuration of the research process, there were no strict rules.

Keywords: *Industry 4.0; European Projects; Digital Competences; Human Factor; Operational Programme Human Capital 2014-2020; Economic Growth; Sustainable Local and Regional Development; Social Cohesion.*

JEL: *Q1, R1, H254*

UDC: *334.722.02(498)*

Introducere. Doar concepte până mai ieri, termenii *digitalizare* și *Industrie 4.0* devin, ușor-ușor, realitate și în România. Automatizarea, inteligența artificială, IoT - Internetul lucrurilor, precum și alte tehnologii avansate captează și analizează cu rapiditate o multitudine de date care oferă multe tipuri de informații.

Provocarea actuală, la adresa IMM-urilor românești, rezidă în schimbarea modului de gândire, de formare, de lucru al angajaților, astfel încât aceștia să reușească să creeze valoare adăugată prin tehnologiile digitale.

Și România are avantajele necesare (viteza internetului, dezvoltarea sectorului IT, tehnologie de ultimă oră deja prezentă în marile unități de producție, forță de muncă specializată) pentru a face un salt către digitalizare și Industria 4.0.

A patra Revoluție Industrială, cunoscută sub numele de Industria 4.0 (I4.0), devine rapid și noua noastră realitate, menită să revoluționeze și să transforme economiile, locurile de muncă, mentalitățile, strategiile și modalitățile de acțiune ale resurselor umane românești. Obiectivul principal, asumat de Industria 4.0, este crearea de întreprinderi digitale, care să fie interconectate și perfect capabile să ia decizii în cunoștință de cauză, să performeze într-un mediu competitiv, în care locul și rolul central revine capitalului uman. Această nouă revoluție interconectează și armonizează tehnologiile inteligente care depășesc organizațiile și ajung să interfereze cu viața noastră de zi cu zi.

Rezultate principale. Esența aceasta a avut-o și scopul parteneriatului 40Ready - atingerea, prin colaborare, la nivel interregional, a obiectivului său principal, și anume, *pregătirea IMM-urilor, la toate nivelurile - antreprenori, manageri și personal - pentru a se adapta și face față provocările Revoluției Industriale 4.0, în strânsă legătură cu activitățile dedicate instrumentelor de politici publice, care sprijină IMM-urile în transformarea lor tehnologică, organizațională și culturală*.

Proiectul a fost o punte de colaborare, o platformă pentru schimbul de experiență și învățarea comună între 8 parteneri din 7 țări: Italia, Belgia, Finlanda, Polonia, Spania, Lituania și, nu în ultimul rând, România. Țara noastră a fost reprezentată în proiect de Organismul Intermediar Regional pentru Programe Europene Capital Uman Regiunea București-Ilfov, numit în perioada implementării proiectului OIR POSDRU Regiunea București-Ilfov.

De asemenea, partenerii și părțile interesate ale Proiectului 4.0 au lucrat împreună pentru a înțelege nevoile IMM-urilor în procesul de dezvoltare a competențelor digitale, pe de o parte, și modul în care factorii de decizie pot acționa, cu instrumente de politici publice, pentru a răspunde acestor nevoi, pe de altă parte.

Toate acestea sunt susținute și de ultima analiză a Autorității Digitale a României, „*Barierele digitale românești pentru sectorul public și privat*”, *barierele digitale ale sectorului privat (inclusiv IMM-urile) sunt în principal cele legate de capitalul uman: competențele digitale scăzute ale forței de muncă; competențe digitale de management absente pentru proprietarii de IMM-uri; număr limitat de specialiști IT pentru nevoile IMM-urilor; lipsa finanțelor pentru adoptarea tehnologiilor digitale avansate însoțite de suport și consultanță*.

România se află pe linia de jos a clasamentului european în ceea ce privește numărul de IMM-uri care planifică/au o strategie de digitalizare a activității (atât pentru tehnologiile de bază, cât și pentru cele avansate); IMM-urile românești sunt dispuse să se angajeze în digitalizare, dar fac foarte puțini pași către aceasta; o parte semnificativă a IMM-urilor românești nu au o analiză solidă cu privire la nevoile lor de digitalizare; Sectorul IMM din România se află într-o etapă preliminară a transformării digitale; digitalizarea și rolul său cheie în transformarea activității și managementului IMM-urilor sunt foarte puțin înțelese de către IMM-uri; marea majoritate a IMM-urilor au o dorință foarte scăzută de transformare digitală sau nu sunt informate/neconcludente.

Call-ul POCU 3.12 (*Competențe digitale pentru angajații IMM-urilor*) a fost lansat oferind totală libertate candidaților de a pregăti un plan de dezvoltare pentru

îmbunătățirea competențelor digitale ale angajaților IMM-urilor, pe următoarele 3 categorii: abilități digitale de bază, abilități digitale legate de muncă și specializarea TIC – competențe digitale. De asemenea, în conținutul Ghidului Solicitantului-Condiții Specifice, a fost menționat cadrul european de e-Competență (e-CF).

Elementul care a lipsit de aici a fost abordarea omogenă, la nivel național, a modului de evaluare a competențelor digitale ale angajaților și, implicit, acela de a crea un plan obiectiv de dezvoltare.

În acest sens, în cadrul proiectului studiat, a fost elaborat și aplicat sondajul „*Revoluția industrială 4.0 vine în viața noastră*" pentru a oferi informații relevante în domeniul Industriei 4.0 și, de asemenea, pentru a oferi soluții tematice: un nou criteriu de susținere a competențelor digitale ale angajaților IMM-urilor prin Programul Operațional Capital Uman 2014-2020; un nou criteriu de evaluare pentru apelul „Competențe digitale pentru angajații IMM-urilor", menit să sprijine Autoritatea de Management pentru POCU în evaluare și, în același timp, să ajute IMM-urile să recunoască principalele domenii I4.0 să se concentreze pe calea lor de digitalizare, în general, și specific, pentru dezvoltarea competențelor digitale ale angajaților.

În acest scop, partenerii au elaborat un plan de acțiune în cadrul proiectului, cu propuneri privind modul în care politicile publice și, implicit, fondurile europene pot sprijini mai bine IMM-urile în pregătirea I4.0.

În ceea ce privește posibilitățile de îmbunătățire a politicilor publice, identificate în cercetarea tematică, operaționalizate în cadrul proiectului, trebuie amintit că acestea variază, de la finanțarea proiectelor pentru dezvoltarea competențelor I4.0 și maturizarea digitală, până la abordări de management care creează sinergie între instrumentele de politică, strategii care integrează atât I4.0, cât și dezvoltarea competențelor pentru IMM-uri.

Valoarea adăugată, adusă de acest proiect, constă în faptul că partenerii săi sunt autorități de management sau organisme de implementare a politicilor selectate, actori care au puterea și și dorința de a face schimbări reale. În acest fel, regiunile care au fost implicate în acest proiect au devenit, în primul rând, mai bine pregătite pentru a implementa proiecte de succes, durabile și profitabile în I4.0. Ele, la rândul lor, vor sprijini în continuare IMM-urile regionale să devină mai competitive, menținând și creând locuri de muncă mai bune. În al doilea rând, în funcție de nevoile de intervenție ale IMM-urilor, vor fi identificate și prezentate potențialele surse de finanțare. De exemplu, în România, un sprijin financiar substanțial pentru consolidarea capacității profesionale a capitalului uman din IMM-uri poate fi oferit, în actuala peroadă de programare, 2021-2027, de Fondul Social European Plus (FSE+). Finanțarea europeană pentru dezvoltare regională (FEDR) poate fi de un real folos în sprijinirea dezvoltării tehnologice și organizaționale. Mai mult, îmbunătățirea acestor politici ar putea garanta dezvoltarea IMM-urilor, atât pentru persoanele care lucrează în ele, cât și pentru suportul tehnologic al digitalizării și automatizării industriale.

Așadar, în România, echipa OIR BI a proiectului Interreg 40 Ready ("*Întărirea capacității IMM-urilor de a se adapta la revoluția industrială 4.0*") a realizat, în anul 2019, o cercetare de piață cu titlul "*Revoluția industrială 4.0 intră în viața noastră*", demers continuat cu analiza de piață "*Raport despre politicile publice privind digitalizarea IMM-urilor identificate a fi îmbunătățite și exemple de bune practici locale*" (împreună cu *Valoria)*.

În urma acestora, s-a configurat ideea *necesității identificării și implementării unui instrument cu ajutorul căruia să fie testate competențele digitale ale angajaților IMM-urilor* și care să facă parte din procesul mai amplu de transformare digitală a IMM-urilor. Aceste concluzii au fost analizate și cu stakeholderii proiectului cu scopul identificării unei soluții/instrument ce a și fost testat, în colaborare cu CNIPMMR ("*Raport Evaluarea competențelor digitale ale angajaților IMM-urilor din România, utilizatori ai tehnologiilor IT*"), **raport care a subliniat importanța și necesitatea folosirii instrumentului de evaluare**, după cum urmează: " *(...) rezultatele finale demonstrează* ***un nivel mediu al acestor competențe digitale****, în aproape toate ariile:* ***cultura informației și a datelor, comunicare și colaborare, securitate, rezolvarea problemelor****. Aria de competențe care necesită cea mai mare atenție în vederea dezvoltării din partea angajaților și, implicit, a administratorilor IMM-urilor, este cea legată de crearea conținutului digital. Preocuparea de a transfera cunoștințe digitale celor din jur nu este un comportament foarte întâlnit. De aceea, angajații care dețin competențe digitale pot fi încurajați să devină ei înșiși agenți ai învățării digitale în cadrul IMM-ului. În contextul actual, IMM-urile sunt interesate să-și orienteze resursele active în zona competitivității și a explorării noii normalități, prin apel la instrumentele digitalului. Altfel spus, eventuala tendință a unor IMM-uri spre nonacțiune, în acest moment, se dovedește a fi contraproductivă în așteptarea revenirii la vechea realitate. Singura direcție corectă pentru IMM-uri, validată și de rezultatele studiului actual, este cea către normalitatea digitală. Mai mult, în economia bazată pe date, resursa umană redevine cea mai importantă resursă a unei întreprinderi. În plus, concepția conform căreia accesul la tehnologie ar reprezenta, în sine, o barieră nu își mai dovedește aplicabilitatea. Un impact semnificativ, în sfera competitivității unei firme, vor avea nivelul de competențe ale angajaților și disponibilitatea acestora de a se dezvolta permanent, de a-și îmbunătăți constant competențele. Așadar, în domeniul IMM-urilor, succesul acestora rezidă în gradul de pregătire și în nivelul competențelor, în special a celor digitale, ale angajaților. Din același punct de vedere, al capitalului uman ca resursă certă a unei companii, aria care va conferi plus valoare firmelor, conform rezultatelor studiului OIR BI, este zona de creare de conținut digital (elaborare de prezentări, configurarea unui magazin online, crearea de pagini web). Lesne de înțeles, dat fiind faptul că, în lipsa acestei componente ori a unei slabe prezențe a firmelor în spațiul digital productiv, efectul generat va fi accesul tot mai limitat al companiilor la activitățile operaționale.* ***În contextul competiției, dublat de cel al pandemiei, problemele de costuri, cu care se confruntau până de curând firmele, sunt anulate grație democratizării accesului la tehnologie și permit accesul mult mai facil al IMM-urilor la instrumentele digitale. O șansă reală pentru evoluția IMM-urilor în contextul actual de digitalizare accelerată este disponibilitatea angajaților de a-și dezvolta permanent competențele profesionale, în general, dar în particular pe cele digitale***."

Toate aceste rapoarte pot fi accesate pe site-ul OIR BI: https://www.oirbi.ro/category/strengthening-sme-capacity-to-engage-in-industry-4-0/.

Prin toate aceste acțiuni și rezultate obținute, cărora li se adaugă schimbul de experiență cu partenerii internaționali din proiect, echipa OIR BI a deschis o cale de îmbunătățire adresată creatorilor de politici publice, actori cheie ai transformării digitale în România: AM POCU, ADR, ADR BI.

Cu alte cuvinte, rezultatele activităților proiectului "*Întărirea capacității IMM-urilor de a se adapta la revoluția industrială 4.0*" au justificat și fundamentat și formularea unei recomandări, care este, de altfel, și parte a *Planului de acțiune pentru îmbunătățirea politicilor publice existente*, elaborat tot în cadrul acestui proiect, adresate actorilor cheie (AM POCU, ADR, ADR BI), creatorii politicilor publice tematice din sfera transformării digitale în România: ***este vital ca toți angajații din toate IMM-urile românești să beneficieze de această oportunitate, în mod gratuit, și să aibă acces facil la un instrument de evaluare a competențelor digitale***. Varianta în limba română a instrumentului poate fi utilizată facil și în mod gratuit, pe site-ul EUROPASS, prin accesarea link-ului: https://europa.eu/europass/ro.

Instrumentul de evaluare, propus ca urmare a implementării proiectului Interreg 40 Ready ("*Întărirea capacității IMM-urilor de a se adapta la revoluția industrială 4.0*"), aduce beneficii nu doar angajaților, ci și IMM-urilor ca entitate în sine deoarece, pornind de la rezultatele testelor angajaților lor, își pot genera, de asemenea, un profil al nevoilor digitale ale firmei, precum și un plan de dezvoltare a competențelor digitale la nivel individual, dar si colectiv/IMM.

În acest context, pentru perioada actuală de programare, 2021-2027, rezultatele obținute în cadrul proiectului Interreg 40 Ready ("*Întărirea capacității IMM-urilor de a se adapta la revoluția industrială 4.0*") justifică oportunitatea și necesitatea formulării unei recomandări adresate creatorilor de politici publice (AM POCU, ADR, ADR BI), de a solicita aplicanților ca, înainte de elaborarea cererii de finanțare, să acceseze link-ul unde este postat chestionarul de evaluare (https://europa.eu/europass/ro) în vederea testării competențelor digitale și, implicit, în vederea generării raportului de evaluare a nevoilor de dezvoltare a competențelor digitale și a concluziilor pe baza cărora se va putea construi și profilul nevoilor de dezvoltare digitală/IMM. În viziunea OIR BI, acest demers va constitui o bază foarte bună și argumentată pentru redactarea unor cereri de finanțare direcționate și către soluționarea unor nevoi din sfera transformării digitale.

Discutarea rezultatelor, concluzii.

A. Soluții potențiale pentru îmbunătățirea implementării Programului Operațional Capital Uman 2014-2020

Potrivit *Small Business Act Factsheet 2019*, pentru România, un raport al Comisiei Europene, IMM-urile reprezintă 99,7% din companiile din economie și angajează 66% dintre angajați. De aceea, este esențial ca digitalizarea acestor companii să fie ghidată, susținută, coordonată.

De asemenea, analiza pieței muncii din România, din perspectiva schimbărilor în structura ocupațională, a scos la iveală 3 mari categorii de ocupații: cele dominante, cele care și-au schimbat semnificativ conținutul și cele emergente. Indiferent de tipologia lor, majoritatea ocupațiilor s-au modificat în conținutul muncii, principalii factori generatori fiind adaptarea la nevoile clienților, creșterea concurenței și renovarea tehnologică.

Mai mult, dezvoltarea și extinderea sectorului privat și cerința de stabilizare a anumitor segmente de piață au condus la dezvoltarea unor politici orientate către beneficiar/client la nivelul companiilor și, prin urmare, la creșterea rolului unor factori precum adaptarea la nevoile clienților. și creșterea concurenței în domeniu.

În plus, conform raportului *DESI 2020*, România continuă să aibă cel mai scăzut nivel de utilizare a serviciilor de internet dintre statele membre UE, ceea ce corespunde celui mai scăzut nivel de competențe digitale de bază din întreaga țară. 18% dintre persoanele cu vârsta cuprinsă între 16 și 74 de ani nu au folosit niciodată internetul (media UE: 9%). Doar 3% dintre internauții români vând produse online și doar 4% participă la cursuri online.

Progresul tehnologic în domeniul digital are o influență deosebită asupra ocupațiilor existente pe piața muncii. În acest context, nevoia de calificare permanentă a angajaților a devenit o variabilă constantă în mediul de afaceri, companiile fiind nevoite să asigure un proces de formare continuă, mai ales în ceea ce privește competențele digitale.

Același raport arată că, deși s-a înregistrat o ușoară creștere a procentului de specialiști IT&C în anul precedent, aceștia reprezintă o proporție mult mai mică a forței de muncă decât în UE (2,2% față de o medie de 3,9% UE).

Specialiștii IT&C reprezintă 1,2% din totalul femeilor angajate. Pe de altă parte, România are rezultate bune în ceea ce privește absolvenții IT&C, ocupându-se pe locul 5 în rândul statelor membre, cu 5,6% din totalul absolvenților.

Acțiunea identificată și propusă, ca urmare a efectuării sondajului, se referă la Programul Operațional Capital Uman 2014 – 2020, Axa Principală 3 - *Locuri de muncă pentru toți*. În cadrul Axei 3, accentul este Obiectivul Specific 3.12: *Creșterea nivelului de cunoștințe/competențe/abilități al angajaților legate de sectoarele/domeniile economice enumerate de Strategia Națională pentru Competitivitate și Strategia Națională de Cercetare, Dezvoltare și Inovare*.

Acțiunea îmbunătățește modul în care sunt organizate apelurile tematice și modul în care sunt selectate proiectele. Se bazează pe includerea unui nou criteriu de evaluare pentru apelul „*Competențe digitale pentru angajații IMM-urilor*". Noul criteriu este conceput pentru a sprijini Autoritatea de Management pentru POCU în evaluare și, în același timp, pentru a ajuta IMM-urile să recunoască principalele domenii I4.0 să se concentreze pe calea lor de digitalizare în general și în special pentru dezvoltarea competențelor digitale ale angajaților.

Ghidul Solicitantului pentru acest apel specific include Anexa 3 - *Criterii de Evaluare și Selecție Tehnică și Financiară*. În cadrul acestui Ghid al Solicitanților este inserat un nou criteriu de evaluare la *categoria 2 – Eficacitate*, legat de competențele digitale pentru IMM-uri. Mai mult, este inclus următorul text: „*Proiectul are valoare adăugată în subcategoria: Formarea/evaluarea și certificarea competențelor digitale se asigură în următoarele domenii tehnologice specifice Industriei 4.0: social media; servicii mobile; tehnologii cloud; internetul lucrurilor; soluții de securitate cibernetică; roboți și mașini automate; date mari și analiza datelor; printare 3d; inteligență artificială; Bitcoin; Blockchain etc.*"

Tot în ghid, *Capitolul 1. Informații despre apelul de proiecte*, subcapitolul *A1. Context general*, următorul text a fost aprobat de către Autoritatea de Management pentru POCU, text care a fost elaborat de către echipa proiectului OIR BI grație activităților implementate în cadrul acestuia, și a cuprins: „*Conform studiului realizat în cadrul proiectului „40Ready" finanțat prin programul Interreg Europe, un interes major al respondenților pentru domeniul I40 și pentru dezvoltarea competențele digitale au fost confirmate. În urma acestei analize, a rezultat că majoritatea IMM-urilor respondente au cunoștințe puțin-moderate în domeniul digital (71%), sunt*

pregătite într-o măsură mică-moderată pentru schimbările aduse de Revoluția Industrială 4.0 (55%) și au acțiunile inițiate se schimbă, într-o măsură moderată. (60%). Majoritatea covârșitoare a respondenților au apreciat Revoluția Industrială 4.0 ca pe o oportunitate. Cea mai importantă concluzie a studiului este că, în curând, IMM-urile au nevoie de acces la fonduri europene ca principală sursă de încredere pe care să-și bazeze eforturile de adaptare la Revoluția Industrială 4.0."

B. Concluzii

Sondajul „*Revoluția industrială 4.0 vine în viața noastră*", realizat la începutul Proiectului 40Ready, a confirmat un interes major al respondenților pentru domeniul I40 și pentru dezvoltarea competențelor digitale.

Conform acestei analize, majoritatea respondenților IMM-urilor au cunoștințe digitale puțin-moderate (71%), sunt puțin-moderați pregătiți pentru provocările Revoluției 4.0 (71%) și au început să schimbe acțiunile la un nivel moderat (60%).

Marea majoritate a respondenților evaluează revoluția industrială 4.0 ca pe o oportunitate.

Cea mai importantă concluzie a studiului este: în viitorul apropiat, IMM-urile au nevoie de atragerea de fonduri UE ca principală sursă contabilă în efortul lor de adaptare la Industria 4.0.

În plus, raportul a arătat:

• că digitalizarea aduce oportunități pentru toate tipurile de companii, inclusiv pentru IMM-uri, dar asigurarea accesului IMM-urilor la digitalizare trebuie sprijinită, coordonată și monitorizată;

• provocarea actuală este de a schimba modul în care IMM-urile gândesc, se formează și lucrează pentru a crea valoare adăugată prin tehnologiile digitale;

• România are multe avantaje precum viteza mare a internetului, dezvoltarea sectorului ITC, tehnologie de ultimă oră deja prezentă în marile unități de producție, precum și forță de muncă specializată pentru a beneficia de digitalizare și Industria 4.0;

• principalele domenii de îmbunătățire a politicilor publice privind digitalizarea IMM-urilor sunt conștientizarea necesității de digitalizare a IMM-urilor; soluții tehnice adecvate pentru digitalizarea IMM-urilor; creșterea competențelor digitale la toate nivelurile relevante pentru digitalizarea IMM-urilor; adecvarea soluțiilor digitale alese de IMM-uri la cerințele pieței.

În concluzie, acțiunea identificată și propusă, ca urmare a efectuării sondajului, **îmbunătățește modul în care sunt organizate apelurile tematice și modul în care sunt selectate proiectele**. Se bazează pe includerea unui nou criteriu de evaluare pentru apelul „Competențe digitale pentru angajații IMM-urilor". Noul criteriu este conceput pentru a sprijini Autoritatea de Management pentru POCU în evaluare și, în același timp, pentru a ajuta IMM-urile să recunoască principalele domenii I4.0 să se concentreze pe calea lor de digitalizare în general și în special pentru dezvoltarea competențelor digitale ale angajaților.

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UNIUNEA EUROPEANĂ ȘI POLITICA AJUTORULUI EXTERN PENTRU REPUBLICA MOLDOVA

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Summary

This article reflects on the contributions for political and economic cooperation of the European Union, which is a leading development partner in the official development aid provided to the Republic of Moldova. We believe that the Government has an important mission, to maximize the impact of the development aid offered by the European Union and to enhance its efficiency, as it had been dependent on political regimes.

The purpose of the article is to shape the efficiency of the aid policy of the European Union in providing for measures to address various problems, proving resilience to major shocks, both internal and external, because of the economic crisis, COVID-19 pandemic, as well as the impact of the war in the neighboring country.

Investigations highlight that the Republic of Moldova continues to face a series of challenges, such as strengthening of transparency and visibility, as well as enhancing awareness of the structure of foreign aid. In this connection, to assess the efficiency of the European aid, it is necessary to rethink the system, through which the aid is provided, including developing an adequate methodological framework for optimizing monitoring processes, to assure enhanced transparency in managing development aid. Our approach highlights the need to deepen, in a clearer manner, the principle of political conditionality, imposed by the European Union, especially the negotiations processes and the achievement of the objectives, set forth following the allocation of foreign aid. The status of a candidate country to the EU will bring new opportunities to rapidly progress on the path of reforms, to modernize economic, political and social systems, including to update the development partners' portfolio. Descriptive, analysis and monographic methods had been used.

Keywords: *European Union, modernization, official development assistance, transparency.*

JEL: *F35, F38, F63, O19*

UDC: *339.923:061.1UE+ 339.96(478)*

Introducere. De-a lungul anilor, relația Uniunii Europene (UE) cu Republica Moldova (Moldova) s-a dezvoltat datorită rolului tot mai mare al UE ca actor global. Uniunea Europeană este un partener de dezvoltare lider la capitolul asistența oficială de dezvoltare oferită Republicii Moldova, astfel, îmbinând caracteristicile unui donator bilateral și multilateral. În ultimul deceniu, Uniunea Europeană și-a intensificat politic și economic cooperarea și asistența pentru Moldova, a demonstrat rezistență la șocuri majore atât interne, din cauza instabilității politice și scandalurilor

de corupție din interiorul țării, cât și externe, din cauza crizei economice și a pandemiei de COVID-19.În ultimii 7 ani, Moldova a beneficiat de granturi în valoare de peste jumătate de miliard de euro și a avut acces la o sumă suplimentară de aproximativ 200 milioane euro sub formă de împrumuturi și granturi în cadrul programelor anterioare de Asistență Macrofinanciară (2017 și 2020). Cooperarea Republicii Moldova cu Uniunea Europeană este aliniată cu (i)viziunea strategică a țării, UE contribuind la formarea documentelor strategice naționale și (ii) dialogul politic susținut de asistență financiară. Prin Decizia Comisiei Europene din 27 aprilie 2022, privind punerea în aplicare a celei de-a doua măsuri excepționale de asistență pentru Republica Moldova, pentru anul 2021a fost adoptat, „Planul anual de acțiuni pentru Republica Moldova pentru anul 2021"(5, European Neighbourhood Policy and Enlargement Negotiations., 2022), cu un buget de 52 milioane euro, destinat pentru 2 programe: (i) UE pentru reforme de 27 milioane euro și (ii) UE pentru redresare și reziliență de 25 milioane euro. Aceste programe au drept scop, sprijinirea Republicii Moldova în implementarea angajamentelor cu UE, în special, Acordul de Asociere și Zona de Liber Schimb Aprofundată și Cuprinzătoare, precum și să contribuie la dezvoltarea economică rezilientă, durabilă și incluzivă în Republica Moldova. Asistența UE acordată Republicii Moldova este aliniată prin Planuri Anuale de Acțiuni (PAA) finanțate în contextul Programului Indicativ Multianual 2021-2027 (anterior fiind Cadrul Unic de Sprijin).Programul Indicativ Multianual 2021-2027 al Uniunii Europene pentru Moldova, care reprezintă noul cadru sau strategie de cooperare pentru dezvoltare a UE cu Moldova ce înlocuiește precedentul Cadru Unic de Suport (Single Support Framework 2014-2020), a fost aprobat de către Comisia Europeană la data de 29 iunie 2022.

La 2 iunie 2021, Comisia Europeană a aprobat **Planul UE de redresare economică pentru Moldova,** care prevede asistență de până la 600 milioane euro sub formă de diferite instrumente, precum împrumuturi, granturi, scheme de garantare și alte forme de suport. Aproximativ 150 milioane euro urmează a fi mobilizați pentru măsuri pe termen scurt, utilizând programe și acorduri de cooperare care sunt deja în vigoare. În timp ce, 450 de milioane euro vor fi puse la dispoziție în cadrul programelor UE pentru 2021-2027, fiind subiect al adoptării acestora. Planul este orientat spre stimularea redresării socio-economice pe termen lung, promovarea tranziției ecologice și digitale și dezlănțuirea potențialului economic neexploatat al țării noastre. Scopul constă în stimularea reformelor structurale, în special în ceea ce privește statul de drept, reforma justiției și anticorupția, întru deblocarea redresării economice durabile a țării. Prioritățile vor fi reflectate în documentele de programare relevante ale asistenței UE acordate țării. Această finanțare, va fi mobilizată pe perioada a 3 ani (2021-2023) pentru a promova investiții, care stau la baza unei redresări durabile și incluzive aferente crizei pandemice COVID-19 din țară. Planul UE de redresare pentru Moldova se bazează pe 5 piloni (Raport privind asistența externă, 2021):

1. managementul finanțelor publice, guvernanță economică și stabilitate macroeconomică;
2. susținerea unei economii inovatoare, circulare și competitive, a comerțului și a IMM-urilor;
3. investiții în infrastructură;

4. sporirea investițiilor în educație și a angajării;
5. susținerea statului de drept, justiției și luptei împotriva corupției ca o condiție prealabilă pentru redresarea socio-economică.

Conform datelor Ministerului Finanțelor, în perioada 2009-2021, UE a debursat Republicii Moldova, suport bugetar sub formă de grant în valoare de 588,2 milioane euro, din care 96,4 milioane euro în 2021. Iar volumul asistenței externe acordate Republicii Moldova, în contextul provocărilor în perioada anului 2021, a totalizat 889,7 milioane euro (fiind în creștere cu 197,1 milioane euro față de anul 2020), dintre care Uniunea Europeană, fiind printre lideri la capitolul debursări în anul 2021, cu 218,6 milioane euro (Raport privind asistenţa externă, 2022).În anul 2021 a fost elaborat raportul care oferă o evaluare a cooperării Uniunii Europene cu Republica Moldova în temeiul Acordului lor de asociere între 2014 și 2020 (Evaluation of the European Union's cooperation with RM, 2021). Acest document prezintă evaluarea strategică la nivel de țară a cooperării Uniunii Europene cu Moldova în perioada 2014-2020, inclusiv două Cadre unice de sprijin (2014-2017 și 2017-2020). Acesta acoperă, dialogul politic și toate tipurile de asistență financiară. Rezultatele acestui raport argumentează contribuția pozitivă a UE la reforme, un accent relativ pe cadrul politic și legal, inclusiv numește factorii care împiedică impactul cooperării și căi de consolidare a conceperii, implementării și monitorizării programelor de sprijin, împreună cu dialogul politic susținut. Toate constatările și recomandările evaluării sunt incluse în Cadrul Financiar Multianual pentru perioada 2021-2027. Evaluarea a abordat șapte sectoare de cooperare (agricultura și dezvoltare rurală, guvernanță, energie, infrastructură și schimbări climatice, educație, mediul de afaceri, societate civilă, și regiunea transnistreană. Conform datelor acestei evaluări, în perioada dintre 2014 și 2020, UE a dezvoltat programe complexe de cooperare cu Moldova, în valoare de peste 1 miliard de euro în sumele planificate (Evaluation of the European Union's cooperation with RM, 2021, p 10).

Vom sublinia, că de la proclamarea independenței, Republica Moldova a fost guvernată de un șir de coaliții, caracterizate prin instabilitate politică și înrăutățire esențială a indicatorilor de corupție. **Efectele asistenței oficiale de dezvoltare** prezintă o problemă destul de complexă, iar selectivitatea în alocarea ajutorului extern se dovedește a fi o sarcină dificilă și deloc nelipsită de risc (Stratan, 2021).În ultimul deceniu, efectele guvernărilor au lăsat amprentă cu lacune din cadrul normativ (setul de politici și legislație), oligarhizarea instituțiilor statului (în sistemul de justiție și anticorupție). Respectiv,au avut un impact prin intervențiile UE la aceste fenomene, și anume: operațiunile de sprijin bugetar au fost întrerupte în 2015 și au fost reluate în 2016, operațiunile de sprijin bugetar au fost din nou întrerupte în 2018, ca răspuns la invalidarea alegerilor pentru primarul Chișinău. Respectiv, condiționalitatea politică impusă de UE sub formă de sancțiuni sau suspendări ale asistenței externe a devenit unul dintre instrumentele cheie în monitorizarea problemelor de guvernanță politică în ultimii ani. Iar unele condiții au fost în mod evident politice și nu au avut nicio influență asupra impactului ajutorului asupra dezvoltării. În sensul reliefat de idei, se recomandă de a aprofunda mai clar principiul condiționalității politice impuse de Uniunea Europeană, în special procesele de negociere și realizarea obiectivelor propuse în urma alocării ajutorului extern.

În urma alegerilor prezidențiale din noiembrie 2020,Președintele Maia Sandu, a reușit să reechilibreze agenda de politică externă, prin stabilirea legăturilor cu UE și vecinii săi, astfel, conturând pentru prima dată de la independență, o aliniere clară a puterilor prezidențiale, executive și legislative pe o cale europeană pro-reformă. Astfel, s-a setat vizibil obiectivele UE în promovarea bunei guvernări, mai ales în dezvoltarea socială și economică a țării. În anul 2022, Republica Moldova, având un mediu politic stabil, a făcut un pas decisiv spre reforme, deși continuă să se confrunte cu mari șocuri macroeconomice, politice, climatice și de sănătate, iar în prezent se confruntă cu impactul războiului din Ucraina. Războiul de agresiune al Rusiei împotriva Ucrainei au fost resimțite în țara noastră, astfel schimbând și contextul decizional pentru bugetele și cheltuielile AOD. Toate acestea au proiectat o misiune dificilă pentru implementarea programelor Uniunii Europene, având ca scop, avansarea cunoștințelor în modernizarea țării. Politologul Varzari este unul dintre autorii de referință în literatura politologică locală, care analizează noțiunea de modernizare a Republicii Moldova (Varzari, 2018), astfel considerând că țara continuă să parcurgă toate etapele procesului de modernizare multiaspectuală a societății, iar vectorul european fiind astăzi singura opțiune strategică de modernizare a țării.

Relațiile Republicii Moldova cu Uniunea Europeană, vom sublinia că acestea au parcurs în 2022 în trei etape: (i) La **3 martie 2022**, Republica Moldova a depus o cerere de aderare la UE; (ii) La **17 iunie 2022**, Comisia Europeană și-a emis avizul cu privire la cererea de aderare la UE; (iii) În cadrul Consiliului European din **23 iunie, 2022**, liderii UE au acordat Republicii Moldova statutul de țară candidată la UE. Calea către aderarea efectivă la blocul celor 27 de națiuni pentru țara noastră, poate dura ani de zile, deoarece are nevoie de reforme pentru a se conforma standardelor democratice și anticorupție. Acest moment istoric va aduce noi oportunități de a progresa rapid pe calea reformelor, implementând standarde economice și sociale europene în Moldova, inclusiv o revizuire și actualizare a portofoliului partenerilor de dezvoltare. Republica Moldova n-a știut cum și nici n-a putut să se impună pentru a fi inclusă în lista de priorități strategice ale Uniunii Europene datorită lipsei unei forțe politice eficiente (Juc, 2015), dar la etapa actuală considerăm că evenimentele au evoluat în aspect pozitiv pentru istoria țării, s-a schimbat paradigma lărgirii Uniunii Europene, politica de extindere a primit un nou impuls. Politologul Juc, acreditează ideea că adoptarea de către Republica Moldova a modelului european de dezvoltare reprezintă o prioritate strategică și o oportunitate, menite să accelereze modernizarea statului și a societății (Juc, 2019, 3-12).

La nivel global, Uniunea Europeană este un caz unic în dezvoltarea internațională. Este atât un donator bilateral, care acordă asistență prin Comunitatea Europeană, dar și un partener de dezvoltare multilateral, care cuprinde eforturile celor douăzeci și șapte de state membre ale sale. UE și statele sale membre rămân cel mai mare furnizor de asistența oficială pentru dezvoltare (AOD), și confirmându-și poziția de lider în ceea ce privește agenda globală pentru dezvoltare durabilă (Raport anual, 2022), astfel cum se prevede în noul Consens european privind dezvoltarea (Official Journal of the EU, 2022). În anul 2021, se conturează o creștere nominală a asistenței oficiale de dezvoltare cu 4,3 % față de anul 2020 (Raport anual, 2022), ajutor extern

furnizat țărilor în curs de dezvoltare în special ca reacție la consecințele pandemiei de COVID-19.

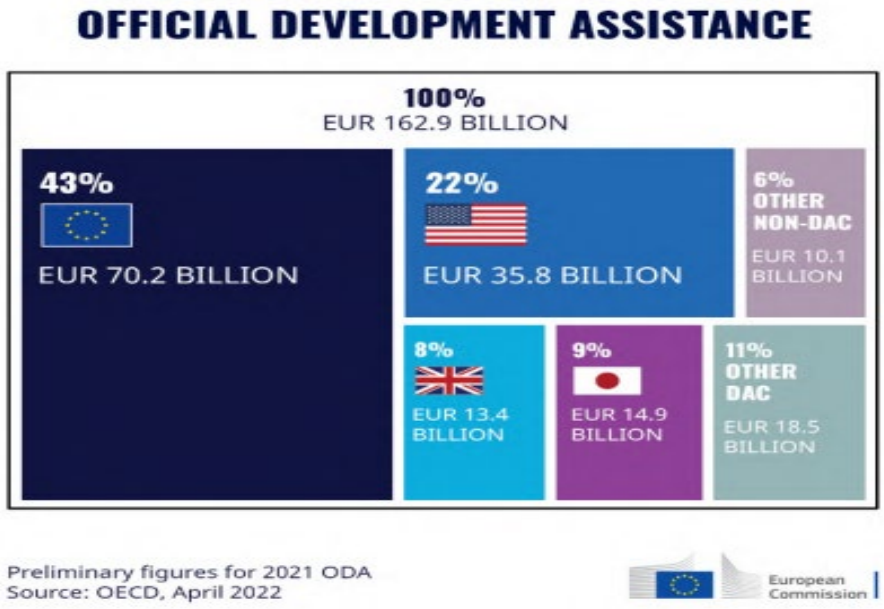

Figura 1. **AOD colectivă a UE comparativ cu țările donatoare din afara UE în 2021(Cifrele pentru 2021 sunt preliminare și sunt prezentate în echivalent grant.)** (Raport anual, 2022, p.11)

Sursa: Preliminary figures for 2021 ODA, OECD, Aprilie 2022.
https://data.consilium.europa.eu/doc/document/ST-11303-2022-INIT/ro/pdf

În timp ce ajutorul extern este o sursă semnificativă pentru Moldova, complexitatea și bugetele, în continuă expansiune o fac vulnerabilă la corupție, un subiect sensibil pentru țara noastră. Guvernul are o misiune importantă și anume de a maximiza impactul ajutorului pentru dezvoltare oferit de Uniunea Europeană și a crește eficacitatea acestuia. Pentru a evalua eficacitatea dezvoltării, este necesar să se regândească sistemul prin care se livrează ajutorul, inclusiv sprijinirea unor pași cruciali, către dezvoltarea unui cadru metodologic adecvat de optimizare a proceselor de monitorizare, pentru asigurarea sporirii transparenței în gestionarea asistenței externe pentru dezvoltare. Asistența tehnică se confruntă cu limite de capacitate de absorbție care trebuie recunoscute. Astfel, recomandăm ca Guvernul, să înainteze o inițiativă legislativă care ar implica capacitatea autorităților publice, printre organizarea structurală a instituțiilor responsabile pentru gestionarea asistenței externe. Astfel, încât să avem doar o singură instituție de stat, care va avea funcția de coordonator național în domeniul asistenței externe. Drept exemplu, putem face recomandare la perioada până la reforma din 2018, unde Cancelaria de Stat avea atribuțiile de rol principal în programarea, implementarea, monitorizarea, raportarea și evaluarea asistenței oferită de parteneri de dezvoltare. Totodată, apreciem ineficientă activitatea Oficiului de Gestionare a Programelor de asistență externă, creată prin Hotărârea de Guvern nr. 338 din 03.06.2020, pentru asigurarea implementării proiectelor sau programelor de asistență externă (Juc&Stratan, 2021).

Studiile asupra AOD oferită de UE, se dezvoltă intens în ultimii ani. În literatura de specialitate și academică există diverse puncte de vedere privind semnificația ajutorului extern, ca fenomen și ca proces. Sunt date statistice semestriale sau anuale, analize, rapoarte oficiale publicate de Cancelaria de Stat, până în anul 2017 (Raport privind asistenţa externă, 2015) Ministerul Finanțelor (din anul 2018), sau la unele publicații de specialitate ale unor think tank-uri Expert Grup (Monitorul Asistenței Externe nr. 1, 2022), IPRE, Idis "Viitorul", (Gaibu, 2011; Lozovanu, 2016; Lozovanu, 2014), din țară și de peste hotare. În 2014 a fost elaborată de către Cancelaria de Stat, cu suportul Programului Națiunilor Unite pentru Dezvoltare, platforma cu privire la gestionarea asistenței externe (Monitorul Oficial al Republicii Moldova, 2018), care prevede monitorizarea programelor de asistență externă, permițând cetățenilor monitorizarea resurselor financiare și a modului în care sunt utilizate acestea. La moment, această platformă nu este actualizată de câțiva ani, situație care denotă elocvent lipsa de finanțare, dar și o lacună în optimizarea proceselor de monitorizare, precum și în asigurarea sporirii transparenței în gestionarea asistenței externe (Stratan, 2021).

Mulți teoreticieni critică rolul ajutorului extern, argumentând că alocarea lui, inclusiv cel oferit prin intermediul donatorilor, prezintă părtiniri similare cu efecte nocive asupra rezultatelor dezvoltării (*Nielson&Tierney*, 2003). Respectiv ajutorul extern,reprezintă doar o parte, adesea o mică parte din ceea ce este necesar pentru reducerea sărăciei (Cassen, 1986).Cu alte cuvinte, considerăm că alocarea asistenței externe poate funcționa, în dependență de politicile țării.

În concluzie, luând ca bază subiectul supus analizei în dinamică, subliniem următoarele:

Eficacitatea asistenței oficiale de dezvoltare alocată de către UE, rămâne a fi un aspect fundamental al Guvernului, necesitând eforturi sustenabile pentru gestionarea transparentă a ajutorului extern. În sensul reliefat de idei, dezvoltarea unui cadru metodologic adecvat de optimizare a proceselor de monitorizare, ar contribui la asigurarea sporirii transparenței, eficienței, precum și creșterea gradului de conștientizare cu privire la structura asistenței externe pentru țara noastră.

Ajutorul extern oferit de UE a stimulat în mare măsură dezvoltarea strategiilor naționale ale Moldovei în conformitate cu standardele și valorile UE, dar totodată găsim dovezi considerabile, că direcția asistenței externe este dictată atât de considerente politice și strategice, cât și de nevoile economice și performanța politicii Guvernului.

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ECONOMIC DEVELOPMENT IN THE EASTERN EUROPE – DETERMINANTS AND DISCREPANCIES

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Summary

Even if the Eastern European countries share a common communist past, the efficiency of the transitions these economies have gone through is at least not similar. Former USSR satellites managed to build relatively functional market economies which in turn allowed these countries to join the European Union and deepen the integration within other cooperation structures of the Western World. Unlike the first group of countries, former Soviet Republics, covered by the Eastern Partnership initiative of the EU, have registered varying performances in building efficient market economies, the success of which could be debated. The present study is set to reinforce the debates related to the economic growth and convergence of the Eastern Europe, simultaneously, finding the main directions on which policy-makers and academics should concentrate to increase the effectiveness and favourable impact of the development policies and strategies. The methodology is based on comprehensive quantitative analysis of the data related to economic development of these nations the core of which is log-log ordinary least squares regressions. The results show that there are considerable differences in the income sensitiveness both among the countries and growth determinants, the Eastern EU member states tending to register higher levels in this regard.

Keywords: *Eastern Europe, development, discrepancies, productivity, European integration*

JEL: *F15, F43, O18, O33, Q01*

UDC: *338.1(1-924.7/.9)*

Introduction. Even if the Eastern European countries share a common communist past, the efficiency of the transitions these economies have gone through is at least not similar. Former USSR satellites i.e. Poland, the Czech Republic, Hungary, Romania and Bulgaria as well as the Baltic States, as an exception, managed to build relatively functional market economies which in turn allowed these countries to join the European Union and deepen the integration within other cooperation structures of the Western World. Unlike the first group of countries, former Soviet Republics i.e. Ukraine, the Republic of Moldova, Belarus, Georgia, Armenia and Azerbaijan, covered by the Eastern Partnership initiative of the EU, have registered varying performances in building efficient market economies, the success of which could be debated. Presently, there are important economic development differences between these countries, both in terms of income and

productivity. Thus, it can be remarked that, for instance, that in the Czech Republic the GDP per capita in 2017 reached 36 300 USD (adjusted to purchasing power parity) while in the Republic of Moldova it slightly passed over 5 600 USD. Looking at this gap in development in a region which share much similarity a subsequent question occurs, and namely, which are the essential causes for this divide? Many growth theories underline the importance of various factors in stimulating development including productivity, consumption, foreign direct investments, capital formation, trade, innovation competitiveness and remittances. Theoretically, each of these factors strengthens economic growth i.e. through boosting production capacities of nations or by strengthening the consumption potential. In this regard, the present study is expected to check for validity this affirmation considering the countries of the Eastern Europe. Moreover, in the case the relation is proved, it is supposed to measure the extent to which these factors enhance the economic growth in this region. Another important objective to be achieved by this research is to identify if there any differences in this extent considering the EU and non-EU member countries. Furthermore, it is supposed to underline the existing differences in the living standards across this region through analysing income, productivity and consumption the fundamental factors determining countries' economic bases. The methodology is based on comprehensive quantitative analysis of the data related to economic development of these nations the core of which is log-log ordinary least squares regressions. These will assure the possibility to identify the sensitiveness of income in the countries of the Eastern Europe considering economic growth determinants. The present study is set to reinforce the debates related to the economic growth and convergence of the Eastern European countries. Simultaneously, it is supposed to advise on the main directions on which policy-makers and academics should concentrate to increase the effectiveness and favourable impact of the developed policies and strategies. Last but not the least, this research is set to contribute with relevant development models charactering growth patterns in these states as well as the potential development dynamics for the following years. It is important to underline that the studied period covers 16 years starting with 2002 and finalising with 2017.

Theoretical fundament of economic development. One of the most essential contributions to framing development economics was made by Robert Solow and Trevor Swan who established the Solow-Swan model. Robert Solow was awarded the Nobel Prize for finding many implications and application of this model which determined the way economic growth and modern macroeconomics are approached (Acemoglu, 2009). This model underlines the necessity to stimulate capital accumulation to foster the long run economic growth of countries. It also underlines the strategic role of technological progress reflected through the prism of productivity growth implying also population expansion, its core being represented by the neoclassical production function which connects the model with microeconomics and wider datasets (Solow, 1957). Furthermore, the Solow-Swan model marks the idea that in the long run economies tend to reach steady equilibrium and only the technological breakthrough could ensure development. Shifts in the level of savings and population assure only levelling in the absolute value of real income per capita. Moreover, it presupposes that weak economies in the long run could catch up with

more developed due to a higher speed of poor countries' technology and capital absorption as compared to the speed of generation of innovation in the advanced economies (Romer, 2006). Certainly, this model is simple as it makes abstractions of various economic variables especially considering individual decision making, thus, it is only introduction to more complex models (Acemoglu, 2009 and Romer, 2011). Mankiw et al (1992) included to this model, besides capital accumulation, population growth and increases in productivity, the necessity to foster human capital. This inclusion helps in explaining the failure of international investments in stimulating growth in some poor countries. It underlines that weak economies are not able to fully benefit from capital output due to lower human capital able to increase the marginal product of it. At the same time, it should be underlined the idea that active participation of countries in international trade is also a determinant factor in strengthening their economic growth perspectives, the fact being widely supported by the empirical work of Krueger (1978, 2012) and Balassa (1985) as well as Feder (1982), authors underling the role of economic openness for fostering overall economic welfare, principles rooted in the neoclassical theory of economic growth. Simultaneously, it should be mentioned ideas of Krugman (1997) who is one of the most influential economists, adept of New Keynesian economics, converging new trade theory with new economic geography mentioning that regions which concentrate production named also agglomerations are characterised "as the outcome of the interaction of increasing returns, trade costs and factor price differences". In the case that trade is shaped by economies of scale the regions with intensive production are more profitable thus capable of attracting even more production, this fact being actual for countries, regions, or cities. At the same time, it should be underlined the contribution of Stiglitz (2002), another famous representative of New Keynesian economics, who highlighted the importance of efficient market mechanism to strengthen economic development especially of developing countries. In this case, governments can improve the economic growth by well-chosen interventions. Furthermore, governments could apply expansionary monetary and fiscal policies to raise the consumption capacities of population as potential solutions for redressing economies from recessions and depressions. Both Krugman and Stiglitz underline the importance of supporting purchasing power and demand of citizens and businesses to enhance economic growth. Another important source of economic development is FDI the effect of which is explained by International production theory, firms tend to move economic activities to the regions having specific attractiveness factors i.e. cheap labour, capital endowment or resources which are not available on the domestic market. FDI tends to foster economic development only in case it has favourable spill overs over local firms (Dunning, 1980 and Fayerweather, 1982). Accordingly, based on the reviewed works, it can be underlined that economic development is dependent on productivity growth, capital formation, innovative and technological capacities, economies' export capacities and FDI attractiveness as well as purchasing power of the citizens which, from the perspective of this research, is reflected through national expenditure and remittances.

Accordingly, these growth theories underline the importance of various factors in stimulating economic development including productivity, consumption, foreign direct investments, capital formation, trade, innovation competitiveness and

remittances. Theoretically, each of these factors strengthens growth i.e. through boosting production capacities of nations or by strengthening the consumption potential. In this regard, the present study is expected to check for validity this affirmation considering the countries of the Eastern Europe (hypothesis 1). Moreover, it is supposed to identify if any other of the selected indicators has a stronger impact on the economic growth as compared to productivity (hypothesis 2). Furthermore, it is expected to identify whether income discrepancies among the countries of the Eastern Europe have diminished over the period of 2002-2017 (hypothesis 3).

Literature review. In order to enhance the understanding of readers regarding the issues related to economic development in the Eastern European countries and its determinants a subset of relevant literature has been selected. Thus, according to Cuaresma et al (2014) economic growth in the Eastern European countries tend to be concentrated in the capital regions, these registering higher catching up pace with the West as compared to the rest of the territory. Important determinants in this regard are the raising income level of the population and human capital. Nevertheless, the positive effects of income growth are limited due to the development asymmetry between capital cities and regions. Moreover, Myant and Drahokoupil (2010) as well as Ghodsee (2011) underlined that the present economic weakness of the Eastern Europe comparing to the developed West should be linked to the economic crisis of communism of the late Cold War, when it was clear that there are irreversible systemic deficiencies. The efforts of Michael Gorbachev undertaken under the framework of glasnost and perestroika were late and unable to reignite development of the East which faced stagnation. The transition has been a period of great challenge for the Eastern Europe some of the states succeeding in overcoming it in a relatively short time, while other, mainly former USSR nations, failed in this path. Furthermore, Pavlínek (2015) mentioned that the effectiveness and speed of transition determined the capacities of the Eastern European countries in attracting FDI. In this regard, it can be marked the consistent difference between the former USSR member states and its satellites. The first group implemented more deficient market reforms, unlike the second, the fact reducing the nations' FDI attractiveness, which negatively affected their long run economic growth potential. Also, Liñán & Fernandez-Serrano (2014) highlighted that national cultures have determinative effect upon the economic performance of countries, the geographical elements having significant relevance in this regard. Overall, European nations share several common cultural features, thus, the authors mentioning that "autonomy and egalitarianism clearly predominate over embeddedness and hierarchy, while harmony tends to prevail over mastery". The Eastern Europe was influence primarily by communist ideology the fact which contributed to nations' low level of autonomy and egalitarianism. Entrepreneurship was long time oppressed in this region the fact creating a gap of business competitiveness. While, Popescu (2014) mentioned that the institutional strength is a decisive factor determining FDI attractiveness of countries. Accordingly, some of the Central and Eastern European nations succeeded in developing faster, while other stagnated or were lagging, for instance compared the evolution of the Czech Republic and Poland. It should be underlined that FDI is an important driver of economic growth since it allows to consolidate economic competitiveness through enhancing employment and capital basis. Finally, Åslund (2018) said that the performance of the

Central and Eastern European countries in terms of fiscal burden, tax system, labor markets, education, pensions, governance, and research and development has consistently improved in the post crisis years the fact which stimulated growth of GDP per capita. Quality of institutions is fundamental prerequisite of economic development, despite the fact that it has consistently increased in this region, it's effectiveness is not comparable to the Western European Union member countries.

Aldcroft (2016) stated that the differences between Europe's West and East are historically inherited which started to shrink in the interwar period when the Eastern nations faced a period of impressive economic growth. By the end of these years, some of the countries even overpassed the levels of the Western counterparts. Thus, according to Maddison Project Database (2018), the GDP per capita in Hungary was higher than in Italy and Austria by 1937 and in Poland larger than in Spain and Portugal. Communism has slowed the growth of the region, by 1970, the development of the West considerably enhancing while in the East economic stagnation becoming wide spread. Moreover, Topalli & Ivanaj (2016) determined that business sector in the Central and Eastern European countries is less competitive as compared to the West due to the lack of experience, it being established relatively recently and namely at the end of 1980s and beginning of 1990s. Moreover, entrepreneurial culture of this region has been negatively affected by communism which determined the erosion of population's economic values motivating much deficient adaptation to market system. Furthermore, Binelli et al (2015) underlined that transition period in the Central and Eastern Europe was particularly grievous in most of the former USSR states, where communism had undertaken the most radical forms. Thus, after the collapse of communism the satellites of USSR faced quicker adaptation period due to more efficient market reforms. At the same time, transition period in the ex-soviet space faced multiple challenges i.e. corruption, organized crime, institutional and legislative weaknesses which destroyed the economic potential of this region of Europe. Also, Roland (2018) mentioned that the end of the 20th century was marked by two major events, the collapse of communism in the Eastern Europe and the rapid orientation of China to market economy. The paths of transition these regions followed are distinct. If in China it is considered successful, in the Eastern Europe it was only partially favourable. The transition period in the former USSR satellites could be assessed as relatively propitious, while in the proper USSR it was destructive and incomplete facing consistent political difficulties. Simultaneously, Tertytchnaya et al (2018) pointed that deficient transition in the Eastern Europe, mainly, in the former USSR countries created immense economic instability the fact determining consistent destruction of the industrial potential which caused high unemployment. As a result, the population fled the states engaging in labour migration from the ex-Soviet peripheries to more attractive countries. Migration created significant inflows of remittances in the states of origin which in the short run fostered economic growth. However, in the long run, temporary emigration has become permanent negatively affecting development perspectives. At the same time, Danzer & Dietz (2014) remarked that emigration in Armenia, Belarus, Georgia, Moldova and Ukraine affected both qualified and non - qualified labour force which mainly head for the European Union and respectively the Russian Federation. In the vast majority, those following the EU's direction faced reduction of their professionalism as "many labour

migrants suffer from occupational downgrading or skill waste in this destination", the fact which also determined the EU to fail in efficiently integrating these migrants' economic potential.

Furthermore, Azam et al (2016) underlined that FDI has a more comprehensive and beneficial effect on the economic development of states as compared to the remittances' inflow, this fact is especially actual in the Eastern Europe. FDI leads to the growth of production capacities of states, while remittances strengthen consumption capacities which in their vast part have only temporary effect of economic growth without structural impact. Moreover, in a certain extent remittances tend to compete FDI which reduces the capacities of countries enhancing technological and capital basis. Moreover, Epstein & Jacoby (2014) said that the Eastern European countries which integrated in the European Union in 2004 and 2007 have been able to considerably strengthen economic potential benefiting from the opportunities of the single market. In this context, the economic divide between the West and East started shrinking. However, the political and institutional developments remained slowly progressing due to the rigidity of the post-communist mentality. Nevertheless, it should be underlined that significant progress has been made including in these areas within the last decade. Furthermore, Bachtler et al (2014) highlighted that an important role in enhancing both economic and institutional as well as political performances in the Central and Eastern European countries has been played by Cohesion policy. As the author concludes "administrative capacity was developed faster and more substantially than commentators predicted". At the same time, it should be underlined that "administrative capacity has been underestimated and insufficient attention has been given to the dynamics of capacity evolution and learning". Finally, Jorgenson et al (2014) determined that it should be appreciated that despite of transition, the Central and Eastern European nations managed to redress the human well-being which has improved considerably accompanied by significant economic growth. Moreover, this growth could be generally assessed as sustainable since it has been relatively high in terms of environment efficiency, yet, there are possibilities to improve the results.

As a result, it can be underlined several important ideas related to the economic development of the Eastern European nations. First, there is an important development gap between the West and East which is a consequence of the stagnation of the communist system. Second, the transition period followed different paths in the former space of USSR and in its satellites, the last, due to the implementation of less radical communism, succeeded in adapting more efficiently to market and implement more transparent reforms. Third, the business sector, institutions and political effectiveness of the Eastern Europe is less competitive as compared to the West due to the lack of market experience following the transition from communism to capitalism. Fourth, in the former satellites of USSR the transition was successfully finalized making possible for countries to join Western institutes i.e. the single market or NATO. However, in the former territory of USSR, except the Baltic States, the transition was deficient causing the reduction of economic potential, emigration, destruction of industrial sector and consistent erosion of the institutions. In these areas little progress is being registered, the states struggling with structural challenges in terms of competences, corruption, reforms implementation, poverty and emigration.

This fact created important development discrepancies among the Eastern European countries, the divide growing with time, more efficient measures being imperative as to boost the economic development in these states.

Methodology. In order to achieve its objectives, the present research applies comprehensive statistical analysis methodology of the data related to the economic development dynamics in the Eastern Europe. Firstly, it is examined the estimates of distribution of countries based on the GDP per capita, PPP, current international USD, both in 2002 and 2017. This fact allows to identify which are the present income discrepancies among the countries and how they have changed since 2002. Also, there are pointed which are the most performant economies in this region and those lagging as well as it is underlined each state's registered growth. Further it is considered the distribution of countries according to log GDP per capita (PPP, current international USD) in 2002 and 2017 which is set to increase the relevance of the analysis through reflecting growth rates and the proportional change in terms of income among the researched states. Moreover, all analyzed indicators by the present study are expressed in logs to make possible to build more accurate OLS regressions between income and economic growth determinants. The distribution of countries according to log GDP per employed person (PPP, current international USD) in 2002 and 2017 is considered to outline the differences among the countries in terms of productivity, how the discrepancies have evolved during the period and which states register higher performances in this regard and which are lagging. The distribution of countries according to log gross national expenditure per capita (PPP, current international USD) in 2002 and 2017 is analyzed to identify whether there are any consistent differences between nations' income, productivity and expenditure and how these changes have evolved during the period. Further, several OLS regressions are developed between log GDP per capita and several determinants of economic growth including log GDP per employed person, log gross national expenditure per capita, log FDI stock per capita, log remittances per capita, log exports per capita, log high tech exports per capita, log gross capital formation per capita, confidence 95%. The coefficient of interest for the present analysis is β1 (CIV in tables) which describes, ceteris paribus, the extent growth determinants affect income and the economic development in the Eastern Europe (or the elasticity of GDP per capita considering the growth determinants selected).

Results. There are important development discrepancies among the countries of the Eastern Europe both in terms of GDP per capita and productivity. Presently, the wealthiest countries in this region are the Czech Republic having an income per capita of over than 36 000 USD, followed by Lithuania, 32 000 USD, Estonia, Slovakia, Poland and Hungary registering 31 700, 31 600, 29 000 and respectively 28 000 USD. At the same time, the poorest nations are the Republic of Moldova, Ukraine, Armenia and Georgia recording, by 2017, 5700, 8600, 9600, and respectively 10700 USD. Thus, it can be observed that the difference in income levels between the most and least prosperous states is more than 6 times. It is important to underline that this data is provided by the World Bank and expresses GDP per capita adjusted to purchasing power parity, current international USD. It was used GDP (PPP) to increase the relevance of cross countries comparisons and consider the differences in relative prices. Figure 1 shows that by 2002 the majority of the Eastern European countries had a GDP per capita lower than 12 000 USD, the median value being less than 8 000

USD. At the same time, it can be remarked that by 2017 the graph has shifted rightwards the fact underlining the raise in the income per capita in all the countries of this region, the value of the median increasing to 25 840 USD. Density estimate of the distribution within the researched period has considerably decreased the fact which highlights the idea that the development discrepancies among the states have enlarged. Moreover, if in 2002 the range of the data was 16 000 USD, then, in 2017 it has reached 30 600 USD, almost doubling in 16 years. The increase in the dispersion is also proven by the increase in the standard deviation from 4 755 to 9 943. As Acemoglu (2009) advises in a similar research "*part of the spreading out of the distribution is because of the increase in average incomes. It may therefore be more informative to look at the logarithm of income per capita*". Therefore, further it will be analysed the natural logarithm (log) of indicators, in order to receive more accurate results.

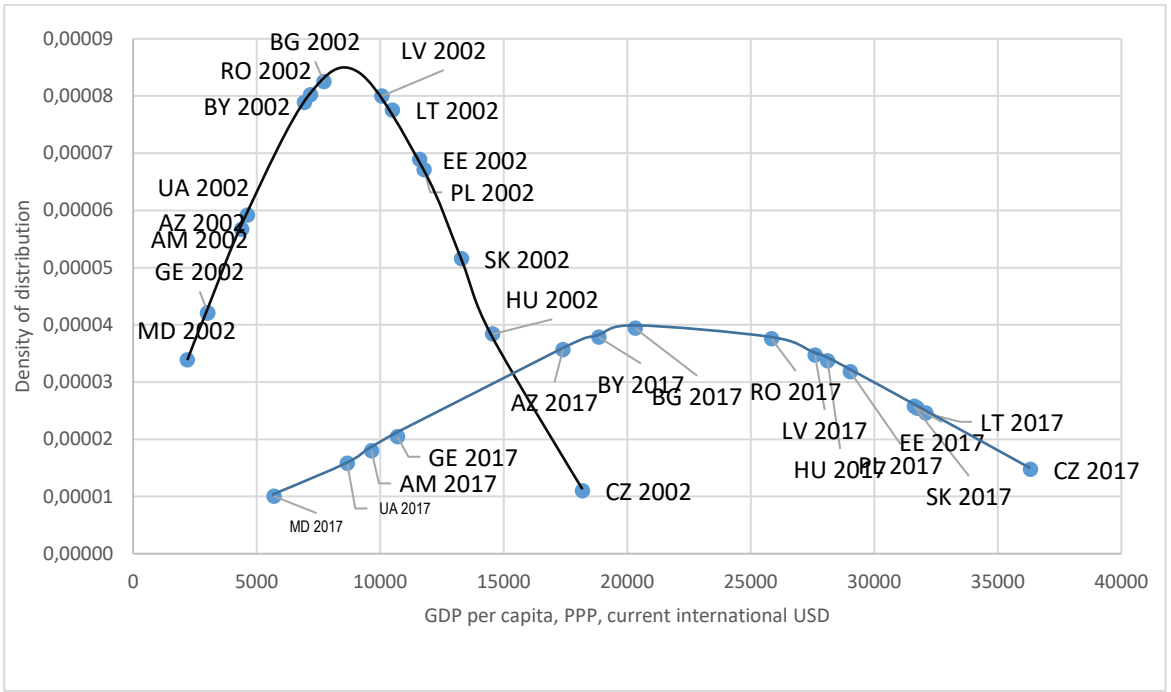

Figure 1. **Distribution of the Eastern European countries, GDP per capita, PPP, current international USD, in 2002 and 2017.**

Source: Designed by the author based on the data provided by the World Bank.

As it can be noticed in figure 2, the graph is also moving rightward the fact marking a similar pattern, nevertheless, the distribution is more constant. In this regard, it could be underlined that: despite the fact that the absolute value of the development discrepancies increased among the countries of the Eastern Europe, the proportional gap has slightly decreased. The range of date reduced from 2.11 in 2002 to 1.85 in 2017, while the standard deviation decreased from 0.64 to 0.58. Accordingly, it can be mentioned that the spread out in the log GDP per capita diminished at a low extent within the period of 2002-2017. Both figures i.e. 1 and 2 show that the level of income has increased in the Eastern European states,

nevertheless, this growth was mainly powered by the wealthier states which had a higher initial income. The weakest economies in the region remain underdeveloped, little progress being made in reducing the development discrepancies over the period as compared to the leading ones. Simultaneously, it can be observed that the evolution of log GDP per capita marks the relative division of states in layers. Accordingly, if in 2002 the density of distribution was rather uniform, than in 2017 it can be observed the group of leaders composed of the Czech Republic, closely followed by Lithuania, Slovakia and Estonia, as well as Poland, Hungary and Latvia, and at some extent, Romania. Emerging economic powers in the region are Bulgaria, Belarus and Azerbaijan. Followers are Georgia, Armenia and Ukraine, while the Republic of Moldova is lagging, registering the most modest results among the states.

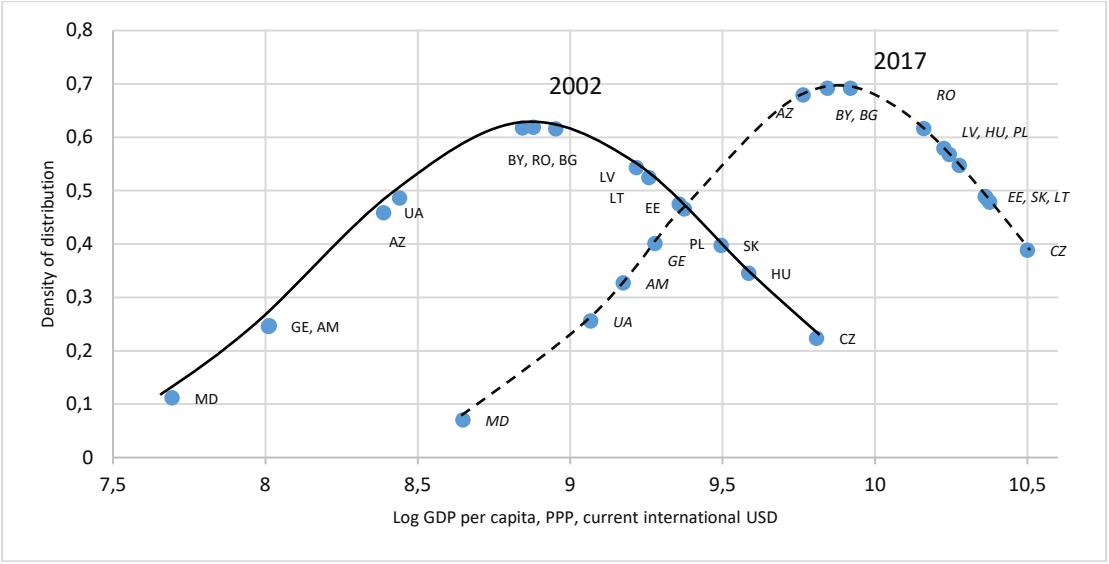

Figure 2. **The distribution of countries according to log GDP per capita (PPP, current international USD) in 2002 and 2017.**

Source: Designed by the author based on the data provided by the World Bank.

An important indicator determining the development potential of countries is productivity which plays strategical role in many growth theories (Acemoglu, 2009, Solow, 1957, Mankiw et al, 1992). The most relevant indicator in this regard is the GDP per employed person adjusted to purchasing power parity. It can be underlined that the proportional discrepancies in log productivity in the Eastern Europe have diminished at a greater extent as compared to sheer income per capita. Accordingly, the standard deviation decreased from 0.70 in 2002 to 0.54 in 2017, the median increasing from 10.27 to 10.89. Moreover, the range of data reduced from 2.08 to 1.60 within the same period of time. Nevertheless, by examining the information presented in figure 3, it can be observed that there still remain important differences in terms of productivity in the region of the Eastern Europe which tend to persist even if some progress has been made. The distribution of output per worker remain disperse, as in the case of income per capita. It can be noticed that leading economies in this region to form an agglomeration consisting of the Czech Republic, Slovakia, Estonia, Hungary, Lithuania, Romania and Latvia. Georgia, Ukraine and Moldova are

positioned on the opposite side, the lagging of the last increasing even with these countries. On overall, the figures 1-3 point two important findings i.e., first, there are consistent differences in economic development among the Eastern European nations and, second, small progress has been registered in reducing these gaps over the period of 2002-2017 both in terms of income per capita and productivity.

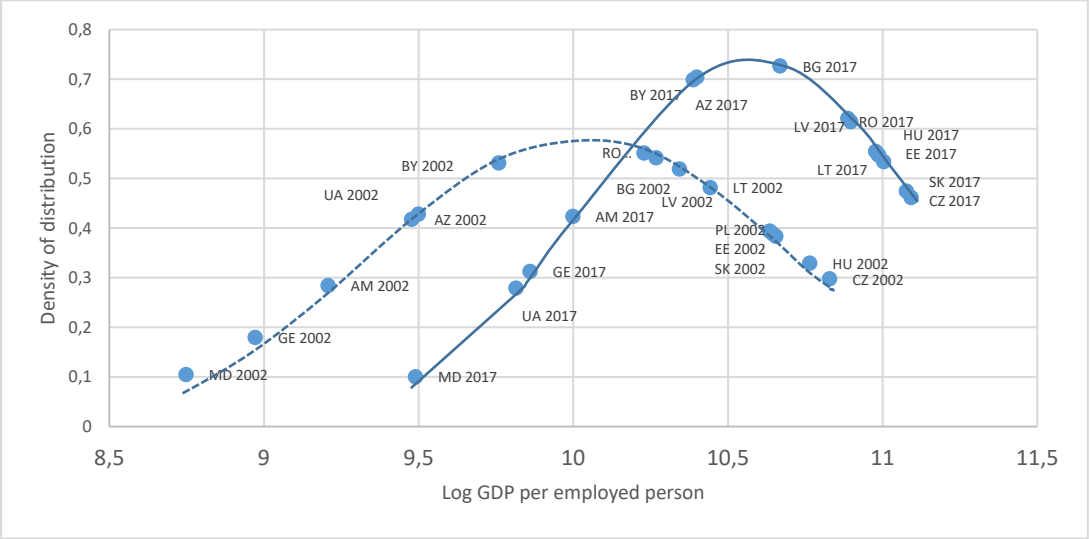

Figure 3. **The distribution of countries according to log GDP per employed person (PPP, current international USD) in 2002 and 2017.**
Source: Designed by the author based on the data provided by the World Bank.

By examining figure 4, it can be underlined the idea that some nations in the Eastern Europe have overpassed the regional trend of productivity growth within the period of 2002-2017 while other not. Thus, the leading countries in this regard are Romania, Azerbaijan, Lithuania, Latvia, Georgia, Slovakia and Armenia. The states which followed the same dynamics as the region as a whole include Belarus, Poland, Estonia and the Czech Republic. The lagers in terms of productivity growth are Moldova, Ukraine, Bulgaria, and Hungary. Another important observation to be made regards the stratification of countries in two distinctive groups, and namely, the Eastern European countries being members of the European Union and those which are not. The first group of countries make an agglomeration in the right part of the graph while the second group is spread on the left side, the fact underlining the idea that the first group has developed more similarly, a favourable effect of the EU over the region, while the remaining countries have grown much more dispersedly, their economies being much less connected to the single market.

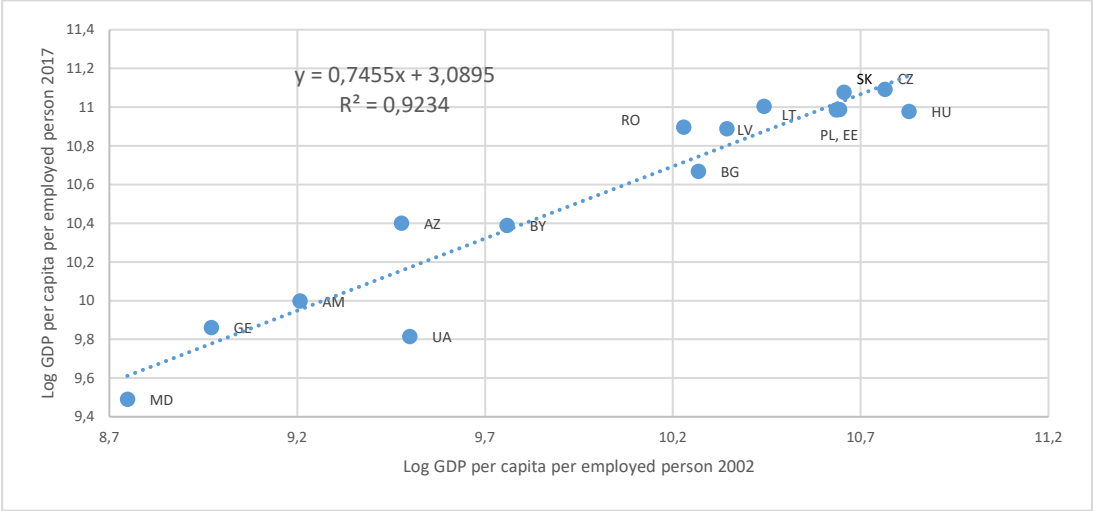

Figure 4. **Log GDP per employed person in 2017 versus log GDP per employed person in 2002.**

Source: Designed by the author based on the data provided by the World Bank.

Table 1 reports ordinary least-squares regressions between Log GDP per capita (dependent variable, y) and Log GDP per employed person (independent variable, x). The linear regressions are explained by the following equation:

$$(1)\ \log(y_i) = \beta_0 + \beta_1 \log(x_p) + \varrho_1$$

where y_i-is GDP per capita, x_p- productivity, β_0- coefficient of intercept, β_1-coefficient of independent variable and ϱ- error term. The coefficient of interest for the present analysis is β_1 (CIV in table) which describes, ceteris paribus, the effect of change in productivity on the economic development (or the elasticity of GDP per capita considering GDP per employed person). As it can be underlined in table 1, and more specifically in the first column, there is a high coefficient of determination R^2 between the variables for all countries except Hungary (the fact which can be exemplified by the peculiar characteristics of this country's economy and the changes in terms of policy priorities). Therefore, it can be underlined that there is a strong correlation coefficient which is statistically significant between income and productivity in this region of Europe. The relevance of OLS regression is confirmed by favourable significance levels SF as well as P-values. β_1 coefficients (CIV in the table 1) mark the idea that economic growth in the researched countries registers varying income sensitiveness on productivity. Accordingly, it can be observed that former Soviet states i.e. Moldova, Azerbaijan, Georgia, Armenia, Belarus and Ukraine, register the lowest sensitiveness, while the Eastern European Union countries record significantly higher levels. Thus, in Moldova 1% improvement in productivity stimulates GDP per capita growth with only 1.22% comparing to Estonia 3.08% or Poland, 2.81%.

Table 1. **OLS regression between Log GDP per capita and Log GDP per employed person, confidence 95%**

*13	R2	SE	SS	RSS	MS	RMS	F	SF	CI	SEI	TSI	PVI	CIV	SEIV	TSIV	PVIV
AM	0.96	0.07	1.72	0.06	1.72	0.00	371	0.00	-5.58	0.74	-7.50	0.00	1.47	0.08	19.3	0.00
AZ	0.99	0.05	3.65	0.04	3.65	0.00	1283	0.00	-4.44	0.39	-11.51	0.00	1.36	0.04	35.8	0.00
BY	0.99	0.03	1.73	0.01	1.73	0.00	2278	0.00	-6.16	0.33	-18.74	0.00	1.54	0.03	47.7	0.00
BG	0.97	0.06	1.32	0.05	1.32	0.00	409	0.00	-14.99	1.21	-12.37	0.00	2.34	0.12	20.2	0.00
CZ	0.90	0.07	0.58	0.06	0.58	0.00	126	0.00	-13.55	2.11	-6.41	0.00	2.16	0.19	11.2	0.00
EE	0.93	0.08	1.32	0.09	1.32	0.01	194	0.00	-23.48	2.40	-9.78	0.00	3.08	0.22	13.9	0.00
GE	0.99	0.03	2.34	0.01	2.34	0.00	2440	0.00	-4.82	0.27	-17.55	0.00	1.43	0.03	49.4	0.00
HU	0.36	0.17	0.23	0.41	0.23	0.03	8	0.01	-16.93	9.59	-1.77	0.10	2.45	0.88	2.8	0.01
LV	0.97	0.06	1.35	0.04	1.35	0.00	424	0.00	-11.44	1.03	-11.09	0.00	1.99	0.10	20.6	0.00
LT	0.96	0.07	1.72	0.07	1.72	0.01	342	0.00	-11.19	1.14	-9.81	0.00	1.95	0.11	18.5	0.00
MD	0.98	0.04	1.23	0.03	1.23	0.00	648	0.00	-2.95	0.44	-6.71	0.00	1.22	0.05	25.5	0.00
PL	0.97	0.05	1.35	0.04	1.35	0.00	531	0.00	-20.58	1.32	-15.57	0.00	2.81	0.12	23.0	0.00
RO	0.96	0.08	2.30	0.09	2.30	0.01	365	0.00	-12.92	1.18	-10.96	0.00	2.13	0.11	19.1	0.00
SK	0.99	0.03	1.22	0.01	1.22	0.00	1865	0.00	-12.07	0.51	-23.60	0.00	2.02	0.05	43.2	0.00
UA	0.88	0.07	0.48	0.07	0.48	0.00	102	0.00	-7.50	1.62	-4.62	0.00	1.68	0.17	10.1	0.00

Source: Calculated by the author.

Gross national expenditure is a relevant indicator depicting the living standards of the population since it reflects the ability of citizens, business and government to buy goods and services. Krugman (1997) and Stiglitz (2002) underline the importance of boosting consumption capacities of households, business sector, and government to enhance economic growth, ideas widely promoted by the representatives of Neo-Keynesian economics. By comparing the information displayed in figure 2 and 5, it can be observed that both consumption and income per capita have grown in the Eastern European countries, the graphs shifting rightwards. Unlike the discrepancies in terms of log income, log consumption differences in the Eastern Europe slightly reduced at a greater extent. Accordingly, the standard deviation of log income decreased with 0.07 units within the researched period, while those in terms of log consumption reduced with 0.22 units, at the same time, the range of data minimised with 0.26 and respectively, 0.78. Moreover, the median value in the case of log income enlarged with only 1.2, while in that of consumption with 1.59. Nevertheless, it could be mentioned that both the divergences in terms of GDP and consumption per capita are more or less similar in the linear association being determined by almost the same values of the respective equations (see figures 4 and 6).

*Please note for all tables: R^2- coefficient of determination; SE- Standard Error; SS- Sum of Squares; RSS- Residual Sum of Squares; MS- Mean Squares; RMS- Residual Mean Squares; F- F test coefficient; SF- Significance F; CI- Coefficient of intercept; SEI- Standard Error of intercept; TSI- t stat of intercept; PVI- P-value of intercept; CIV- Coefficient of independent variable; SEIV- Standard error of independent variable; TSIV- t stat of independent variable; PVIV- P-value of independent variable;

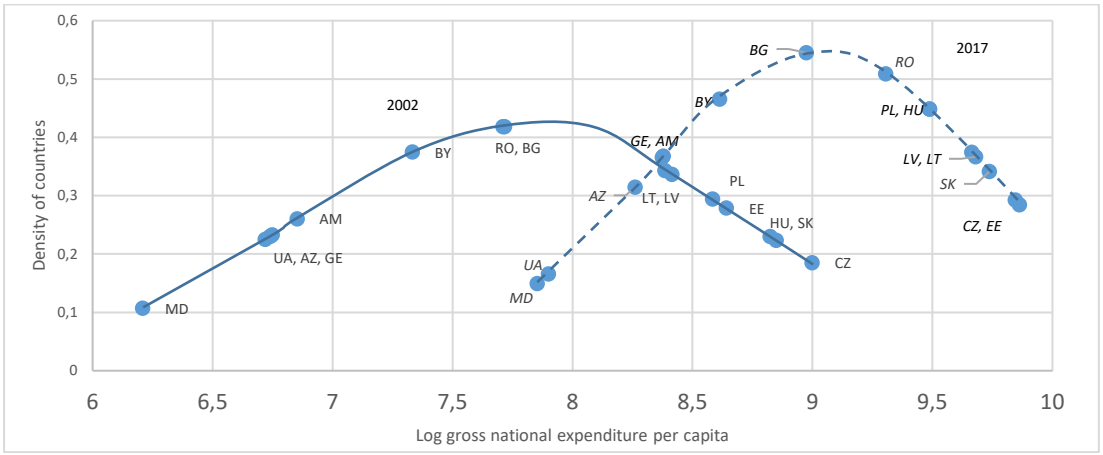

Figure 5. **The distribution of countries according to log gross national expenditure per capita (PPP, current international USD) in 2002 and 2017.**

Source: Designed by the author based on the data provided by the World Bank.

Taking into account the information presented in figure 6, it can be highlighted that several countries exceeded the regional trend in terms of consumption per capita within the period of 2002-2017, the highest growth being registered in Romania, Lithuania, Latvia, Estonia and Georgia. It is also relevant to mention that dynamics of consumption in Ukraine, Poland and Hungary recorded values below the expected trend in the region.

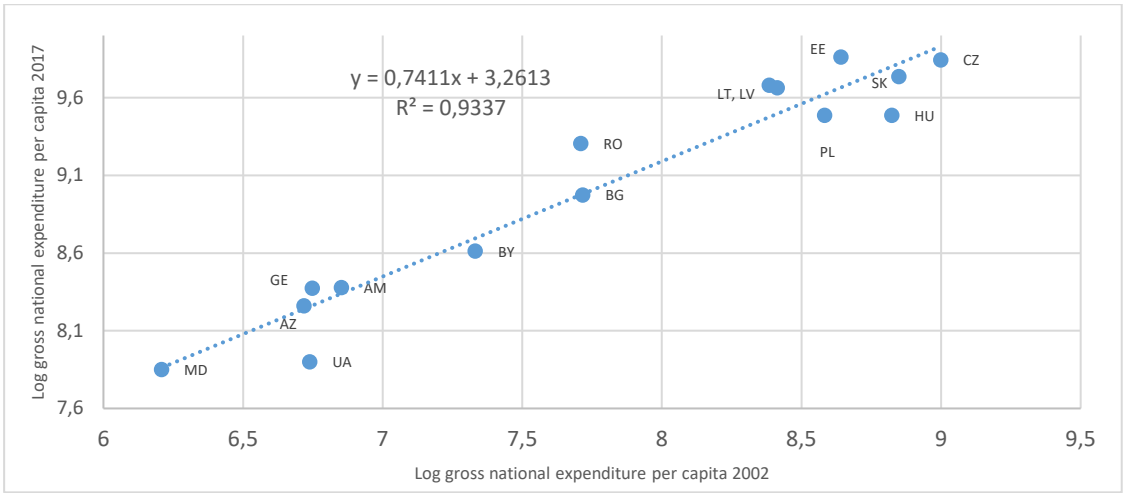

Figure 6. **Log gross national expenditure per capita in 2017 versus log gross national expenditure per capita in 2002.**

Source: Designed by the author based on the data provided by the World Bank.

Based on the information provided in table 2, it can be concluded that there is a strong and statistically significant linear association between income and expenditure in the countries of the Eastern Europe. For the vast majority of states, the values of the determination coefficient R^2 are very high the fact which confirms the observation

made in the previous sentence. At the same time, it should be remarked that the value of R^2 for Hungary is higher than in table 1, yet, lower as compared to the rest of states, the situation which proves the specific character of economic growth in this country which is driven by peculiar determinants. Since the linear relation is strong and relevant (SF is low), it can be concluded that the linear relation between Log GDP per capita and Log gross national expenditure per capita is determined by the following equation:

$$(2)\ \log(y_i) = \beta_{0c} + \beta_{1c} \log(x_c) + \varrho_2$$

where y_i-is GDP per capita, x_c- consumption, β_{0c}- coefficient of intercept, β_{1c}- coefficient of independent variable and ϱ_2- error term. The coefficient of interest is β_{1c} (CIV in table 2) which describes, ceteris paribus, the effect of change in consumption on the economic development (or the elasticity of GDP per capita considering Gross national expenditure per capita). The sensitiveness of income of countries depending on consumption is much more reduced as in the case of productivity, yet also high. Accordingly, the highest sensitiveness is registered in Slovakia where for each 1% change in expenditures per capita, the income per capita will adjust with 0.88%, followed by Estonia, Poland, 0.8%, as well as Lithuania and Romania, 0.79% and respectively 0.74%. On the opposite side there are situated Ukraine, 0.36%, Moldova, 0.49%, and Armenia, 0.59%. Thus, an increase with 1% of expenditure in Slovakia will stimulate the growth of GDP per capita with 0.88% while in Ukraine with only 0.36%.

Table 2. **OLS regression between Log GDP per capita and Log gross national expenditure per capita, confidence 95%**

*	R2	SE	SS	RSS	MS	RMS	F	SF	CI	SEI	TSI	PVI	CIV	SEIV	TSIV	PVIV
AM	0.90	0.12	1.60	0.19	1.60	0.01	121	0.00	4.03	0.43	9.36	0.00	0.59	0.05	10.98	0.00
AZ	0.92	0.14	3.41	0.29	3.41	0.02	167	0.00	3.57	0.45	7.92	0.00	0.73	0.06	12.93	0.00
BY	0.88	0.12	1.53	0.22	1.53	0.02	99	0.00	4.26	0.53	8.05	0.00	0.62	0.06	9.94	0.00
BG	0.82	0.13	1.12	0.25	1.12	0.02	62	0.00	3.60	0.75	4.79	0.00	0.68	0.09	7.87	0.00
CZ	0.68	0.12	0.44	0.21	0.44	0.01	29	0.00	4.34	1.08	4.02	0.00	0.61	0.11	5.43	0.00
EE	0.88	0.11	1.25	0.17	1.25	0.01	105	0.00	2.35	0.74	3.16	0.01	0.80	0.08	10.25	0.00
GE	0.90	0.13	2.12	0.23	2.12	0.02	130	0.00	3.54	0.46	7.74	0.00	0.66	0.06	11.41	0.00
HU	0.40	0.17	0.25	0.38	0.25	0.03	9	0.01	3.75	2.05	1.83	0.09	0.66	0.22	3.02	0.01
LV	0.78	0.15	1.08	0.31	1.08	0.02	49	0.00	3.57	0.89	4.02	0.00	0.66	0.09	7.00	0.00
LT	0.83	0.15	1.49	0.30	1.49	0.02	71	0.00	2.54	0.88	2.90	0.01	0.79	0.09	8.40	0.00
MD	0.85	0.12	1.07	0.20	1.07	0.01	76	0.00	4.62	0.41	11.17	0.00	0.49	0.06	8.74	0.00
PL	0.74	0.16	1.03	0.36	1.03	0.03	40	0.00	2.48	1.18	2.11	0.05	0.80	0.13	6.29	0.00
RO	0.84	0.17	2.00	0.39	2.00	0.03	73	0.00	3.08	0.77	4.01	0.00	0.74	0.09	8.53	0.00
SK	0.77	0.14	0.94	0.28	0.94	0.02	46	0.00	1.61	1.24	1.31	0.21	0.88	0.13	6.80	0.00
UA	0.85	0.08	0.47	0.08	0.47	0.01	77	0.00	6.10	0.32	19.10	0.00	0.36	0.04	8.78	0.00

Source: Calculated by the author.

Information presented in table 3 confirms the fact that FDI is a determinant of economic development in the researched countries. It can be remarked that the registered R^2 for all of the states is very high, excluding Azerbaijan (an economy

which is heavily dependent on natural resources exports unlike the other nations). At the same time, it can be mentioned that Hungary records a coefficient of determination much higher as compared to the previous cases, the fact highlighting the strategic role of FDI in the fostering its economic development, the situation which is also characteristic for all other states. Low level of SF marks that the linear association is statistically significant, thus, FDI influencing the economic development of the region as a whole. Since the correlation is strong and statistically significant, it can be concluded that the linear relation between Log GDP per capita and Log FDI stock per capita is determined by the following equation:

$$(3) \qquad \log(y_i) = \beta_{0FDI} + \beta 1_{FDI} \log(x_{FDI}) + \varrho_3$$

where y_i-is GDP per capita, x_{FDI}- foreign direct investments, β_{0FDI}- coefficient of intercept, β_{1FDI}- coefficient of independent variable and ϱ_3- error term. The coefficient of interest is β_{1FDI} (CIV in table 3) which describes, ceteris paribus, the effect of change in the stock FDI per capita on the economic development (or the elasticity of GDP per capita considering FDI stock per capita). The highest sensitiveness of income on FDI stock is characteristic for Estonia and Lithuania, 0.63, followed by Slovakia, Poland, and Hungary, 0.59, 0.56 and respectively 0.53. On the opposite side there are Ukraine, Bulgaria and Belarus, 0.22, 0.33 and respectively 0.35. This fact underlines the idea that a 1 % growth in FDI stock per capita in Estonia, for instance, will increase GDP per capita with 0.63%, while in Ukraine the same 1% growth will only foster income per capita with 0.22%.

Table 3. **OLS regression between Log GDP per capita and Log FDI stock per capita, confidence 95%**

*	R2	SE	SS	RSS	MS	RMS	F	SF	CI	SEI	TSI	PVI	CIV	SEIV	TSIV	PVIV
AM	0.89	0.12	1.59	0.19	1.59	0.01	118	0.00	5.70	0.28	20.19	0.00	0.44	0.04	10.84	0.00
AZ	0.29	0.43	1.08	2.61	1.08	0.19	6	0.03	5.83	1.48	3.94	0.00	0.50	0.21	2.41	0.03
BY	0.95	0.08	1.66	0.09	1.66	0.01	264	0.00	7.20	0.14	49.94	0.00	0.35	0.02	16.24	0.00
BG	0.86	0.12	1.18	0.19	1.18	0.01	85	0.00	6.79	0.30	22.93	0.00	0.33	0.04	9.24	0.00
CZ	0.85	0.08	0.55	0.10	0.55	0.01	76	0.00	6.01	0.48	12.53	0.00	0.46	0.05	8.74	0.00
EE	0.92	0.09	1.29	0.12	1.29	0.01	152	0.00	4.15	0.47	8.79	0.00	0.63	0.05	12.33	0.00
GE	0.98	0.06	2.30	0.05	2.30	0.00	644	0.00	5.75	0.12	48.28	0.00	0.41	0.02	25.38	0.00
HU	0.64	0.13	0.41	0.23	0.41	0.02	25	0.00	5.21	0.95	5.49	0.00	0.53	0.11	5.00	0.00
LV	0.94	0.08	1.31	0.08	1.31	0.01	217	0.00	6.05	0.25	23.75	0.00	0.45	0.03	14.73	0.00
LT	0.88	0.12	1.58	0.21	1.58	0.01	107	0.00	4.70	0.50	9.34	0.00	0.63	0.06	10.36	0.00
MD	0.85	0.12	1.07	0.20	1.07	0.01	76	0.00	5.63	0.30	18.85	0.00	0.42	0.05	8.74	0.00
PL	0.85	0.12	1.18	0.21	1.18	0.01	80	0.00	5.24	0.52	10.11	0.00	0.56	0.06	8.93	0.00
RO	0.89	0.14	2.13	0.26	2.13	0.02	115	0.00	5.84	0.35	16.51	0.00	0.49	0.05	10.71	0.00
SK	0.74	0.15	0.91	0.32	0.91	0.02	40	0.00	4.76	0.84	5.67	0.00	0.59	0.09	6.29	0.00
UA	0.93	0.05	0.51	0.04	0.51	0.00	179	0.00	7.44	0.11	67.19	0.00	0.22	0.02	13.37	0.00

Source: Calculated by the author.

Table 4 provides information regarding the linear association between income and remittances. The economic and social impasse in the Eastern Europe determined massive emigration of these countries' populations towards wealthier regions of the continent i.e. Western European and the Russian Federation. This situation created important inflows of financial resources sent back in the home countries by migrants. The remittances boosted the purchasing power capacities of households, thus, raising the demand for products and services which strengthened domestic economic development. As it can be observed in table 4, the vast majority of countries register high levels of the determination coefficient R^2, except for Bulgaria and Poland, the average value of the coefficient for the remaining states being 0.80. Low levels of SF underline the idea that there is a strong and statistically significant relation between remittances and income per capita in the Eastern Europe which is exemplified by the following equation:

$$(4)\ \log(y_i) = \beta_{0r} + \beta 1r \log(x_r) + \varrho 4$$

where y_i-is GDP per capita, x_r- remittances per capita, β_{0r}- coefficient of intercept, β_{1r}- coefficient of independent variable and ϱ4- error term. The coefficient of interest is β_{1r} (CIV in table 4) which describes, ceteris paribus, the effect of change in the per capita remittances on the economic development (or the elasticity of GDP per capita considering received per capita remittances). The highest sensitiveness is registered in Bulgaria where for each 1% change in the level of received per capita remittances there is a 0.95% change in the respective level of GDP, this state is followed by Estonia, 0.80% and Lithuania, 0.57%. On the opposite site there are situated Latvia, Ukraine and Hungary with 0.28%, 0.28% and respectively 0.19%.

Table 4. **OLS regression between Log GDP per capita and Log remittances per capita, confidence 95%**

*	R2	SE	SS	RSS	MS	RMS	F	SF	CI	SEI	TSI	PVI	CIV	SEIV	TSIV	PVIV
AM	0.80	0.16	1.43	0.35	1.43	0.03	56	0.00	5.82	0.39	14.88	0.00	0.48	0.06	7.51	0.00
AZ	0.80	0.23	2.94	0.75	2.94	0.05	55	0.00	6.96	0.33	20.98	0.00	0.53	0.07	7.39	0.00
BY	0.95	0.08	1.65	0.09	1.65	0.01	251	0.00	8.00	0.10	81.11	0.00	0.39	0.02	15.83	0.00
BG	0.24	0.27	0.33	1.04	0.33	0.07	4	0.05	4.43	2.41	1.84	0.09	0.95	0.45	2.11	0.05
CZ	0.74	0.11	0.48	0.17	0.48	0.01	40	0.00	8.49	0.27	31.31	0.00	0.34	0.05	6.33	0.00
EE	0.93	0.08	1.31	0.10	1.31	0.01	184	0.00	5.49	0.33	16.60	0.00	0.80	0.06	13.57	0.00
GE	0.94	0.10	2.20	0.15	2.20	0.01	203	0.00	6.13	0.19	33.08	0.00	0.49	0.03	14.25	0.00
HU	0.75	0.11	0.47	0.16	0.47	0.01	42	0.00	8.93	0.16	56.32	0.00	0.19	0.03	6.47	0.00
LV	0.78	0.15	1.08	0.31	1.08	0.02	49	0.00	8.17	0.24	34.60	0.00	0.28	0.04	7.00	0.00
LT	0.76	0.17	1.36	0.43	1.36	0.03	45	0.00	6.50	0.51	12.70	0.00	0.57	0.09	6.67	0.00
MD	0.72	0.16	0.91	0.35	0.91	0.03	36	0.00	5.70	0.42	13.53	0.00	0.44	0.07	6.01	0.00
PL	0.32	0.26	0.44	0.94	0.44	0.07	7	0.02	8.10	0.69	11.71	0.00	0.35	0.13	2.57	0.02
RO	0.61	0.26	1.45	0.94	1.45	0.07	22	0.00	8.16	0.32	25.54	0.00	0.35	0.08	4.64	0.00
SK	0.81	0.13	0.99	0.24	0.99	0.02	59	0.00	7.88	0.28	28.07	0.00	0.39	0.05	7.65	0.00
UA	0.93	0.05	0.51	0.04	0.51	0.00	176	0.00	7.67	0.09	81.18	0.00	0.27	0.02	13.26	0.00

Source: Calculated by the author.

Knowing the previous results of the undertaken regression analyses, it has become interesting which is the effect of export on income of the region. Based on the information provided in table 5, it can be remarked that the registered determination coefficient is high for all of the countries and the SF is low. In this regard, it can be underlined that the correlation is statistically significant and reflects the impact of exports on economic growth in the countries of the Eastern Europe which can be exemplified by the following log-log model:

$$(5)\ \log(y_i) = \beta_{0e} + \beta_{1e} \log(x_e) + \varrho 5$$

where y_i-is GDP per capita, x_e- exports per capita, β_{0e}- coefficient of intercept, β_{1e}- coefficient of independent variable and ϱ_5- error term. The coefficient of interest is β1e (CIV in table 5) which describes, ceteris paribus, the effect of change in the per capita exports on the economic development (or the elasticity of GDP per capita considering per capita exports). The highest sensitiveness of income per capita considering exports is remarked for Romania, Armenia and Moldova, 0.67, 0.65 and respectively 0.61. At the same time, the lowest levels are registered in the Czech Republic, Ukraine and Slovakia, 0.42, 0.43 and respectively, 0.45. In this case, an increase in terms of per capita exports of 1% in Moldova, for example, will boost nation's per capita income with 0.67%, while in Ukraine with 0.43%.

Table 5. **OLS regression between Log GDP per capita and Log exports per capita, confidence 95%**

*	R2	SE	SS	RSS	MS	RMS	F	SF	CI	SEI	TSI	PVI	CIV	SEIV	TSIV	PVIV
AM	0.94	0.08	1.68	0.10	1.68	0.01	239	0.00	4.51	0.27	16.39	0.00	0.65	0.04	15.47	0.00
AZ	0.86	0.19	3.18	0.51	3.18	0.04	88	0.00	5.35	0.43	12.35	0.00	0.54	0.06	9.36	0.00
BY	0.90	0.11	1.57	0.18	1.57	0.01	122	0.00	4.74	0.43	10.92	0.00	0.60	0.05	11.03	0.00
BG	0.93	0.08	1.27	0.10	1.27	0.01	186	0.00	5.01	0.33	15.13	0.00	0.56	0.04	13.62	0.00
CZ	0.86	0.08	0.55	0.09	0.55	0.01	83	0.00	6.34	0.43	14.89	0.00	0.42	0.05	9.09	0.00
EE	0.93	0.08	1.32	0.09	1.32	0.01	201	0.00	4.53	0.39	11.76	0.00	0.59	0.04	14.16	0.00
GE	0.98	0.06	2.30	0.05	2.30	0.00	624	0.00	5.00	0.15	33.22	0.00	0.56	0.02	24.98	0.00
HU	0.79	0.10	0.50	0.13	0.50	0.01	52	0.00	5.48	0.62	8.83	0.00	0.49	0.07	7.20	0.00
LV	0.94	0.08	1.31	0.09	1.31	0.01	208	0.00	5.86	0.27	21.37	0.00	0.46	0.03	14.41	0.00
LT	0.95	0.08	1.69	0.09	1.69	0.01	251	0.00	5.23	0.30	17.71	0.00	0.53	0.03	15.85	0.00
MD	0.92	0.08	1.16	0.10	1.16	0.01	162	0.00	4.48	0.30	15.14	0.00	0.61	0.05	12.72	0.00
PL	0.91	0.09	1.27	0.12	1.27	0.01	144	0.00	4.97	0.41	12.15	0.00	0.59	0.05	12.01	0.00
RO	0.98	0.06	2.33	0.06	2.33	0.00	563	0.00	4.44	0.22	20.30	0.00	0.67	0.03	23.74	0.00
SK	0.81	0.13	0.99	0.23	0.99	0.02	60	0.00	5.87	0.54	10.91	0.00	0.45	0.06	7.73	0.00
UA	0.83	0.08	0.46	0.09	0.46	0.01	68	0.00	5.90	0.36	16.17	0.00	0.43	0.05	8.26	0.00

Source: Calculated by the author.

One of the main indicators reflecting innovation capacities of countries and their technological competitiveness is high tech exports (reported to the total number of population). The Eastern Europe's innovation potential is somehow limited as

compared to the Western European countries, yet, it should not be underestimated its long run power in fostering economic growth and boosting living standards, especially in this deprived region. Based on the information provided in table 6, it can be concluded that, on overall, there is a strong interconnection between innovation and income of population in the majority of countries, except for Azerbaijan, Georgia, and Hungary, and at a lower extent, Estonia and Armenia. The significance coefficient SF in the vast majority of states is low, the situation which allows mentioning that there is a strong and statistically significant correlation between high tech exports and economic growth in this region. Thus, it can be underlined that the correlation is statistically significant and reflects the favourable impact of innovation and technological competitiveness on income which can be exemplified by the following equation:

$$(6) \qquad \log(y_i) = \beta_{0te} + \beta_{1te} \log(x_{te}) + \varrho_6$$

where y_i-is GDP per capita, x_{te}- high tech exports per capita, β_{0te}- coefficient of intercept, β_{1te}- coefficient of independent variable and ϱ_6- error term. The coefficient of interest is β_{1te} (CIV in table 6) which describes, ceteris paribus, the effect of change in the per capita high tech exports on the economic development (or the elasticity of GDP per capita considering per capita high tech exports). The highest sensitiveness in this regard is registered in Belarus, 0.71%, which means that for each 1% increase in the per capita high tech exports, there will be a 0.71% growth in per capita GDP. This nation is followed by Moldova with a coefficient of 0.58, while on the opposite side there is situated Latvia, 0.3.

Table 6. **OLS regression between Log GDP per capita and Log high tech exports per capita, confidence 95%**

*	R2	SE	SS	RSS	MS	RMS	F	SF	CI	SEI	TSI	PVI	CIV	SEIV	TSIV	PVIV
AM	0.57	0.23	1.01	0.77	1.01	0.06	18	0.00	8.39	0.10	81.87	0.00	0.49	0.11	4.27	0.00
AZ	0.07	0.50	0.25	3.44	0.25	0.25	1	0.33	9.33	0.13	71.22	0.00	0.17	0.17	1.01	0.33
BY	0.88	0.12	1.53	0.21	1.53	0.02	102	0.00	6.86	0.27	25.79	0.00	0.71	0.07	10.09	0.00
BG	0.97	0.06	1.32	0.05	1.32	0.00	398	0.00	7.64	0.10	80.12	0.00	0.42	0.02	19.94	0.00
CZ	0.88	0.07	0.57	0.08	0.57	0.01	103	0.00	7.20	0.30	24.31	0.00	0.41	0.04	10.13	0.00
EE	0.46	0.23	0.65	0.76	0.65	0.05	12	0.00	7.21	0.80	9.02	0.00	0.43	0.13	3.47	0.00
GE	0.24	0.36	0.56	1.79	0.56	0.13	4	0.06	9.34	0.30	31.14	0.00	-0.31	0.15	-2.09	0.06
HU	0.11	0.20	0.07	0.56	0.07	0.04	2	0.21	8.15	1.37	5.93	0.00	0.25	0.19	1.31	0.21
LV	0.97	0.05	1.35	0.04	1.35	0.00	474	0.00	8.26	0.07	114.51	0.00	0.30	0.01	21.77	0.00
LT	0.92	0.10	1.65	0.14	1.65	0.01	169	0.00	7.89	0.16	50.15	0.00	0.36	0.03	13.00	0.00
MD	0.65	0.18	0.82	0.45	0.82	0.03	26	0.00	7.55	0.14	53.85	0.00	0.58	0.11	5.06	0.00
PL	0.96	0.06	1.34	0.05	1.34	0.00	367	0.00	8.20	0.09	92.79	0.00	0.33	0.02	19.15	0.00
RO	0.90	0.13	2.15	0.24	2.15	0.02	125	0.00	7.56	0.19	40.33	0.00	0.45	0.04	11.16	0.00
SK	0.93	0.08	1.14	0.09	1.14	0.01	181	0.00	8.03	0.15	53.75	0.00	0.31	0.02	13.46	0.00
UA	0.69	0.11	0.38	0.17	0.38	0.01	31	0.00	7.51	0.25	29.59	0.00	0.41	0.07	5.55	0.00

Source: Calculated by the author.

Table 7 provides information regarding the linear correlation between Log GDP per capita and Log gross capital formation per capita. Capital is an important indicator reflecting the availability of assets in the economy capable of generating growth. By examining the first column, it can be observed that coefficient of determination is relatively high in the region, yet, on overall slightly lower as in the case of previous indicators. Nevertheless, it allows concluding that capital formation is strongly correlated with GDP per capita, the relation which is statistically significant taking into account SF coefficient and it is reflected by the following equation:

$$(7) \qquad \log(y_i) = \beta_{0cap} + \beta_{1cap} \log(x_{cap}) + \varrho_7$$

where y_i-is GDP per capita, x_{cap}- high tech exports per capita, $\beta 0_{cap}$- coefficient of intercept, β_{1cap}- coefficient of independent variable and ϱ_7- error term. The coefficient of interest is β_{1cap} (CIV in table 7) which describes, ceteris paribus, the effect of change in the per capita capital formation on the economic development (or the elasticity of GDP per capita considering per capita capital formation). The highest sensitiveness is recorded in the case of Slovakia, 0.83, followed by Azerbaijan, 0.81 and Estonia, 0.69. At the same time, on the opposite side it is Ukraine, Moldova and Armenia, 0.30, 0.44 and respectively 0.45. Thus, if Slovakia registers a 1% growth in terms of capital per capita, it may expect the GDP to increase with 0.83%, while this raise in the case of Ukraine will be of only 0.3%.

Table7. **OLS regression between Log GDP per capita and Log gross capital formation per capita, confidence 95%**

*	R	SE	SS	RSS	MS	RMS	F	SF	CI	SEI	TSI	PVI	CIV	SEIV	TSIV	PVIV
AM	0.63	0.22	1.13	0.66	1.13	0.05	24	0.00	5.86	0.59	9.90	0.00	0.44	0.09	4.90	0.00
AZ	0.80	0.23	2.93	0.76	2.93	0.05	54	0.00	3.83	0.75	5.08	0.00	0.81	0.11	7.37	0.00
BY	0.81	0.16	1.41	0.34	1.41	0.02	59	0.00	6.16	0.44	13.95	0.00	0.46	0.06	7.65	0.00
BG	0.59	0.20	0.81	0.56	0.81	0.04	20	0.00	5.96	0.79	7.53	0.00	0.49	0.11	4.51	0.00
CZ	0.59	0.14	0.38	0.27	0.38	0.02	20	0.00	5.37	1.08	4.95	0.00	0.57	0.13	4.45	0.00
EE	0.61	0.20	0.86	0.56	0.86	0.04	22	0.00	4.23	1.24	3.42	0.00	0.69	0.15	4.64	0.00
GE	0.87	0.15	2.04	0.31	2.04	0.02	91	0.00	4.65	0.43	10.77	0.00	0.63	0.07	9.53	0.00
HU	0.23	0.19	0.15	0.49	0.15	0.03	4	0.06	5.85	2.00	2.93	0.01	0.52	0.25	2.05	0.06
LV	0.41	0.24	0.57	0.82	0.57	0.06	10	0.01	6.09	1.18	5.14	0.00	0.46	0.15	3.13	0.01
LT	0.58	0.23	1.04	0.75	1.04	0.05	19	0.00	5.23	1.06	4.93	0.00	0.60	0.14	4.41	0.00
MD	0.73	0.16	0.91	0.35	0.91	0.02	37	0.00	5.66	0.42	13.38	0.00	0.45	0.07	6.08	0.00
PL	0.64	0.19	0.89	0.50	0.89	0.04	25	0.00	5.02	0.97	5.17	0.00	0.63	0.13	5.01	0.00
RO	0.79	0.19	1.89	0.49	1.89	0.04	54	0.00	4.98	0.63	7.86	0.00	0.62	0.08	7.33	0.00
SK	0.52	0.20	0.64	0.58	0.64	0.04	15	0.00	3.22	1.73	1.86	0.08	0.83	0.21	3.93	0.00
UA	0.63	0.12	0.35	0.20	0.35	0.01	24	0.00	7.04	0.38	18.34	0.00	0.30	0.06	4.86	0.00

Source: Calculated by the author.

Conclusions. The present study accepts hypothesis 1 mentioning that the selected growth determinants stimulate economic development in the countries of the Eastern Europe, these indicators include productivity, consumption expenditures,

foreign direct investments, capital formation, trade, innovation competitiveness and remittances. Thus, our theoretical assumptions are backed by relevant proves highlighting that each of these factors strengthens growth. At the same time, this research rejects hypothesis 2 aiming to find if any other of the selected indicators has a stronger impact on the economic growth as compared to productivity. It has by far the most significant effect on the economic development of the Eastern European countries. This determinant is followed by innovation competitiveness reflected through high technology exports. On the third place it is situated the formation of capital shortly followed by remittances, consumption expenditures, foreign direct investments and finally, exports. Simultaneously, this study rejects hypothesis 3 highlighting that income discrepancies among the countries of the Eastern Europe have diminished over the period of 2002-2017. It should be stated that in absolute values the discrepancies have considerably increased and the development differences between former USSR satellites and Republics accentuated over the researched period. The discrepancies slightly diminished in proportional values, yet, insignificantly. These differences are also valid in terms of productivity as well as consumption expenditures.

There can be remarked a clear differentiation between the Eastern European economies which integrated in the European Union and those which are part of the Eastern Partnership initiative. Growth determinants in the first group have a much consistent impact on the economic development, as compared to the second group, in the majority of cases β coefficients of the independent variables of the first states being much larger. Moreover, the growth in the Eastern European Union countries tended to be powered more by productivity increase as compared to the EaP states. These observations are also valid for high technology exports meaning stronger innovation competitiveness of the first and for consumption expenditures underlining that they had a higher impact on the domestic production in the Eastern EU nations as compared to the rest. The same fact is observable for the capital formation pointing the idea that it was more oriented towards improving productive capacities in the first group comparing to the second. Export and FDI's effects on regional growth was almost the same, yet, slightly higher in the East EU member states, meaning that these countries' performances in these areas was slightly larger. At the same time, it can be remarked that the impact of the remittances on the economic growth of the Eastern Europe is greater in the former Soviet Republics, presently, EaP countries. Accordingly, it can be highlighted that these states are more dependent on migrants' transfers which is a consistent factor fostering economic growth.

The impact of the growth determinants on the economic development is lowest in Ukraine, followed by Georgia, Moldova and Armenia. The sensitiveness of β coefficients in the case of these nations are smaller as compared, for instance, to Estonia, Poland, Bulgaria, Slovakia and Romania, as well as Hungary and Lithuania. This observation could be explained by lower economic dynamics of the EaP states and proportional growth both in terms of income and growth determinants. Another important observation which can be assess regards hindering factors in the former USSR Republics which hampers these nations in reaching greater impact of development determinants. In this regard, it could be inferred that corruption, weak

institutions and less efficient economic policies may serve as justification, ideas which can be developed in a potential research.

As a result, it can be remarked the increase of the development discrepancies between the Eastern European nations which integrated in the European Union and the EaP countries. This situation reduces the potential of the region as a whole to grow since this it could not reach the full potential through maximising the impact of the development determinants and by increasing the integration among the countries. Former USSR states tend to stagnate this fact raising the instability of the region and, therefore, increase the security risks of the community.

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MANAGEMENTUL PERFORMANT – FACTOR PRIMAR ÎN DEZVOLTAREA DURABILĂ A INTREPRNDERILOR

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Summary

The management process is complex and involves the exercise of interdependent functions of planning, organization, motivation and control. The human factor and aspects related to its activity within the team were included, such as organizational culture, conflict, power, authority, management style and teamwork. In the new knowledge society, efficient management, vision and strategic planning, sustainable competitiveness, efficient management are the vectors of success that ensure the viability of the economy and society in general. The development of the competitiveness of an enterprise, branches, countries, nations, becomes impossible without the accelerated development of the economy, of the investments in the human factor and the improvement of the management strategies / aspects. In this sense, we found that the aspects related to the development of post-industrial society, but also of economic competitiveness, have not been sufficiently studied. To date, there is no complex approach to the formation, development and accumulation of human capital in the conditions of the competitive economy with major impact and long-term effects. The research methods used in this paper are: analysis, description, comparative analysis and synthesis. Performance management is a strategic and integrated process that "delivers" the desired success, it is a new concept in business management, even if most of its major elements exist, are known or have been practiced for a long time. Performance management reminds management and employees that all training courses produce results. The major contribution of successful management is the focus on achieving results.

Keywords: *performant management, alimentar industry, enterprise, resources, development, competitiveness, sales.*

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Introducere. Procesul de management general este unul complex și presupune exercitarea unor funcții interdependente de planificare, organizare, motivare și control. Toate aceste laturi își găsesc reflectarea în prezenta lucrare. Însă nu lipsesc nici momentele ce țin de factorul uman și aspectele legate de activitatea lui în cadrul colectivului, cum ar fi cultura organizațională, conflictul, puterea, autoritatea, stilul de management și lucrul în echipă.

În noua societate a cunoașterii, managementul eficient, viziunea și planificarea strategică, competitivitatea sustenabilă, ***managementul performant*** *constituie vectorii succesului ce asigură viabilitatea economiei și a societății în general*.

Managementul performant este un termen omniprezent în mediul afacerilor de astăzi, fiind inclus în corpul de cunoștințe al unor discipline variate și fiind folosit la toate nivelele organizaționale (Brudan, 2010), reflectă abordarea unei entități vis-a-vis de performanță și include sub-procese, cum ar fi:

a. Definirea strategiei (planificarea/stabilirea obiectivelor);
b. Implementarea strategiei și a listei de inițiative;
c. Evaluarea/ măsurarea performanței.

Managementul performant este un proces strategic și integrat ce „*livrează*" succesul dorit de către organizații prin îmbunătățirea performanței oamenilor ce lucrează acolo și prin dezvoltarea capabilităților individuale și de echipă (Armstrong, 1994).

Acesta, reprezintă un concept nou în domeniul administrării afacerilor, chiar dacă cele mai multe dintre elementele sale majore există, sunt cunoscute sau se practică de multă vreme.

Managementul performant reaminteşte cadrelor de conducere şi angajaţilor că, toate cursurile de pregătire profesională produc rezultate. Iar înaltul angajament în îndeplinirea sarcinilor sau orele multe de muncă intensă nu reprezintă rezultate prin ele însele, ci doar premise ori condiţii pentru obţinerea rezultatelor. Însă aceste rezultate sunt produse doar atunci când avem un capital uman impresionant la nivelul unităților economice.

Contribuţia majoră a managementului performant este focalizarea pe obţinerea rezultatelor, de exemplu, produse şi servicii pentru clienţii din interiorul şi din exteriorul organizaţiei. Accentul este mutat de pe efort şi ocuparea timpului pe rezultate şi eficacitate și, deci, pe obținerea competitivității.

Astfel, din cele relatate mai sus, deducem următoarea formulă a managementului performant:

Managementul performant = productivitate+eficacitate+eficiență

Managementul performant reprezintă o abordare strategică şi integrată a asigurării succesului de durată în activitatea organizaţiilor, prin îmbunătăţirea performanţei organizaţiei, echipelor şi indivizilor.

Totuși nu există o interpretare unanim acceptată a termenului de management performant, coexistând puncte de vedere diferite privitor la ce înseamnă și la ce conferă caracterul unei firme de a fi performante.

În Dicționarul explicativ al Limbii Române, performanța descrie „*un rezultat (deosebit de bun) obținut de cineva într-o întrecere sportivă; o realizare deosebită într-un domeniu de activitate sau ca fiind cel mai bun rezultat obținut de un sistem tehnic, de o mașină, de un aparat etc.*" (Dicționar explicativ).

La fel, în această sursă se precizează că, atunci când este vorba despre un sistem, un aparat, o mașină etc., performanța este susceptibilă a indica un „*randament ridicat*". În același timp, performanța produselor arată că, acestea sunt dintre acelea „*foarte competitive*".

În Dicționarul financiar – bancar, termenul de performanță este definit prin prisma financiară reflectând *„potențialul economic și solidaritatea financiară a unei*

entități economice, obținută în urma analizării unui ansamblu de factori cantitativi (indicatori economico – financiari calculați pe baza datelor din situațiile financiare anuale și periodice) (Money.ro, 2021).

În literatura economică apare și termenul de performanța socială a întreprinderii. „*Performanţa socială a unei entităţi economice se poate identifica cu preocupările acesteia legate de diverse aspecte sociale cum ar fi: contribuţia la dezvoltarea comunităţii unde îşi desfăşoară activitatea, respectarea cerinţelor dezvoltării durabile etc.*" (Ștahovschi A., Mircea-Dafinescu V., 2013).

Prin urmare, entităţile economice care se diferenţiază printr-o mai bună performanţă socială pot avea aşteptări de a obţine o performanţă financiară sustenabilă. Evaluarea performanţei sociale oferă entităţilor economice cel puţin următoarele beneficii:

- încurajează entităţile să îşi îmbunătăţească managementul performanţei sociale; promovează transparenţa performanţei sociale şi a riscurilor sociale aferente activităţilor derulate;
- oferă o bază pentru realizarea de comparaţii cu alte entităţi economice din sector sau cu standarde internaţionale sau reglementări legale (*acolo unde este cazul*);
- oferă informaţii relevante prin raportarea socială diverselor categorii de părţi interesate;
- atrage şi promovează investiţiile în entităţi economice cu o performanţă socială ș.a.

O altă viziune a performanței în context economic este și cea de natură umană. În acest sens, managementul performanţei este definit ca un sistem care cuprinde: metodologie de stabilire a obiectivelor, un proces de măsurare a performanţei, un sistem de plată diferenţiată și managementul carierei (Tripon, 2015).

Conceptul de management performant presupune definirea și alinierea în organizație a celor mai bune practici de management. Managementul performanţei trebuie înţeles ca un proces continuu, reflectând practici normale de management, nu „tehnici speciale" impuse managerilor. Cadrul său conceptual include termeni cum sunt: „managementul performanţei", „performanţă" și de „organizaţie performantă".

Prin definiţia sa, managementul performant reprezintă o abordare *strategică* şi *integrată* a asigurării succesului de durată în activitatea organizaţiilor, prin îmbunătăţirea performanţei organizaţiei, echipelor şi ale indivizilor.

Caracterul strategic rezultă din preocuparea pentru problemele mai generale cu care se confruntă organizaţia pentru a funcţiona eficient şi eficace în mediul extern în care se află şi privitor la direcţia generală pe care doreşte să o adopte pentru a-şi îndeplini obiectivele pe termen mediu şi lung.

De altfel, instituirea oricărui program de management strategic are ca punct de pornire misiunea, viziunea, obiectivele şi strategiile organizaţiei, definite în fazele planificării strategice. De la acestea sunt dezvoltate apoi procese de evaluare şi de măsurare a performanţei.

Caracterul integrat vizează modul în care managementul performanţei se articulează în activitatea întreprinderii şi se corelează cu alte procese esenţiale, cum ar fi strategia întreprinderii, dezvoltarea angajaţilor, managementul calităţii totale etc.

Managementul performant – factor primar în dezvoltarea durabilă a întreprinderilor.

Managementul performanței reprezintă un concept nou în domeniul administrării afacerilor, chiar dacă cele mai multe dintre elementele sale majore există, sunt cunoscute sau se practică de multă vreme. De exemplu, de multă vreme angajaţii urmează cursuri de pregătire profesională, lucrează eficient pe parcursul zilei de muncă, superiorii le evaluează performanţa iar în organizaţie se desfăşoară procese de planificare, control, monitorizare şi altele. Toate aceste activităţi ocupă timp considerabil iar oamenii care le desfăşoară sunt foarte ocupaţi.

Managementul performanţei reaminteşte cadrelor de conduce şi angajaţilor că toate aceste activităţi produc rezultate. Cursurile de pregătire profesională, înaltul angajament în îndeplinirea sarcinilor sau multele ore de muncă intensă nu reprezintă rezultate prin ele însele, ci doar premise ori condiţii pentru obţinerea rezultatelor.

Astfel, contribuția majoră a managementului performanţei este focalizarea pe obţinerea rezultatelor, de exemplu produse şi servicii pentru clienţii din interiorul şi din exteriorul organizaţiei. Accentul este mutat de pe efort şi ocuparea timpului pe rezultate şi eficacitate.

În prezent, organizaţiile se confruntă cu provocări mai numeroase şi mai mari decât în orice alte momente din trecut, fie acesta chiar cel foarte apropiat. Concurenţa sporită obligă firmele să fie foarte atente atunci când aleg strategiile prin care urmăresc să ramână competitive.

În plus, este nevoie ca toată lumea din organizaţie şi toate procesele şi sistemele să acţioneze şi să funcţioneze eficace, adică să realizeze exact ceea ce trebuie realizat, în modul potrivit şi la timpul potrivit.

Doar atunci când toate rezultatele din diverse zone de activitate sau unităţi şi compartimente ale organizaţiei continuă să fie în concordanţă cu rezultatele de ansamblu ale firmei, aceasta din urmă poate supravieţui sau prospera. Atunci putem spune că organizaţia şi părţile ei componente sunt performante.

O altă părere este aceea că, performanţa poate fi privită însă şi ca un comportament – modul în care acţionează organizaţiile, echipele şi indivizii pentru a-şi îndeplini sarcinile.

Astfel, Campbell (1990) consideră că, „*performanţa este un comportament şi ar trebui deosebită de rezultate sau efecte*”. În opinia sa, rezultatele pot fi afectate de factori contextuali şi, din acest motiv, nu reflectă corect performanţa individuală sau a echipei (Sonnentag S., Frese M., 2005).

Managementul performant al unei organizații poate fi redat prin intermediul interdependenței mai multor subcomponente ale acestea. Acestea pot fi redate după cum urmează în Figura 1:

Figura 1. **Subcomponentele managementului performant**
Sursa: Adaptat de autor (Sonnentag S., Frese M., 2005)

Deci, „*implementarea managementului performant contribuie atât la asigurarea unui grad înalt de profitabilitate al întreprinderilor (...), cât și la creșterea nivelului de competitivitate a acestora*" (Sonnentag S., Frese M., 2005).

Reieșind din cele expuse mai sus, se poate deduce că managementul performant reprezintă procesul de utilizare a tehnicilor și a metodelor de gestiune într-o manieră eficace, eficientă și viabilă, în același timp, pentru a atinge obiectivele organizaționale și asigurarea succesului de durată prin creșterea performanțelor economice și de management.

Finalitatea ciclică în atingerea parametrilor de performanță preconizați conduce, de altfel, și la creșterea competitivității organizației.

În această direcție, competitivitatea este un concept complex care este dezbătut îndelung de economiștii din întreaga lume, iar fiind legat de noţiunea de *competiţie*, el exprimă, la un nivel general, capacitatea persoanelor, firmelor, economiilor, regiunilor de a se menţine în competiţia derulată la un nivel intern şi/sau mai ales internaţional şi de a obţine avantaje economice din aceasta.

Un reper fundamental, în acest sens, poate constitui implementarea managementului performanțelor în activitățile desfășurate de întreprinderi și constituirea, pe această bază a unui nou set de preocupări manageriale orientate, în mod global, către o dezvoltare durabilă.

Conceptul de **dezvoltare durabilă** desemnează totalitatea formelor și metodelor de dezvoltare socio-economică care se axează în primul rând pe asigurarea unui echilibru între aspectele sociale, economice, ecologice și elementele capitalului natural.

Ritmul accelerat al schimbărilor, care au loc în mediul economic, social, tehnologic, cultural etc., precum și complexitatea acestor schimbări impun companiilor cerințe de competitivitate mult mai drastice, decât erau câteva decenii în urmă. Totodată, dependența companiei de stakeholderii săi devine mai puternică,

majorându-se și nivelul de responsabilitate față de consumatori, angajați, comunitate, mediu etc.

Schimbările prin care se caracterizează mediul de activitate al companiilor moderne, impun necesitatea managementului de a se alătura la noile cerințe și de a propune tehnici și metode noi de gestionare a întreprinderilor mult mai performante. Astfel, ultimele decade sunt marcate de apariția și dezvoltarea conceptului de sustenabilitate (*dezvoltare durabilă*) – inițial fiind gândită drept o soluţie la criza ecologică determinată de intensa exploatare industrială a resurselor şi degradarea continuă a mediului, *dezvoltarea durabilă se referea la prezervarea calităţii mediului înconjurător*.

Însă, dezvoltarea durabilă, pe parcursul câtorva decenii, a ajuns să promoveze conceptul de conciliere între progresul economic şi social, fără a pune în pericol echilibrul natural al planetei.

Dezvoltarea durabilă urmărește și încearcă să găsească un cadru teoretic stabil pentru luarea deciziilor în orice situație în care se regăsește un raport de tipul om – mediu, fie că e vorba de mediul înconjurător, mediul economic sau mediul social. Deși inițial dezvoltarea durabilă s-a vrut a fi o soluție la criza ecologică determinată de intensa exploatare industrială a resurselor și degradarea continuă a mediului și căuta deci în primul rând prezervarea calității mediului înconjurător, în prezent conceptul s-a extins asupra calității vieții în complexitatea sa, și sub aspect economic și social. Obiect al dezvoltării durabile este acum și preocuparea pentru dreptate și echitate între state, nu numai între generații.

Dezvoltarea durabilă reprezintă una dintre cele mai mari provocări ale secolului XXI, dar, în același timp, oferă oportunități viabile întreprinderilor, devenind un model de dezvoltare, care permite, în mod inteligent, de a beneficia de avantaje economice, sociale şi ambientale. Pentru întreprinderile, care doresc să eficientizeze procesele manageriale, prezintă importanță faptul că, includerea obiectivelor de dezvoltare durabilă în strategiile organizaţionale nu trebuie să fie tratată doar ca o problemă unidimensională, care implică reglementări, costuri adăugate și răspundere suplimentară, fiind determinată doar de dorinţa creării unei imagini pozitive, ci ca o condiţie a construirii afacerilor sustenabile, implicând creşterea eficienţei operaţionale și obținerea avantajului competitiv. Astfel, se poate de afirmat că creșterea sustenabila poate fi asigurată doar prin implementarea unui management performant în cadrul întreprinderii.

În ultimii ani, tot mai multe companii din lume au început să întreprindă diverse acțiuni orientate spre reducerea poluării, utilizarea eficientă a resurselor, îmbunătățirea relațiilor cu comunitatea și „stakeholderii” săi. Însă, o parte dintre autori susțin că, aceste inițiative sunt insuficiente, dacă se realizează în mod superficial și nu conduc la crearea unei organizații sustenabile (Linnenluecke, M.K. şi Griffiths, A., 2010). Ei argumentează că, pentru a răspunde provocărilor sociale și de mediu, organizațiile trebuie să realizeze o transformare culturală semnificativă.

Totodată, racordarea la principiile sustenabilităţii trebuie să înceapă cu modificarea viziunilor, valorilor, credinţelor caracteristice unităţilor economice din ţară. Anume, prin schimbarea culturii organizaţionale a companiilor, e posibilă integrarea acestui concept în strategiile întreprinderilor.

Subiectul dezvoltării durabile a întreprinderii și a conceptului de Responsabilitate Socială a Companiei (RSC) a fost promovat și dezvoltat de către un număr impunător de studii, realizate de către: R. Freeman, A. Carrol, S. Atkinson, C. Ramus, U. Steger, M. Epstein, M. Roy, V. Veleva, M. Ellenbecker, J. Barney, T. Dyliick, K. Hockerts, I. Maignan, O. Ferrell, S. Bertels, R. Eccles, I. Slapikaite etc.

Atât acești autori, dar și mulți alții, prin lucrările lor, au tras un semnal de alarmă pentru a sensibiliza lumea afacerilor cu privire la aspectele negative ale impactului provocat de business asupra societății și mediului ambiant și necesitatea de a se racorda la principiile dezvoltării durabile.

Studiile, efectuate în Republica Moldova, cu precădere în ultimul deceniu, de către: *ExpertGrup, 2005, 2011; S. Buciuşcan, 2010; R. Grigoraş, 2011; R. Creţoiu, 2015; ODIMM, 2017*, au evidențiat diverse aspecte ale acțiunilor de RSC și au adus multiple argumente în favoarea abordării afacerilor din punct de vedere sustenabil.

Managementul culturii organizaţionale permite, prin identificarea punctelor forte şi vulnerabile ale comportamentului uman în cadrul organizaţional de a-l direcționa spre anumite obiective, iar cultura organizațională, prin valențe practice, prezintă un instrument viabil, de o importanță majoră, în potențarea performanțelor organizaționale.

Cercetările în domeniul managementului, efectuate în centrele universitare din Republica Moldova, de asemenea, au început să abordeze conceptul de cultură organizațională. Subiectul respectiv este analizat în lucrările cercetători: *A. Cotelnic, A. Zelenschi, I. Demerj, S. Serduni, S. Buciușcan, L. Bilaș, I. Dorogaia, L. Pelevaniuc (Cotos), A. Bîrcă, N. Platon* etc.

În prezent, nevoia de a cerceta cultura organizațională orientată spre principii de sustenabilitate a devenit mai puternică, deoarece dinamica actuală a mediului extern solicită schimbări majore în companii. În plus, implementarea strategiilor de responsabilitate socială corporatistă devine o necesitate, întrucât este tot mai mult solicitată de stakeholderii companiei.

Pentru a face față acestor exigențe, tuturor schimbărilor, întreprinderile, se orientează spre atingerea unor scopuri primordiale în business, precum:

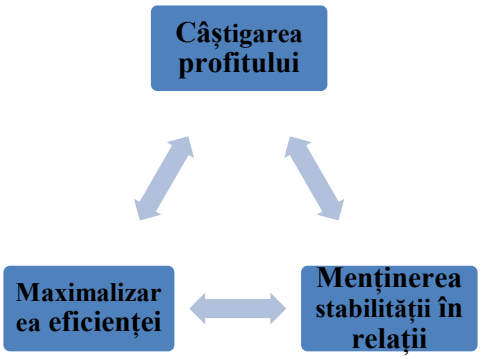

Figura 2. **Scopurile primordiale în business**
Sursa: Elaborat de autor

Evoluția abordărilor în managementul modern, ne permite să constatăm că, dezvoltarea durabilă reprezintă nu numai o condiție obligatorie pentru companiile care tind să se adapteze la schimbările permanente din mediul economic, social, tehnologic, etc., dar prezintă multiple beneficii pentru business:

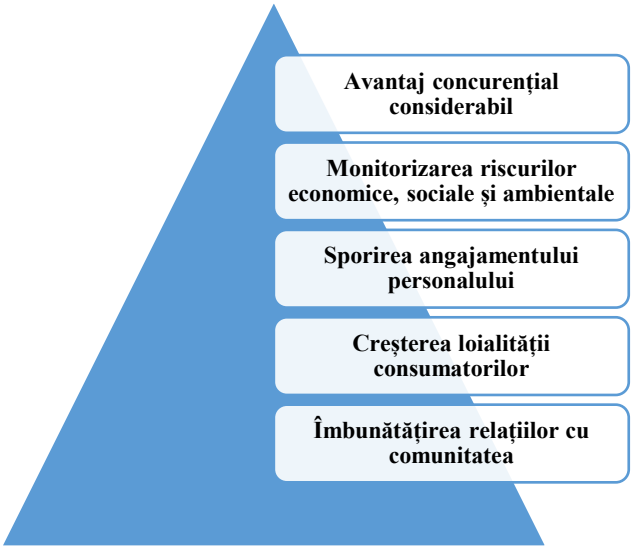

Figura 4. **Beneficiile dezvoltării durabile pentru business**
Sursa: Elaborat de autor

Părerea multor autori este expusă de Rădulescu (RADULESCU C., 2016), care evidențiază că, pentru organizații, dezvoltarea durabilă implică o provocare nouă, ce constă în îmbunătățirea simultană a bunăstării sociale și umane, reducerea impactului ecologic, precum și asigurarea realizării eficiente a obiectivelor organizaționale. Totodată, este necesar de menționat că unul din factorii primari în dezvoltarea durabilă a întreprinderii rămâne managementul performant. Numai datorită prezenței unui management performant în cadrul întreprinderii va fi posibil de asigurat o dezvoltare durabilă a acesteia, deoarece sintagma de dezvoltare sustenabilă sau durabilă desemnează o modalitate de utilizare a resurselor, care tinde să satisfacă necesitățile umane simultan cu prezervarea mediului înconjurător, astfel încât aceste nevoi să poată fi satisfăcute nu numai în prezent, ci și în viitor (MAXIM A., STANA D., GRIGORAȘ M., 2010). Cu atât mai mult că în prezent, dezvoltarea durabilă mai include și necesitatea ca întreprinderea să realizeze concomitent cu obiective sociale și ambientale și o performanță din punct de vedere economic.

Concluzii. În concluzie, se poate de menționat că dezvoltarea durabilă a întreprinderilor este una din cele mai mari provocări contemporane dar care oferă în același timp și oportunități viabile întreprinderilor. Ea reprezintă un nou model de dezvoltare, care permite întreprinderilor de a beneficia de avantaje economice, sociale și ambientale concomitent. Pentru a beneficia de aceste avantaje întreprinderea trebuie să eficientizeze procesele manageriale, să includă obiective de dezvoltare durabilă în strategiile organizaționale orientate la construire unei afaceri sustenabile, implicând creșterea eficienței operaționale și obținerea avantajului competitiv. Astfel, creșterea

sustenabila poate fi asigurată doar prin implementarea unui management performant în cadrul întreprinderii. Aplicarea unui management performant contribuie atât la asigurarea unui grad înalt de profitabilitate al întreprinderilor cât și la creșterea nivelului de competitivitate al acestora, deoarece managementul performant reprezintă procesul de utilizare a tehnicilor și a metodelor de gestiune într-o manieră eficace, eficientă și viabilă, în același timp. Managementul performant asigură succesului de durată prin creșterea performanțelor economice, sociale și ambientale. Iar finalitatea ciclică în atingerea parametrilor de performanță preconizați generează creșterea competitivității întreprinderii.

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BRANDUL DE ȚARĂ CA INSTRUMENT DE INTENSIFICARE A ATRACTIVITĂȚII INVESTIȚIONALE A ȚĂRII

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Summary

The global competition among countries for attracting foreign direct investments has become acute. Under the conditions of incertitude and high risks, a growing number of countries have undertaken different proactive programs and have adopted investment strategies. To enhance their international competitiveness among investors, governments have focused on a variety of approaches, including nation branding.

This paper explores the influence of the brand image of a nation on its ability to attract foreign direct investments. The results confirmed that successful country promotion abroad and continuous activities inside of the country can improve the investment environment causing higher foreign direct investment inflows.

Keywords: *nation brand, country image, foreign direct investment, foreign direct investment location choice, investment promotion agencies.*

JEL: *F21, M31, O57*

UDC: *659.126+339.727.22*

Investiţiile străine directe (ISD) reprezintă un proces complex şi de durată, care implică resurse financiare, materiale, tehnice şi umane semnificative într-un mediu internațional de afaceri incert. Incertitudinea mediului internaţional de afaceri are două componente: *incertitudinea obiectivă*, când decidenții cunosc rezultatele și efectele posibile pe baza datelor furnizate de evoluţiile anterioare, și *incertitudinea subiectivă,* atunci când estimările cu privire la producerea unui anumit eveniment generator de risc se bazează pe aprecierile şi percepţiile proprii ale decidentului în funcţie de informaţiile de care dispune la momentul respectiv, şi de experienţa pe care o are în domeniul respectiv. Nivelul de incertitudine subiectivă însă poate fi semnificativ redus prin promovarea unei imagini corecte legate de mediul de afaceri din ţara gazdă (Stoina 2008).

Plasarea de capitaluri pe termen lung pe pieţele externe se va realiza numai dacă există un stimulent suficient de puternic, în măsură să motiveze companiile să-şi asume incertitudinea și riscurile. Crearea unei imagini pozitive printre investitorii străini, ca instrument de stimulare, poate avea un impact direct și semnificativ asupra volumului şi orientării fluxurilor investiţionale (Hîncu, Bunu, Dascaliuc 2010).

Deși, potrivit Raportului Mondial al Investiţiilor 2022, investițiile străine globale s-au ridicat la 1,650 miliarde de dolari în anul 2021, cu o puternică majorare, de 64%, după prăbușirea provocată de pandemie în 2020, cu toate acestea, mediul global pentru afacerile internaționale și investiții transfrontaliere s-a schimbat dramatic în anul 2022. Războiul din Ucraina – pe lângă efectele persistente ale pandemiei – provoacă o triplă criză: alimentară, financiară și a carburanților în multe țări din lume. Astfel, incertitudinea

investitorilor ar putea exercita o presiune semnificativă în scădere asupra fluxului de investiții străine directe la nivel mondial în următoarea perioadă, iar competiția dintre țări pentru atragerea de capital străin devine tot mai puternică (UNCTAD/WIR/2022).

Ţările folosesc diverse strategii pentru atragerea investițiilor străine în vederea acumulării capitalului necesar pentru o dezvoltare durabilă. Printre aceste metode se regăsește tot mai mult şi brandingul de țară a cărui scop este de a crea şi promova o imagine cât mai atractivă a ţării, inclusiv în rândul investitorilor.

Un **brand de ţară** reprezintă o construcţie simbolică, care accentuează în mod pozitiv calităţile memorabile, atractive, unice, relevante şi durabile ale unei naţiuni (Allan 2004).

Brandul de țară ca concept este un domeniu relativ tânăr și neexplorat, dar extrem de relevant din cauza potențialului său de a influența situația economică a țării. Acesta este motivul pentru care în prezent aproape toate ţările lumii au drept obiectiv de a se diferenţia, acordând o atenție considerabilă brandingului de țară și promovării imaginii țării.

În prezent nu există o definiție unică și unanim acceptată a brandului de țară, acesta fiind considerat drept o concepție care poate ajuta țările să-și sporească competitivitatea ca o identitate competitivă, reprezentând un instrument util pentru promovarea intereselor economice și politice ale țării, care ar putea modifica, îmbunătăți sau spori reputația și imaginea anumitor națiuni.

În literatura de specialitate, se menționează diferite dimensiuni ale brandului de ţară, care pot fi sintetizate într-un model hexagonal al brandului de ţară, care cuprinde: turismul, brandurile de export, politica internă şi externă a Guvernului (sau diplomația publică), investițiile și imigrația, cultura și patrimoniul și oamenii. Aceste elemente joacă un rol important în competitivitatea internațională a unei țări fiind principalele aspecte cu care publicul din străinătate vine în contact, iar fiecare țară trebuie să-și modeleze evoluția imaginii și reputației acestor dimensiuni în direcţia competitivităţii internaţionale prin intermediul strategiilor de poziţionare a brandului de țară (Anholt 2002).

Figura 1. **Modelul hexagonului brandului de țară**
Sursa: Anholt, S. Brand New Justice: How branding places and products can help the developing world. Oxford: Elsevier Butterworth-Heinemann, 2002, pp.118.

De cele mai multe ori, strategiile brandingului de țară pentru atragerea investitorilor străini se înscriu în politica generală a unei ţări de promovare a climatului investiţional și vin să completeze celelalte măsuri de stimulare a investițiilor cum ar fi: facilităţile fiscale acordate investitorilor străini, granturile guvernamentale, crearea zonelor economice libere, ș.a. Ţările care au aplicat cu succes strategii de creare a unei imagini de ţară la nivelul investitorilor străini în vederea atragerii acestora sunt considerate: Africa de Sud, Spania, Columbia și Irlanda.

Succesul politicilor de branding de țară printre investitorii străini se datorează în mare parte eforturilor *agenţiilor naționale de atragere și promovare a investițiilor* specializate în acest sens. Astfel de agenții îndeplinesc de cele mai multe ori, pe lângă rolul de promovare şi informare a investitorilor străini potenţiali, şi rolul de a furniza servicii specifice către aceştia (consultanţă cu privire la crearea companiilor, achiziţionarea sau fuzionarea cu companiile locale).

Printre cele mai proeminente exemple de agenții care au rolul de a promova și/sau a atrage investițiile străine directe sunt: Agenţia pentru Comerţ şi Dezoltare din SUA (TDA), Agenţia Statelor Unite pentru Dezvoltare Internaţională (USAID), Corporaţia Britanică de Dezvoltare (CDC), Agenţia Canadiană de Dezvoltare Internaţională (CIDA), Programul de promovare a investițiilor din Costa Rica (CINDE), etc.

Este de notat că, comparativ cu țările emergente, agenţiile naționale de investiţii din ţările dezvoltate sunt concentrate, în special, pe promovarea climatului investiţional din ţările emergente şi mai puţin pe promovarea propriului climat investiţional. Activitatea acestora vine deci în completarea activităţii agenţiilor de promovare de pe pieţele emergente.

Pentru construirea imaginii țării și atractivității investiționale, agențiile naționale de investiții, utilizează diverse tehnici, cum ar fi:

1.Măsuri de promovare a imaginii țării la nivelul investitorilor străini: publicitatea derulată prin canalele media generale şi specializate, participarea la târguri de investiţii organizate la nivel internaţional, promovarea prin canalele media ale unui sector specific, organizarea de misiuni de informare direct în ţara sursă a investiţiilor străine, organizarea de seminarii generale de informare cu privire la oportunităţile de investiţii în ţara gazdă;

2. Măsuri active de generare a investiţiilor directe: angajarea unor campanii directe sau telemarketing, organizarea de seminarii cu privire la oportunităţile de investiţii dintr-un anumit sector/industrie din ţara gazdă, organizarea de seminarii de informare pe probleme specifice unui anumit sector sau unei anumite industrii în ţările furnizoare de investiţii directe, realizarea de studii de piaţă pe specificul companiilor investitoare, însoţite de prezentări legate de dezvoltarea vânzărilor pe piaţa ţării gazdă;

3.Tehnici bazate pe furnizarea de servicii postinvestiţii: furnizarea de servicii de consultanţă, expedierea regulilor de completare a documentaţiilor specifice unei investiţii directe sau de obţinere a avizelor, furnizarea de servicii postinvestiţii.

Eforturile de creare a reputației sau imaginii unei țări (brandului de țară) în vederea atragerii investitorilor străini pot fi contabilizate și afectate inclusiv în funcție

de poziția pe care o deţine o țară în clasamentele internaţionale, în special în cele cu un grad ridicat de notorietate în rândul factorilor de decizie.

Deși în scopul aprecierii atractivităţii investiţionale a unei ţări pe plan mondial, investitorii apelează cel mai frecvent la ratingurile investiţionale realizate de companiile şi firmele de consultanţă specializate (de ex. Security Bank, Moody's Investors Service, The Economist Intelligence Unit (EIU), Forbes, ș.a.), există indicatori specifici care evaluează poziția relativă a diferitor ţări şi care se bazează pe percepţia anumitor audienţe, cum ar fi Indicele Brandului de Țară Anholt - Ipsos (NBI) elaborat de Simon Anholt.

Simon Anholt a lansat primul clasament internaţional al brandurilor de ţară bazânduse pe o analiză comparativă efectuată la nivelul a 11 ţări, care la moment a ajuns la 60 de ţări, în ceea ce priveşte produsele şi serviciile, competenţa şi corectitudinea în guvernare, dezvoltarea capitalului uman, percepţia culturii, dezvoltarea turismului şi a investiţiilor.

Potrivit Clasamentului Indicelui Brandului de Țară Anholt Ipsos (NBI) cele mai apreciate ţări din lume continuă să fie lideri la capitolul imagine şi reputaţie globală, dar problemele economice mondiale și-au lăsat amprenta: două treimi din națiunile lumii au înregistrat scăderi în reputația lor pe parcursul anului 2021. Cu toate acestea, Germania deține locul de top pentru al cincilea an la rând, ca națiune cu cea mai bună reputație globală, urmată de Canada, Japonia, Italia ș.a.(IPSOS 2021).

Topul primelor 5 țări pentru categoria ”Imigrație și investiții” pe parcursul ultimilor ani rămâne în mare parte neschimbat: Canada, Germania, Elveția, Marea Britanie și Suedia. De asemenea, se atestă o scădere de reputație la această categorie pentru Statele Unite (IPSOS 2020).

Rezultatele acestui clasament sunt în concordanță și cu datele Raportului Mondial al Investiţiilor 2022, care reflectă că pe parcursul ultimilor ani investițiile s-au majorat în țările dezvoltate, cu 199% în anul 2021, în timp ce în economiile în curs de dezvoltare sau mai puțin dezvoltare, avansarea a fost mai moderată, de 30%, și respectiv de 19% (UNCTAD/WIR/2022)

La etapa actuală de conjunctură politică şi economică globală, brandul de ţară devine un element esenţial pentru obţinerea avantajelor competitive în special pentru ţările Europei Centrale și de Est, fie din cauza poziției lor ca fiind naţiuni europene relativ noi, sau din cauza încercărilor lor de a dezvolta economia locală, iar în unele cazuri pentru a se integra în Uniunea Europeană (UE).

Odată cu dezvoltarea relaţiilor internaţionale au fost demarate o serie de încercări de modificare a imaginii şi de creare a brandului de ţară al Moldovei.

În anul 2006, Guvernul Republicii Moldova a aprobat proiectul “Brandul Republicii Moldova”. Proiectul a fost elaborat timp de doi ani de către Organizaţia de Atragere a Investiţiilor şi Promovare a Exportului din Moldova (MIEPO). Astfel, un cub colorat tridimensional şi sloganul “*Descoperiţi-ne*” (“Discover us”) a devenit brandul Republicii Moldova. Acest simbol are o serie de semnificaţii, fiind asociat cu o piatră preţioasă şi necunoscută, precum este Moldova, şi este format din mai multe culori care reprezintă businessul si investiţiile, turismul, agrobusiness-ul şi vinul. Sloganul “Descoperiți-ne” a fost creat ca un îndemn de a cunoaşte ţara care este puţin cunoscută în exterior.

În anul 2018 a fost lansat brandul de țară ”*Pomul Vieții*” utilizat pentru promovarea comerțului, turismului și investițiilor. Prin intermediul elementelor sale, Pomul Vieții reflectă sectoarele strategice ale economiei naționale, invitând investitorii în Moldova. Țara este reflectată ca fiind situată la intersecția principalelor rute comerciale din Eurasia, reprezentând un veritabil hub care adună experiența, continuitatea și diversitatea generațiilor.

În prezent, *Agenţia de Investiţii din Moldova* reprezintă unica instituţie mandatată să promoveze imaginea Republicii Moldova pe dimensiunea economică şi investiţională, fiind administrator al Brandului de Ţară pentru buna poziţionare pe arena internaţională.

Din păcate, eforturile Republicii Moldova de a crea un brand de ţară încă nu au avut efectul scontat, aceste eforturi fiind la o etapă incipientă, iar Republica Moldova deţinând potenţial pentru a deveni un brand de succes, prin strategia de diferenţiere, care va contribui la dezvoltarea durabilă a țării.

Conform cercetărilor realizate, Republica Moldova nu deţine o recunoaştere necesară şi o imagine pozitivă pe dimensiunea economică, de care are nevoie pentru a concura pe piaţa globală. În general, Moldova este cunoscută ca una din ţările sărace din Europa, cu o economie devastată. Doar un număr mic de persoane au asocieri economice favorabile cu Moldova (31,5%).

Aspectele pozitive cele mai mult apreciate rămân a fi elementele culturii şi tradiţiilor (55,7%) și elementele potenţialului natural şi antropologic (27,7%). Aspectele negative care nu sunt agreate se referă preponderent la mediul economic (45,6%) și mediul social (35,7%).

Potrivit studiului realizat se constată că pentru investitorii străini, Republica Moldova reprezintă o țară cu potențial în ceea ce privește atractivitatea investițională (34%), printre factorii negativi fiind menționați: instabilitatea politică, crizele regionale și economice, forța de muncă slab calificată, cadrul de reglementare a afacerilor împovărător, corupția, ș.a.

Totodată, potrivit Raportului privind promovarea investițiilor în Europa emergentă 2022, Republica Moldova pe parcursul anului 2021 a avut fluxuri de investiții străine directe modeste în valoare de 264 milioane de dolari. În ce privește fluxurile de investiții străine directe per capita, Republica Moldova, a ocupat aceeași poziție în clasament – 21, cu un volum de 101 mii dolari (Emerging Europe 2022).

Nivelul scăzut al investițiilor străine directe pe cap de locuitor în Moldova, în comparație cu alte țări, poate fi explicat prin cunoașterea slabă a Republicii Moldova în străinătate, capacitatea redusă și puterea de cumpărare a pieței locale, lipsa resurselor naturale, dependența energetică dintr-o singură sursă și probleme de politică internă, conflictul transnistrean nerezolvat și infrastructura deficientă.

Iată de ce, este necesar de a consolida imaginea ţării prin direcţii esenţiale de creare a avantajelor competitive și atragere a investițiilor, cum ar fi:

1.Definirea direcțiilor strategice privind creșterea atractivității investiționale şi crearea unui cadru legislativ favorabil;

2.Dezvoltarea cooperării economice internaţionale prin încurajarea și atragerea investiţiilor străine directe și a alianţelor;

3.Identificarea și promovarea sectoarelor competitive care ar contribui la creșterea credibilității și vizibilității țării;

4.Implicarea reprezentanţilor guvernului, companiilor, diasporei, diplomaţiei publice, personalităților marcante în promovarea imaginii ţării și atragerea investițiilor;

5.Realizarea campaniilor ample de promovare a atractivității investiționale a țării;

6.Identificarea corectă a percepţiei interne şi externe referitor la mediul de afaceri din Republica Moldova.

Aceste premise stau la baza creării unei vizibilități și imagini pozitive în rândul celor care deţin capitaluri importante, iar brandul de țară reprezintă un puternic egalizator pentru ţările fără influenţă economică, militară și politică, care cu ajutorul brandului pot concura pe piața globală.

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ANTREPRENORIATUL INOVATIV ÎN REPUBLICA MOLDOVA: DOCUMENTE DE POLITICI, FACTORI DETERMINANȚI[14]

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Summary

In recent years, the Government of the Republic of Moldova has made considerable efforts to boost the development of the SME sector and has increasingly recognized the role of innovation as a key driver of a competitive and sustainable economy. And although strategic policy documents, programs, and other normative-legal acts, aimed at stimulating the elaboration and implementation of innovations have been developed and adopted at the national and regional levels, the political commitment to the implementation of innovation policy has remained limited and the innovation ecosystem remains at an incipient phase. In this context, for innovative entrepreneurship to develop effectively and be able to fully contribute to economic growth and development, it is suggested that its importance be further recognized.

The paper aims to present an overview of the legislative framework and policy documents to support innovation at the national and regional levels - derived from other policy areas, highlighting the fact that the integration of the innovation policy for entrepreneurship in existing policy areas is problematic. In the article, the author also identifies and analyzes the determinants of innovative entrepreneurship, available for the Republic of Moldova and comes with some recommendations on boosting the development of innovative entrepreneurship in the country, the main suggestion being the emergence of an innovation strategy with the participation of all stakeholders in innovation and entrepreneurship.

Methods such as analysis and generalization (of the legislative acts and policy documents, economic and statistical indicators and other analytical materials) were used in the elaboration of the article.

Keywords: *innovative entrepreneurship, innovation policies, intellectual property, research and development, knowledge transfer, ICT, Republic of Moldova.*

JEL: *O10; O30; O31; O34; O38*

CZU: *338.22:001.895 (478)(043)*

Introducere. În contextul crizei profunde, cu care se confruntă societatea actuală, inovațiile reprezintă un enorm potențial, care poate contribui la relansarea și creșterea economică. În același timp, inovațiile sunt de o importanță primordială

[14] Articolul a fost elaborat în cadrul Proiectului aplicativ din cadrul concursului "Program de stat" (2020-2023): 20.80009.0807.38 „Evaluarea multidimensională și dezvoltarea ecosistemului antreprenorial la nivel național și regional în vederea impulsionării sectorului IMM în Republica Moldova”, finanțat din bugetul de stat al Republicii Moldova.

pentru IMM-uri, realizarea cărora le permite celor din urmă să obțină avantaj competitiv sau pur şi simplu să supravieţuiască.

Dezvoltarea și calitatea inovării și a antreprenoriatului inovativ depinde de dezvoltarea și calitatea ecosistemului antreprenorial și de inovare. Acestea sunt ecosisteme, care se dezvoltă intensiv în ultima perioadă, iar pentru a funcționa eficient au nevoie de mai multe elemente. Printre acestea se numără o bază științifică solidă, care să producă rezultate de calitate ridicată, o participare intensă a întreprinderilor la activitățile de inovare, o cooperare activă și strânsă a tuturor părților interesate în dezvoltarea activității de cercetare și inovare și, nu în ultimul rând, bune condiții-cadru/politici, care să permită dezvoltarea inovării în întreprinderi.

Vorbind despre ecosistemul național de inovare este important, în primul rând, să se identifice principalele provocări sau bariere, care împiedică contribuția principalelor lui elemente la creșterea economică, să se analizeze cadrul de politici privind inovarea pentru a înțelege, dacă acesta este propice provocărilor identificate, precum și pentru susţinerea activităţilor de inovare ale întreprinderilor şi pentru valorificarea eficientă a resurselor private şi publice alocate pentru inovare.

Principalul obiectiv al acestui articol este de a analiza unele elemente, care contribuie la funcționarea eficientă a ecosistemului antreprenorial inovativ, a prezenta o privire de ansamblu asupra cadrului legislativ și documentelor de politici de susţinere a inovării la nivel național și regional. De asemenea, autorul în acest articol și-a propus de a identifica și analiza factorii determinanți ai antreprenoriatului inovativ, disponibili pentru Republica Moldova, venind cu unele recomandări privind impulsionarea dezvoltării activității de inovare a întreprinderilor în țară.

Analiza unor elemente, care contribuie la funcționarea eficientă a ecosistemului antreprenorial inovativ

Baza științifică publică. Cu referire la baza științifică publică e de menționat, că în anul 2021, potrivit BNS, în țară desfășurau activitate de cercetare-dezvoltare 67 de unități, inclusiv 38 de institute și centre de cercetare, 19 instituții de învățământ superior și 10 – alte tipuri de unități. Din total unități cu activitate de cercetare-dezvoltare, 51 de unități (sau 76,1%) au forma de proprietate de stat. În activitatea de cercetare-dezvoltare sunt antrenați 4,2 mii de salariați, în creștere cu 2,6% faţă de numărul înregistrat la sfârşitul anului 2020. După nivelul de pregătire profesională, 38,4% din salariații din activitatea de cercetare-dezvoltare aveau studii de doctorat și postdoctorat, 45,6% aveau studii superioare de master și licență, 5,6% – studii profesional tehnice postsecundare și 10,4% – alt nivel de pregătire. Pe categorii de ocupații ponderea cea mai mare în cadrul salariaților din activitatea de cercetare-dezvoltare a fost reprezentată de cercetători (70,2%) (BNS,2022).

Calitatea rezultatelor științifice. Măsurarea națională a performanței științifice (număr de publicații, citări, h-index etc.) este foarte complexă și neapărat subiectivă (Țurcan, 2022). Însă după unele metrici, totuși ne putem construi o imagine generală privind performanța cercetării în Republica Moldova. Spre exemplu, potrivit sistemului informatic, destinat evidenţei şi vizualizării indicatorilor sistemului de cercetare-dezvoltare-inovare (CDI) (IDSI, 2022) numărul publicațiilor științifice total la 100 cercetători este de 363,71 (date disponibile a.2020), iar potrivit portalului public SCImago Journal & Country Rank, care include reviste și indicatori științifici de țară dezvoltați din informațiile conținute în baza de date Scopus® (Elsevier B.V.)

(SCImago, 2022). Republica Moldova în același an (2020) se afla pe locul 121 din 234 de țări după numărul publicațiilor științifice (a.2020). În același timp, după calitatea producției științifice țara ocupa poziții mai bune decât după numărul publicațiilor - după numărul citărilor la un articol publicat se afla pe locul 8 cu 11,10 citări per articol.

Totodată, dezvoltarea științei și inovării în Republica Moldova întâmpină dificultăți majore. În societate este foarte scăzută percepția asupra rolului cercetării și inovării în dezvoltarea social-economică a țării. Sectorul cercetare și inovare înregistrează pierderi calitative și cantitative ale potențialului uman. Numărul de cercetători este în descreștere de la an la an. Personalul științific este dominat de persoane în vârstă, iar tinerii nu au tendința de a se implica în cercetare. Sistemul de cercetare începând cu a.1991 este subfinanțat – cheltuielile pentru cercetare și inovare însumează aproximativ 6 euro pe cap de locuitor - de 80 de ori mai puțin decât media pe Uniunea Europeană (Sprîncean, 2021).

Participarea întreprinderilor la activitățile de cercetare și inovare. Cu referire la participarea întreprinderilor la activitățile de cercetare și inovare e de menționat, că în Republica Moldova, capacitatea de inovare a întreprinderilor și, în special, participarea sectorului privat la activitățile de cercetare și inovare este destul de limitată. Întreprinderile investesc cel mai puțin atât în cercetare-dezvoltare externă (procurată de la alte întreprinderi), în achiziții de cunoștințe externe (invenții brevetate și nebrevetate, licențe, know-how, drepturi de autor etc.), cât și în activități de cercetare-dezvoltare, realizate cu forțe proprii. Inovația în industrie și servicii se bazează, în principal, pe achiziții de utilaj, echipament și software străine și nu utilizează soluțiile și sursele tehnologice interne (BNS, 2022). Principalul motiv pentru aceasta este că în cadrul majorității întreprinderilor din Republica Moldova nu există departamente de cercetare și inovare, pe de o parte. Pe de altă parte, activitatea de cercetare și inovare a întreprinderilor nu este susținută de către stat, cu excepția câtorva proiecte de inovare și transfer tehnologic, care implică instituțiile științifice și sectorul privat. Finanțarea de stat a activităților de cercetare și inovare vizează doar entitățile acreditate de CNAA – instituțiile și organizațiile din mediul academic, sectorul privat rămânând în afara acestei finanțări. Ca urmare a tuturor acestor deficiențe, numărul întreprinderilor inovatoare se diminuează din an în an.

Cooperarea părților interesate în dezvoltarea cercetării și inovării. Cu referire la comunicarea și cooperarea activă și strânsă a tuturor părților interesate în dezvoltarea activității de cercetare și inovare, e de menționat, că acesta este un obstacol major în calea dezvoltării inovației în țara noastră. Ecosistemul antreprenorial, aflat încă în stadiu de constituire, slabele legături dintre știință și sectorul privat, neimplicarea reprezentanților sectorului privat în procesul de elaborare a legislației privind cercetarea și inovarea sau ca și consilieri în cadrul instituțiilor de învățământ superior (în special universități) și ale organizațiilor publice de cercetare, inexistența unor fonduri public-private pentru inovare, care în condițiile de criză ar ajuta afacerile inovative cu grad înalt de risc să se dezvolte – toate acestea sunt dovada unei slabe cooperări dintre actorii interesați în dezvoltarea inovației. Însăși datele statistice arată (BNS, 2022), că întreprinderile cel mai puțin colaborează cu universitățile și instituțiile de cercetare, având cele mai strânse relații de cooperare cu furnizorii, urmați de clienți sau cumpărători și alte întreprinderi. Totodată, e de

menționat, că în ultimii ani, totuși, foarte lent, întreprinderile tot mai puțin aleg modalitatea de realizare a inovațiilor de sine stătător, îndreptându-și atenția spre cooperarea cu alte întreprinderi.

Condițiile cadru care susțin activitatea de inovare a întreprinderilor. Cu referire la condițiile-cadru/politicile, care permit dezvoltarea inovării în întreprinderi e de menționat, că activitatea de inovare în țara noastră poate lua avânt doar la existența unor politici, care să susțină inovarea, inclusiv antreprenoriatul inovativ. Însă, spre regret, un obstacol major în calea dezvoltării activității de inovare a întreprinderilor este anume inexistența unor politici clare, a unor reguli, care ar reglementa această activitate. În plus, în țară nu există pârghii legislative și mecanisme, facilități specifice/preferențiale pentru stimularea creării start-up-urilor și spin-off-urilor inovative, a fondurilor cu capital de risc, a altor entități de finanțare a inovării. sau eficiența celor, care există este aproape nulă. Alt obstacol pentru actorii implicați în activități de cercetare și inovare, în special pentru sectorul privat, este acreditarea pentru obținerea fondurilor publice pentru cercetare și inovare – procedură, care lasă în afara finanțării antreprenoriatul inovativ. În țară nu există programe specifice, care ar stimula personalul calificat din sectorul de afaceri să realizeze proiecte de inovare, inclusiv împreună cu mediul academic sau invers, cercetătorii, în special doctoranzii, să se antreneze sau să activeze în întreprinderi inovative pentru avantaje reciproce, etc. În confirmarea acestor argumente în continuare prezentăm o privire de ansamblu asupra cadrului legislativ și documentelor de politici existente de susținere a inovării.

Privire de ansamblu asupra cadrului legislativ și documentelor de politici de susţinere a inovării. În ultimii ani Guvernul Republicii Moldova a recunoscut din ce în ce mai mult rolul inovării ca motor cheie al unei economii competitive și durabile. Acest lucru a avut ca rezultat adoptarea unor documente strategice, programe, concepte şi acte normativ-juridice, orientate spre stimularea elaborării şi implementării inovaţiilor. Printre acestea cele mai relevante sunt:

- Programul național în domeniile cercetării și inovării pentru anii 2020-2023 și ***Planul de acțiuni privind implementarea acestuia*** (HG381, 2019). Se consideră, că Programul vine cu o viziune integratoare asupra cercetării și inovării, depășind astfel fragmentarea creată prin existența a două strategii sectoriale: Strategia de cercetare - dezvoltare a Republicii Moldova până în 2020, aprobată prin Hotărârea Guvernului nr.920/2014, și Strategia inovațională a Republicii Moldova pentru perioada 2013-2020 „Inovații pentru competitivitate" (document, care a vizat în mod direct domeniul inovării), aprobată prin Hotărârea Guvernului nr.952/2013. Așadar, Programul la moment este principalul document, orientat spre susținerea activității de inovare, vine să substituie Strategia inovațională a țării, însă, în mare parte, acesta este concentrat pe cercetarea științifică, iar abordarea inovațiilor în program este superficială și inconsistentă. Deși unul din principiile pe care se bazează Programul este *5) sprijinirea mediului de afaceri favorabil inovării* totuși, prioritățile și obiectivele acestuia sunt stabilite fără a ține cont de necesitățile și provocările antreprenoriatului inovativ. Din acest motiv documentul pierde din relevanța sa pentru mediul privat inovator.

Prioritățile politicii naționale de inovare se aliniază cu alte obiective politice generale.

- ***Programul de activitate al Guvernului Republicii Moldova 2021*** (Guv., 2021) abordează într-o mică măsură domeniul inovării. În program se stipulează doar că ”*Trebuie să încurajăm inovarea şi antreprenoriatul digital”*. Capitolul VI. ”Politici sectoriale” include Subcapitolul ”Transformare digitală”, unde printre acțiunile prioritare se indică ”*Elaborarea şi implementarea unui cadru de inovare tehnologică în sectorul public, inclusiv elaborarea metodologiilor referitoare la dezvoltarea prototipurilor de soluţii digitale şi implementarea proiectelor pilot*”, precum și ”*Elaborarea și adoptarea politicilor …. ….și de stimulare a angajaților inovativi”*.

- ***Planul de acțiuni al guvernului pentru anii 2020-2023*** (HG636, 2018), la capitolul IV. Dezvoltarea economică durabilă are stabilite următoarele obiective:
4.2. *”… schimbarea structurală a economiei naționale prin modificarea modelului de creștere economică, și anume înlocuirea modelului bazat pe consumul alimentat de remitențe cu un model dinamic, bazat pe specializare inteligentă și transformări ample ale mediului științific și economic”*;
4.4. ”*Definirea domeniilor prioritare de specializare inteligentă; selectarea domeniilor de nișă și inovație*…”
4.5. ”*Îmbunătățirea mediului de afaceri pentru a majora numărul de întreprinderi fiabile motivate … și să implementeze inovații, capabile să creeze locuri de muncă atractive, să asigure productivitate înaltă și producție competitivă orientată spre export*”

- ***Strategia națională de dezvoltare „Moldova 2020”*** (LP166, 2012) nu este aliniată la nevoile politicii de inovare. În strategie se vorbește despre schimbarea paradigmei de dezvoltare a țării, care printre altele presupune ”*promovarea societăţii bazate pe cunoştinţe, inclusiv prin fortificarea activităţilor de cercetare şi de dezvoltare, inovarea şi transferul tehnologic orientate spre eficienţă şi competitivitate*”, însă nici una din prioritățile strategiei nu are la bază vectorul inovațional de dezvoltare.

Obiectivele de dezvoltare a inovării se aliniază și cu alte documente de politici, ancorate în documentele strategice privind educația, IMM-urile, dezvoltarea industrială și în alte documente de politici publice conexe, cum ar fi:

- ***Strategia de dezvoltare a sectorului IMM pentru anii 2012-2020*** (HG685, 2012) oferă cadrul de politici pe termen lung și mediu privind dezvoltarea sectorului orientat spre exporturi, investiții și inovații și a dezideratului politic de integrare europeană. Încurajării spiritului inovator în cadrul IMM-urilor îi este dedicată prioritatea 4 a Strategiei, iar în Planul de acțiuni privind implementarea Strategiei pe anii 2018-2020, sunt incluse un șir de obiective și acțiuni, care au ca scop creșterea competitivității IMM-lor și încurajarea spiritului inovator. Printre acestea sunt de menționat obiectivele: *Facilitarea accesului IMM-urilor pe piețele interne și externe; Îmbunătățirea și dezvoltarea capacităților tehnice și inovatoare ale IMM-urilor; Facilitarea dezvoltării grupării IMM-urilor în clustere; Asistenţa pentru IMM-uri în crearea afacerilor inovaţionale; Sporirea rolului proprietăţii intelectuale şi al inovațiilor în dezvoltarea IMM-urilor.*

- ***Legea cu privire la parcurile științifico-tehnologice și incubatoarele de inovare nr.226 din 01.11.2018*** (LP226, 2018) are drept scop stimularea activităților de inovare și de transfer tehnologic, menite să transforme rezultatele cercetărilor

științifice și inovațiile în produse, servicii, procese noi sau perfecționate. Aceasta se referă direct la domeniul inovării și oferă un cadru pentru crearea și funcționarea noilor tipuri de infrastructură de inovare, având în vedere susținerea activității de inovare a rezidenților acestor structuri prin anumite facilități, inclusiv financiare.

- ***Strategia de dezvoltare "Educația 2020"*** (HG944, 2014) stipulează, că *"Educația constituie factorul de bază în crearea şi transmiterea de noi cunoştinţe ... în dezvoltarea capitalului uman ... ... şi are un rol primordial în crearea premiselor pentru dezvoltarea umană durabilă şi edificarea unei societăţi bazate pe cunoaştere*". Totodată nici unul din obiectivele și prioritățile strategiei nu este concentrată direct pe inovare.

Contribuția produselor și serviciilor digitale la creșterea economică este în creștere în Republica Moldova. În plus, în contextul crizei pandemice era absolut necesar de a identifica noi rezerve de creștere și susținere a activității antreprenoriale. De aceea, Foia de parcurs pentru stimularea digitalizării economiei și dezvoltării comerțului electronic a devenit un instrument valoros pentru ameliorarea mediului de afaceri și promovarea inovației digitale. Totodată, în ***Strategia de dezvoltare a industriei tehnologiei informației și a ecosistemului pentru inovare digitală pe anii 2018-2023*** și Planul de acțiuni privind implementarea acesteia (HG904, 2018) una din oportunitățile identificate este *Dezvoltarea continuă a tehnologiilor și inovațiilor și a capacității de absorbție a acestora*. Viziunea strategiei este *Industria TI competitivă orientată spre inovare digitală în toate sectoarele economiei și crearea produselor și serviciilor TI cu valoarea adăugată înaltă pentru piața internă și export, bazându-se pe cercetare și dezvoltare.*

Obiectivul general al strategiei este *Dezvoltarea condițiilor pentru sporirea competitivității, ..., stimularea startupurilor și orientarea spre inovare digitală în toate sectoarele economiei*.

Unul din obiectivele specifice ale Secțiunii 1: Mediul de afaceri TI competitiv este *Existența a cinci centre de inovație în domeniul TI*, iar Secțiunea a 3-a "Inovații bazate pe TIC" are ca obiective specifice:

- *Sporirea numărului companiilor, care aplică inovații digitale pentru eficientizarea business proceselor și simplificarea administrării afacerilor;*
- *Crearea fondurilor de accelerare și investiții în inovații bazate pe TIC;*
- *Crearea rețelei naționale de ateliere de inovații și prototipare.*

Politica de susținere a inovării la nivel regional. În Republica Moldova aspectul regional al politicii cu privire la știință și inovare nu este dezvoltat. În cele 4 regiuni de dezvoltare ale Republicii Moldova nu există agenții regionale pentru inovare și nici strategii regionale de dezvoltare a științei și inovării. În unele regiuni, există centre de inovare și transfer tehnologic, localizate în universități, cum ar fi Centrul de Inovare și Transfer Tehnologic din mun.Bălți, localizat în incinta Universității de Stat "A.Russo", Centrul de Inovare și Transfer Tehnologic din mun.Chișinău, localizat în incinta Academiei de Studii Economice. Este planificat de a deschide un Centru regional de inovare și tehnologie în Cahul. Prin crearea acestor centre se urmărește creșterea competitivității economice regionale prin promovarea dezvoltării cercetării, inovării și transferului tehnologic. Deși aceste centre au fost create, activitatea acestora este limitată. Pe paginile web ale acestor centre informația nu este actualizată din anul 2019. Însă, există strategii de dezvoltare regională și

programe operaționale regionale, care destul de fragmentat și limitat abordează domeniul inovării:

- ***Strategia de Dezvoltare Regională Nord 2016–2020*** (ADR Nord, 2016). La Analiza SWOT, secțiunea Economie, una din oportunitățile de dezvoltare a economiei regiunii este văzută ca *Posibilitatea dezvoltării afacerilor inovaționale prin accesarea resurselor din diferite programe de finanțare*. Obiectivul specific 2: Creștere economică sustenabilă în regiune prevede Măsura 2.3: *Susţinerea domeniului de cercetare, inovare şi transfer tehnologic*. Realizarea măsurii respective va contribui esențial la ”*crearea unui mediu favorabil cercetării şi inovării, ... va spori identitatea regională în termeni de inovare, prin promovarea unitară a tuturor actorilor implicați la nivel regional: universități, centre de cercetare, incubatoare de inovare şi afaceri”*. Acțiunile de realizare a măsurii vor fi orientate spre ”*o analiză concretă a potențialului de cercetare şi inovare, prin realizarea unui studiu în domeniu, ulterior prin susținerea unor inițiative de cercetare, cu suportul programelor naționale și internaționale specializate în IT, pentru asigurarea transferului tehnologic în producerea noilor invenții la nivelul de RDN şi țară”*. Pentru această măsură au fost planificate proiecte prioritare orientate spre susținerea inovării. Unul dintre acestea este: Crearea în mun. Bălți a Centrului de Inovare și Transfer Tehnologic din Regiunea de Dezvoltare Nord.

- ***Planul Operațional Regional Nord 2016-2020*** (ADR Nord, 2016) include Obiectivul 2. Creștere economică sustenabilă în RDN cu următoarele măsuri:

2.2 *Facilitarea dezvoltării mediului de afaceri* prin facilitarea dezvoltării infrastructurii de afaceri

2.3 *Susţinerea domeniului de cercetare, inovare şi transfer tehnologic* prin proiecte inovative: (1) *Crearea în mun.Bălți a centrului de inovare și transfer tehnologic din Regiunea de Dezvoltare Nord;* (2) *Coaching-ul transnațional - vector de creștere inteligentă pentru start-up-uri și scale-up-uri în regiunea Dunării*.

- ***Strategia de Dezvoltare Regională Centru 2016–2020*** (ADR Centru, 2016). La Analiza SWOT, secțiunea Economie, una din oportunitățile de dezvoltare a economiei regiunii este văzută ca ”*Creşterea competitivităţii întreprinderilor prin investiţii în proiecte de cercetare şi inovare*”. Secțiunea 4.2. Obiectivul specific 2: *Dezvoltarea economică durabilă și competitivă* a regiunii include:

Măsura 2.1 Sprijinirea dezvoltării urbane durabile prin: *2.1.2 Sprijinirea acțiunilor inovative în dezvoltarea oraşelor*.

Măsura 2.2 Dezvoltarea economiei regionale și diversificarea infrastructurii de afaceri prin: ”… *creșterea competitivității întreprinderilor pe piețele interne și externe prin stimularea inovării și cooperării economice*”.

- ***Planul Operațional Regional Centru 2017-2020*** (ADR Centru, 2017) are ca Obiectiv specific 2. *Dezvoltarea economică durabilă şi competitivă a regiunii* și include Măsura 2.2 *Dezvoltarea economiei regionale bazate pe inovare.* Pentru această măsură au fost planificate și proiecte orientate spre susținerea inovării: (1). *Îmbunătățirea infrastructurii de susținere a dezvoltării sectorului privat prin crearea Incubatorului Tehnologic și de Afaceri (ITA) START (C22106;* (2). *Crearea conexiunilor infrastructurale regionale aferente parcului tehnologic regional Telenești (C22140)*

- ***Strategia de Dezvoltare Regională Sud 2016–2020*** (ADR Sud, 2016) este documentul de bază în planificarea strategică a dezvoltării Regiunii de Dezvoltare Sud. Pentru realizarea viziunii strategice a fost stabilit Obiectivul general: Dezvoltarea unei regiuni prospere şi cu o creştere economică echilibrată prin: *implementarea strategiilor moderne şi inovatoare prietenoase mediului.*

- ***Programul Operațional Regional Sud 2017-2020*** (ADR Sud, 2017) are ca Obiectiv specific 2. *Creșterea economică echilibrată și durabilă* și include Măsura 2.3. *Dezvoltarea serviciilor și infrastructurii de suport în afaceri.* Pentru această măsură însă nu au fost planificate și proiecte orientate spre susținerea inovării.

- ***Strategia de Dezvoltare Regională a Găgăuziei 2017–2020*** (ADR Găgăuzia, 2017). În strategie una din oportunitățile de dezvoltare a regiunii este văzută ca *Dezvoltarea clusterelor tehnologice, de producere și comercializare*. Pentru realizarea obiectivului general al strategiei este stabilită ca prioritate 2. *Creșterea economică echilibrată și sporirea competitivității regiunii*.

- ***Planul Operațional Regional 2017-2020 al Găgăuziei*** (ADR Găgăuzia, 2017) are stabilită Prioritatea 2: *Sporirea potențialului economic și creșterea competitivității în regiune* prin Măsura 2.1: *Crearea climatului favorabil și a infrastructurii pentru dezvoltarea antreprenoriatului,* fără a se referi la domeniu inovării.

Toate aceste strategii și planuri operaționale definesc, în principal, acțiuni și obiective pentru implementarea Strategiei Naționale de Dezvoltare Regională 2016-2020, care nu abordează domeniul inovării. Acestea, totuși, schițează obiective pentru creșterea competitivității regiunilor prin crearea condițiilor pentru o creștere economică durabilă în regiuni.

Cu referire la raioanele Republicii Moldova situația privind politica de inovare e și mai precară. În raioane există doar strategii de dezvoltare socio-economică și strategii de dezvoltare integrată a raioanelor. Toate aceste strategii sunt elaborate în diferite perioade de timp. Dintre toate aceste strategii, doar cele elaborate la o dată mai recentă abordează într-o măsura foarte limitată susținerea inovării.

Analiza indicatorilor privind factorii determinanți ai antreprenoriatului disponibili pentru Republica Moldova. Activitatea de inovare a întreprinderilor este influențată de anumiți factori, care pot acționa atât în sensul scăderii cât și în sensul creșterii performanțelor acestora și care reprezintă adevărate provocări pentru antreprenori. Acești factori sunt diferiți și se referă la:

1. ***Cadrul de reglementare. Sistemul de proprietate intelectuală.*** Dezvoltarea sistemului de proprietate intelectuală al Republicii Moldova este reflectată în Raportul Global al Competitivității (WEF, 2015-2020). Acesta include 2 indicatori, care caracterizează sistemul național de proprietate intelectuală:

- *Dreptul de proprietate*
- *Protecția proprietății intelectuale.*

Spre regret, pentru anii 2020 și 2021 World Economic Forum nu a publicat raportul cu privire la competitivitatea țărilor. De aceea, în analiza respectivă vom utiliza datele disponibile pentru perioada 2015-2019.

La capitolul Dreptul de proprietate Republica Moldova în a.2019 se află pe un loc inferior (108) printre cele 141 de state, incluse în clasament, scorul de progres fiind aproape de media globală (48,1 puncte). Față de a.2018 țara înregistrează o îmbunătățire de +8 poziții.

Evoluția schimbării poziției în clasament în perioada 2015-2019 arată valori diferite: în a.2016 țara coboară 3 poziții – de pe locul 126 până pe locul 129, după care, în a.2017 revine din nou pe locul 126, iar în perioada următoare urmează o ascensiune semnificativă de +18 poziții (+10 poziții în a.2018 și +8 poziții în a.2019).

Referitor la faptul, în ce măsură este protejată proprietatea intelectuală în Republica Moldova raportul respectiv ne arată, că în a.2019 țara se situează pe locul 91 printre aceleași 141 de state ale lumii, incluse în clasament. Locul țării s-a îmbunătățit față de a.2018 cu +11 poziții, scorul de progres constituind 47,1 puncte.

Evoluția schimbării poziției Republicii Moldova în clasament în perioada 2015-2019 arată valori diferite: în perioada 2015-2017 țara a coborât în clasament cu -6 poziții, după care a urmat o perioadă de ascensiune - +2 poziții în a.2018 și +11 poziții în a.2019. Pentru întreaga perioadă (2015-2019) Moldova înregistrează progrese semnificative (+25 poziții).

2. ***Crearea și diseminarea cunoștințelor. Activitatea de cercetare-dezvoltare.*** Despre activitatea de cercetare-dezvoltare din Republica Moldova putem reflecta după datele disponibile, prezentate de Institutul de Statistică al UNESCO (UNESCO, 2021), după datele incluse în clasamentul internațional Indicele Global de Inovare (OMPI, INSEAD, 2015-2021), precum și după datele statistice, prezentate de AGEPI.

Statistica UNESCO include 3 indicatori, care caracterizează factorul Activitatea de cercetare-dezvoltare (datele în general sunt disponibile doar pentru anii 2015-2018):

- *Cheltuieli brute pentru C-D*
- *Cheltuieli brute pentru C-D finanțate de business, mii lei*
- *Cheltuieli brute pentru C-D efectuate de business, mii lei*

Cheltuielile brute pentru C-D ale Republicii Moldova în a.2018 au constituit 484 500 mii lei, majorându-se față de a.2017 cu 30 600 mii lei, sau cu 6,7%. Față de a.2015 cheltuielile brute pentru C-D ale țării au crescut cu 7,4%.

Cheltuielile brute pentru C-D finanțate de business (date disponibile 2017-2018) au constituit 75 100 mii lei în a.2018, reducându-se față de a.2017 cu 6 200 mii lei, sau cu 7,6%.

Cheltuielile brute pentru C-D efectuate de business (date disponibile 2015-2018) în a.2018 au constituit 84 800 mii lei, reducându-se față de a.2017 cu 1 100 mii lei, sau cu 1,3%. Pentru întreaga perioadă 2015-2018 cheltuielile brute pentru C-D efectuate de business s-au redus cu 8 800 mii lei, sau cu 9,4%.

Potrivit clasamentului internațional Indicele Global de Inovare după Cheltuielile brute pentru C-D finanțate de business (date disponibile 2019-2021) în a.2021 Republica Moldova s-a situat pe locul 72 cu un scor de doar 15.5 puncte. Față de a.2020 locul țării nu s-a schimbat, în schimb față de a.2019 – s-a înrăutățit cu 2 poziții.

După Cheltuielile brute pentru C-D efectuate de business (date disponibile 2015-2021) Republica Moldova în a.2021 s-a situat pe locul 76, coborând față de a.2021 cu 2 poziții. Schimbarea indicatorului în perioada 2015-2021 arată două evoluții diferite: din 2015 până în 2016 evoluția a fost pozitivă (+4 poziții, de pe locul 66 pe locul 62). În perioada 2016-2021 evoluția a fost descendentă, țara a coborât de pe locul 62 până pe locul 76 (14 poziții în 6 ani).

Potrivit bazei de date AGEPI (AGEPI, 2022) (date disponibile 2015-2021) în Republica Moldova în a.2021 au fost eliberate brevete în număr de 69 unități. În raport cu a.2020 numărul acestora a crescut semnificativ cu 25 de unități. Evoluția numărului de brevete eliberate în perioada 2015-2021 arată trenduri diferite: o ascensiune de +9 brevete în anii 2015-2016, după care în a.2017 numărul acestora se reduce până la 62 unități, crescând în a.2018 cu +17 unități, continuând să se reducă semnificativ în anii 2019-2020 cu 35 de unități, anul 2021 fiind marcat de creșterea indicatorului respectiv.

3. ***Transfer de cunoștințe.*** Dezvoltarea factorului respectiv este caracterizată, în general, de doi indicatori:

- *Cereri de brevete depuse de sectorul de cercetare și universitar*
- *Colaborarea dintre universitate/industrie privind activitățile de cercetare-dezvoltare*

Datele privind Cererile de brevete depuse de sectorul de cercetare și universitar sunt prezentate de AGEPI (AGEPI, 2022). În a.2021 la AGEPI au fost depuse 76 de cereri de brevete, fiind mai puține decât în a.2020 cu 20 de unități. Evoluția indicatorului în perioada 2015-2021 arată trenduri diferite de la an la an: creșterea cu 31 de unități a numărului de brevete depuse din 2015 până în 2016; reducerea numărului de brevete depuse în a.2017 cu 45 de unități; în 2018 indicatorul respectiv a crescut cu 3 unități, după care în a.2019-2020 se reduce, din nou, cu 1 și 16 unități, respectiv. Anul 2021 a fost marcat prin reducerea în continuare a numărului de brevete depuse la AGEPI. Astfel, atât în ultimii doi ani, cât și față de a.2015 numărul de brevete depuse la AGEPI s-a diminuat.

Despre activitățile de cercetare-dezvoltare, realizate prin intermediul colaborării dintre universitate/industrie putem reflecta analizând Raportul Indicele Global de Inovare (OMPI, INSEAD, 2015-2021), care include acest indicator.

Potrivit raportului respectiv în a.2021 Republica Moldova s-a situat pe o poziție foarte inferioară (116) în clasament, scorul de progres constituind 28,7 puncte. În acest an locul țării a rămas neschimbat față de a.2020.

Schimbarea poziției în clasament în perioada 2015-2020 arată evoluții diferite de la an la an: în a.2016 țara a avansat de pe locul 120 până pe locul 112 (+8 poziții); în a.2017 evoluția a fost descendentă – de pe locul 112 până pe locul 117, avansând din nou în a.2018 cu +7 poziții, și cu +1 poziție în a.2019, după care în a.2020 situația se înrăutățește din nou, rămânând neschimbată în a.2021.

4. ***Disponibilitatea TIC.*** Factorul Disponibilitatea TIC poate fi analizat, utilizând datele clasamentului internațional Indicele Global de Inovare (OMPI, INSEAD, 2015-2021). Raportul respectiv include doi indicatori (date disponibile pentru perioada 2015-2021):

- *Accesul la TIC*
- *Utilizarea TIC*

La indicatorul Accesul la TIC Republica Moldova în a.2021 se află pe locul 58 în clasament cu un scor de progres peste media globală de 66.4 puncte. În acest an țara a avansat în clasament cu +4 poziții – de pe locul 72 până pe locul 68.

Evoluția schimbării poziției Republicii Moldova în clasament este în general descendentă și arată trenduri diferite: în perioada 2015-2017, cu o ușoară avansare de +2 poziții în a.2016, țara coboară în clasament de pe locul 55 până pe locul 61,

avansând semnificativ cu +24 de poziții în a.2018. În perioada 2019-2020 se înregistrează din nou o evoluție descendentă (-19 și -16 poziții, respectiv), anul 2021 fiind marcat de evoluția pozitivă a acestui indicator.

La indicatorul Utilizarea TIC în a.2021 Republica Moldova se află pe poziția 73, cu un scor de progres de 54.2 puncte.

Evoluția schimbării poziției în clasament în perioada 2015-2021 arată două trenduri diferite: o evoluție, în general, descendentă în perioada 2015-2020 – de pe locul 57 până pe locul 75 sau cu -18 poziții, cea mai mare coborâre înregistrându-se în a.2020 (-9 poziții). Anul 2021 este marcat de evoluția ușor pozitivă – o ascensiune de +2 poziții.

Rezultate principale și concluzii. Analiza elementelor, care contribuie la funcționarea eficientă a ecosistemului antreprenorial inovativ (baza științifică; rezultatele științifice; activitatea de inovare a întreprinderilor; cooperarea părților interesate în dezvoltarea activității de cercetare și inovare; condițiile-cadru/politicile, care permit dezvoltarea inovării în întreprinderi) ne-a permis sa concluzionăm:

1. Deși există multe dificultăți și obstacole, totuși, în țară există o bază științifică solidă, care produce rezultate științifice calitative, apreciate la nivel internațional.

2. Agenții economici participă la activitatea de inovare, însă din an în an numărul acestora se diminuează. Aceștia investesc cel mai puțin atât în cercetare-dezvoltare externă, în achiziții de cunoștințe externe, cât și în activități de cercetare-dezvoltare, realizate cu forțe proprii. Acestea preferă mai curând să achiziționeze inovații și tehnologii inovative din străinătate, decât să le dezvolte local.

3. Cooperarea părților interesate în dezvoltarea inovării este slabă, iar întreprinderile cel mai puțin colaborează cu universitățile și instituțiile de cercetare.

4. Condițiile-cadru pentru inovare în Republica Moldova nu susțin implicarea întreprinderilor în activitățile de cercetare și inovare, și nici nu contribuie esențial la cooperarea dintre mediul științific și cel de afaceri. Analiza mai detaliată a cadrului legislativ și a documentelor de politici de susţinere a inovării ne-a permis să concluzionăm:

- În țară nu există o politică de inovare clară, care ar reglementa și susține direct antreprenoriatul inovativ - politica de inovare existentă este derivată a altor documente de politici. Integrarea politicii de inovare în documentele de politică existente este problematică, deoarece se observă fragmentarea, iar deseori chiar de-sincronizarea acestor documente de politici. În toate aceste documente domeniul inovării nu este abordat în măsura necesară, între aceste documente de politici nu există sinergii puternice, deoarece inițiativele de politică în domeniul științei și inovării sunt dezvoltate în mod izolat, fără a lua în considerare externalitățile pozitive și negative pentru alte domenii de politică. Nu există mecanisme de coordonare integrată și monitorizare a acestor politici. Pe de altă parte, pentru ca activitatea de inovare să se dezvolte eficient, antreprenorii, ca principali actori ai acestei activități complexe, au nevoie de legi și norme clare, de care ar putea să se conducă și care ar putea să-i încurajeze. O altă provocare o reprezintă și alte lacune legislative. Spre exemplu, țara nu are un cadru legal aprobat privind capitalul de risc și spin-off-urile,

îngerii de afaceri, voucherele de inovare, etc., care în condițiile de criză ar ajuta afacerile inovative cu grad înalt de risc să se dezvolte.

- Principalul document, orientat spre susținerea activității de inovare, deși, în mare parte, este concentrat pe cercetarea științifică este Programul național în domeniile cercetării și inovării pentru anii 2020-2023 și Planul de acțiuni privind implementarea acestuia. Acest program, fiind conceput să substituie Strategia inovațională a țării, abordează domeniul inovației foarte superficial și inconsistent.
- Prioritățile politicii naționale de inovare se aliniază cu alte obiective politice generale. Destul de concis și limitat acestea sunt prezente în Programul și Planul de activitate al guvernului, în Strategia Națională de dezvoltare. De asemenea, aceste priorități de inovare se aliniază cu alte obiective politice, ancorate în documentele strategice privind educația, IMM-urile, dezvoltarea industrială, privind parcurile științifico-tehnologice și incubatoarele de inovare și în alte documente de politici publice conexe pentru atingerea obiectivelor strategice de dezvoltare a inovației.
- Aspectul regional al politicii cu privire la inovare nu este dezvoltat. În cele 4 regiuni de dezvoltare ale Republicii Moldova nu există agenții regionale pentru inovare și nici strategii regionale de dezvoltare a științei și inovării. Însă, există strategii de dezvoltare regională, care nu au o viziune integratoare referitoare la domeniul inovării și abordează destul de limitat susținerea activității de inovare a întreprinderilor. Astfel, regiunile diferă între ele nu doar după gradul de dezvoltare economică, ci și după gradul de dezvoltare a inovării. Acestea generează oportunități de creștere și de dezvoltare a inovării diferite.

Analiza indicatorilor privind factorii determinanți ai antreprenoriatului, disponibili pentru Republica Moldova, ne-a permis să concluzionăm următoarele:

1. Cu referire la dreptul de proprietate și protecția proprietății intelectuale în ultimii ani în Republica Moldova se înregistrează îmbunătățiri.
2. Referitor la cheltuielile brute pentru cercetare-dezvoltare e de menționat, că acestea în general au crescut ușor față de a.2015, însă cheltuielile brute efectuate și finanțate de business s-au redus, atât potrivit statisticii UNESCO, cât și clasamentului internațional Indicele Global de Inovare.
3. Potrivit bazei de date AGEPI numărul de brevete eliberate arată trenduri diferite în perioada 2015-2021, atât cu ascensiuni, cât și cu coborâri. Numărul cererilor de brevete depuse de sectorul de cercetare și universitar, de asemenea, evoluează diferit în diferiți ani cu diminuarea indicatorului față de a.2015.
4. Poziția țării privind activitățile de cercetare-dezvoltare, realizate prin intermediul colaborării dintre universitate/industrie potrivit Raportului Indicele Global de Inovare este foarte inferioară și nu se observă îmbunătățiri esențiale în ultimii ani.
5. Potrivit aceluiași raport puțin mai favorabilă se arată a fi situația la capitolul Accesul la TIC și Utilizarea TIC, fiind pe poziții mai favorabile în clasament, însă evoluții pozitive semnificative, de asemenea, nu se înregistrează.

Unele recomandări. Deoarece analiza cadrului legislativ și a documentelor de politici de susținere a inovării a arătat, că în țară nu există o politică de inovare clară, care ar reglementa și susține direct antreprenoriatul inovativ, politica de inovare

existentă este derivată a altor documente de politici, care nu lucrează în favoarea inovării și între care nu există sinergii puternice, se consideră necesar:

1. A crea o echipă de experți pentru a efectua o analiză a cadrului legislativ și de reglementare actual, elaborând propuneri privind modul de realizare a sinergiilor între documentele strategice ale statului, care pun accent pe inovare, pentru ca acestea să lucreze în favoarea inovării, evitând totodată fragmentarea și de-sincronizarea acestor documente de politici.

2. Pentru impulsionarea dezvoltării antreprenoriatului inovativ în țară se cere de a elabora o strategie națională de inovare, axată pe antreprenoriatul inovativ, elaborată cu participarea tuturor părților interesate în inovație și antreprenoriat, cu accent pe toate elementele ecosistemului antreprenorial și de inovare, deoarece rezultatul interacțiunii dintre diferite elemente ale ecosistemului antreprenorial este considerat procesul prin care indivizii transformă oportunitățile în inovații.

3. A crea pârghii legislative și facilități specifice/preferențiale pentru stimularea creării start-up-urilor și spin-off-urilor inovative, a fondurilor cu capital de risc și a altor entități de finanțare a inovării, care în condițiile de criză ar ajuta afacerile inovative cu grad înalt de risc să se dezvolte.

4. Pentru orientarea strategică, coordonarea și monitorizarea implementării politicilor de inovare a crea la nivel național organisme (Consiliu Național pentru inovare și antreprenoriat inovativ) de coordonare şi monitorizare a politicilor, care să reunească toţi actorii interesaţi în dezvoltarea inovării naționale. Acest organism ar trebui să aibă abilități de coordonare a eforturilor, de potențare a experiențelor și cunoștințelor și de informare și convingere a decidenților de politici privind nevoile și acțiunile necesare antreprenorilor inovativi și celor, care contribuie la dezvoltarea ecosistemului antreprenorial inovativ.

5. A stimula dezvoltarea aspectului regional al politicii de inovare pentru ca autoritățile regionale sa-și poată planifica și realiza măsuri în favoarea inovării și creșterii competitivității fiecărei regiuni, ajustării disparităților și creșterii calității vieții cetățenilor.

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THE RELATIONSHIP BETWEEN UNEMPLOYMENT, NAIRU AND INVESTMENT. MICROFUNDATIONS FOR INCOMPLETE NOMINAL ADJUSTMENT

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Summary

This paper proposes a simple method to estimate a macro shock-specific Okun elasticity: it measures by how much the unemployment rate falls over a certain horizon when output increases by one percentage point over the same horizon because of a specific macroeconomic shock. Inference is based on simple instrumental variable regressions of cumulative unemployment on cumulative output. Using data for the Republic of Moldova I consider government spending, tax, monetary policy, financial, technology, and oil shocks. We obtain eight key results:

• At medium horizons (2-3 years), Okun elasticities are largely stable across different kinds of shocks.

• At shorter horizons, differences are more pronounced. The speed at which unemployment adjusts relative to output depends on the shock driving fluctuations. This highlights the importance to consider longer horizons. Otherwise, one could incorrectly conclude that the elasticity breaks down for some cycles.

• The elasticity is larger for financial shocks. Importantly, it is larger than for monetary policy and government spending shocks.

• The largest elasticity is for technological shocks followed by oil shocks.

• An increase/decrease in unemployment by (0.14 p.p.) caused an increase/ decrease in GDP by 1 p.p. period 2011--2015.

• An increase/decrease in unemployment by (1.79 p.p.) caused an increase/ decrease in money supply by 1 p.p. period 2011--2015.

• An increase/decrease in unemployment by (0.17 p.p.) caused an increase/ decrease in GDP by 1 p.p. period 2007--2011.

• An increase/decrease in unemployment by (0.06 p.p.) caused an increase/ decrease in money supply by 1 p.p. period 2007--2011.

Keywords: *Unemployment; investment; monetary policy; rational expectations; interests rates; credit index implications*

JEL: *E43;E52;E61;J68.*

UDC: *331.56+330.322*

Introduction. Today world seems to be more and more disintegrated and "no gate" news media influence as much as more in 1980's and leading newspapers condemning the **casino mondiale** (world casino), the shift in the world economy away from production and real goods and into pure financial speculation, and warming of a crash to come, unless changes were made. In line of mathematics, we

can write such as $a^2 + b^2 = c^2$ but this is more far away from a technical modeling which could be drawn as in common own space: $\alpha x^2 + \beta y^2 = \gamma z^2$

If we do not leave any blank lines we will continue to make and transforming equations, create indentation and hit a new paragraph of economic analysis.

Okun's (1962) Law predicts the short-run output elasticity of unemployment, i.e. by how much the unemployment rate falls, on average, when output increases by one percentage

point. A stable Okun's Law is a key ingredient in macroeconomics textbooks, and business cycle models. Yet, little is known about whether the elasticity depends on the force driving the business cycle. For instance, whether unemployment and output co-move differently in recessions triggered by financial turmoil or an oil supply disruption is unclear ex-ante. The lack of evidence is surprising considering worries that the relationship breaks down occasionally and is particularly weak during recoveries from recessions rooted in financial market distress (e.g. Gordon, 2010).

We argue these findings can help to understand the initially "jobless" recovery following the 2007 financial crisis. Our mission is to investigate in an empirical framework, Okun Law in the Republic of Moldova, in the context of Covid 19, and pandemic of 2020's. Our paper is closely related to Daly et al. (2013) who also estimate shock-specific Okun elasticities. We build on their work along three dimensions. First, we consider a more general selection of macroeconomic shocks. Second, we propose a new one-step approach to estimate the elasticities, whereas Daly et al. (2013) follow a two-step procedure. This increases efficiency and simplifies the construction of confidence bands. Third, my method allows us to perform weak-IV robust inference. The last point is crucial because the forecast-error variance contribution of macro shocks to the variables of interest is often small (Gorodnichenko and Lee, 2017).

In the 2020, seasonally adjusted GDP decreased by 6.825% in the euro area and by 6.375% in the EU, compared with the previous year, according to a preliminary flash estimate published by Eurostat, the statistical office of the European Union. These declines, related to COVID-19 containment measures, follow a strong rebound in the third quarter of 2020 (+12.4% in the euro area and +11.5% in the EU) and the sharpest decreases since time series started in 1995 observed in the second quarter of 2020 (-11.7% in the euro area and -11.4% in the EU). According to a first estimation of annual growth for 2020, based on seasonally and calendar adjusted quarterly data, GDP fell by 6.8% in the euro area and 6.4% in the EU.

For Economy of the Republic of Moldova, seasonally adjusted GDP decreased by 14.0 in the second quarter, 9.7 in the third quarter and 3,3 in the forth quarter, starting with recovery period of boom and bust, respectively for 2021, first quarter -1,8, second quarter – 21,5, third quarter 8,3 and the forth quarter 18,9. According to a first estimation of annual growth for 2020, based on seasonally and calendar adjusted quarterly data, GDP fell by 6.9% in 2020, but smoothly recovery was been registered at 12.3.

Throughout last two years, economy of Republic of Moldova has gone through recurrent periods of boom and bust. This is the fascinating phenomenon of business cycles and economic fluctuations. Although long periods of high economic growth have sometimes led people to believe that the business cycle was dead, statistical data show that it is still alive and well: economic activity continues to fluctuate in an

irregular cyclical manner around its long-run growth trend and the persistence of the shocks describe the origin: financial shocks, demand shocks and inflation shocks classical theory of modeling to nuisance: short-run shocks, disequilibrium shocks and innovative shocks, but also unobserved variables: long-term trends, gaps and shocks (rather than otherwise technological). and at the start of the present decade the growth rate of real GDP per capita turned negative in all of the three largest OECD economies. A fundamental challenge for macroeconomic theory is to explain why the economy goes through these cyclical movements rather than evolving smoothly over time.

The two previous years of COVID-19 implications derived the capitalist market economies of the world through recurrent periods of dynamic trends. At the start of the present decade the growth rate of real GDP per capita turned negative in all of the three largest Eastern European Economies: Russia, Ukraine and Romania. We concludes that that numerous disarrays identifying with the arrangement of strategies utilized by Monetary Policy in a specific space of study financial variables and parameters can reconsider anticipated time-arrangement and/or uncertainty in terms of model errors. Economic activity today depends crucially on expected economic conditions tomorrow. A drop in the economy's expected future growth rate will tend to reduce the propensities to consume and invest by reducing the expected future earnings of households and firms. Hence the aggregate demand curve will shift down, causing an immediate fall in current output. As another example, a change in the expected rate of inflation will shift the aggregate supply curve by feeding into the nominal wages negotiated by workers and firms. It may also move the aggregate demand curve through its impact on the expected real rate of interest.

Literature review. What is the shock of unemployment? The arrangement banters during the Great Recession prompted an overflow of examination on this inquiry. The greater part of studies have tracked down gauges of unobtrusive multipliers in total unemployment, frequently beneath solidarity. Assuming that unemployment are for sure this low, they propose that expansions in government spendings are probably not going to animate confidential movement what's more, that financial solidifications that include spending diminishes are probably not going to cause a lot of damage to the confidential area.

The majority of the evaluations depend on midpoints for a specific country over a specific verifiable period. Since there is no extension for controlled, randomized preliminaries on nations, all assessments of total government multipliers are essentially reliant upon verifiable chance. Hypothesis lets us know that subtleties like the industriousness of expenditure changes, how they are supported, how financial strategy responds, and the snugness of the work market can fundamentally influence the extent of the unemployment especially non-acccelerating inflation rate of unemployment (NAIRU). Sadly, the information don't give us clean regular investigations that can respond to these inquiries. While the new Moldovan economy boost bundle was simply shortage supported and embraced during a time of high joblessness what's more, accommodative money related strategy, it was established because of a frail economy and thus any total assessments are dependent upon concurrent conditions predisposition.

During the most recent decades, the writing has started to investigate whether evaluations of unemployment shocks differ contingent upon conditions. One strand of

this writing thinks about how conceivable it is that government investment are different during downturns (for example Auerbach what's more, Gorodnichenko (2012), Bachmann and Sims (2012), Baum et al. (2012), Auerbach and Gorodnichenko (2013), Fazzari et al. (2013) and Riera-Crichton et al. (2014)). Another strand of the writing thinks about what money related approach means for government investment. New Keynesian DSGE models show that when loan costs are stuck at the zero lower bound, multipliers can be higher than in ordinary times (for example Cogan et al. (2010), Christiano et al. (2011), Coenen and et al. (2012)). This paper adds to the exact writing by exploring whether government investment vary as per two possibly significant elements of the economy: 1) how much leeway in the economy and (2) whether loan fees are close to the zero lower bound. Expanding the underlying examination in Owyang et al. (2013), we exploit the way that the whole twentieth Century contains possibly more extravagant data than the post-WWII information that has been the focal point of the majority of the new exploration. We make another quarterly informational collection for the Moldova reaching out back to 1992. This example remembers episodes of immense varieties for government investment, wide vacillations in joblessness, delayed periods close to the zero lower bound of transfers, and an assortment of duty reactions. This paper broadens the little, however developing, writing on government reliance of multipliers in two alternate ways. In the first place, none of the current papers that gauge state subordinate models consider the zero lower bound on interest as a government. Subsequently, our paper is quick to investigate state-reliance including the zero lower bound under unemployment. Second, we add to state-subordinate multiplier writing by featuring a few key strategic issues that emerge. Specifically, we show that the absolute most generally referred to discoveries of higher investment rate during downturns are because of unique subtleties of the computation of multipliers and are not powerful to conceivable speculations. Utilizing Jordà's (2005) neighborhood projection technique, which we view as a more powerful strategy, we find no proof that the government investment is higher during high joblessness period. Most gauges of the multiplier are somewhere in the range of 0.6 and 1. We perform broad power checks as for our proportions of the model, test period, recognizable proof strategy and the way of behaving of duties and track down little change in the appraisals. We exhibit that the vast majority of the distinctions in ends between our work and that of Auerbach and Gorodnichenko (2012) lie in unpretentious, yet urgent, suspicions hidden the development of motivation reaction capabilities on which the investment are based. Rather than direct models, where the estimation of motivation reaction capabilities is a clear endeavor, building motivation reaction capabilities in nonlinear models is loaded with confusions. We additionally find little proof that the investment is higher at the zero lower bound (monetary policy interest rate in the reaction function equation). The just case in which the stabilizers recognizably surpasses solidarity in the zero lower bound state is at the point when we prohibit the proportioning times of Covid 19 and pandemic of 2020's.

Assumption The single-run simulation results should be displayed to show short-term boom-bust cycles, different for length and intensity, along a long-run growth path. During periods of faster growth, the increase in capacity utilization boosts investment, profits, consumption, and creates asset price inflation. The strong

demand generates a positive feedback loop by pushing for further increases in investment. As a side effect, the strong investment expenditure leads to increase in leverage (raising also the debt service) and share of secondary workers. At the peak, the decrease in consumption caused by secondary workers and the reduction in investment due to high interest rates and bankruptcies reach a critical threshold. The positive feedback of loop is now reversed as testified the increase in bankruptcy ratio and the decrease in secondary workers. These two effects, with the exit from the market of the weakest firms and the increase in the share of primary workers, pave the way for the transition to a new expansionary phase. In our story, price evolution is partially disentangled from output (correlation approximately equal to 0.1) mostly because of the use secondary workers as a cost-containing strategy. Both primary workers' and secondary workers' wages are strongly and positively correlated with output (about 0.6), so in the absence of (large) wage differentials we would observe a standard cost-push inflation. However, the increase in the share of secondary workers that occurs during sudden jumps in aggregate demand drives costs down and contains the inflationary pressure. In fact, Λt is positively correlated with output (0.6) and negatively with inflation (−0.4). As discussed with reference to figures 4-5, the model satisfactorily mimics the response of the aggregate economy to shocks. The agent-based approach allows for an investigation of the changes at the micro level that determine the macroeconomic outcomes. In particular, we focus here on the effect on inflation of shocks on foreign exchange and on export. The previous empirical results shows the bivariate distribution for inflation and number of workers before and after a depreciation, which in this model is represented by an increase in the price of raw materials. The shock generates an increase in dispersion in both distribution and higher use of temporary workers, as testified by the movement of firms' density towards the South-East corner of the space. The median of the distribution of Λ shifts to the right, determining a change in the opposite direction for firm-level inflation. A decrease in employment and a proportionally larger use of secondary workers leads to a containment of the inflationary effect that would otherwise result from an exogenous increase in costs. Also, results in the same way, plots the same bimodal distribution, showing the changes caused by a negative variation in export. For this plot we simulated the same negative variation in export that Moldovan experienced in 2013-2022, equal to 5 times the standard deviation of the export time series. After the shock, firms with relatively little secondary workforce absorb the shock by increasing the share of secondary workers, exacerbating the deflationary effect.

Our results determined through the use of empirical data from past recessions in the 1970s, 1990s, and 2000s that Okun's law was a useful theory. All recessions showed two common main trends: a counterclockwise loop[clarification needed] for both real-time and revised data. The recoveries of the 2021s and 2022s did have smaller and tighter loops in the benchmark.

Quarterly Projection Model. Conventional macroeconomic models often assume that the expected future values of economic variables depend only on the past history of those variables. Indeed, we postulate that the expected inflation rate for the current period is simply equal to the actual inflation rate experienced in the previous period. The assumption of backward-looking expectations may be plausible in 'quiet' times when the macroeconomy is not subject to significant shocks. When people have

no particular reason to believe that the tightness of labour and product markets next year will be much different from what it is today, it seems reasonable for them to assume at next year's inflation rate will be more or less the same as this year's. However, if the economy is hit by an obvious and visible shock such as a dramatic change in the price of imported oil or if there is a clear change in the economic policy regime, say, due to a change of government it does not seem rational for people to assume that next year's economic environment will be the same as this year's.

- It is a **structural model** because each key equation has an economic interpretation, but the equations are not fully micro-founded. In other words, for every key model equation that exists in the model we can explain an underlying economic mechanism that this equation approximates. For example, how the central bank sets the interest rate or how the output is determined. We will discuss this in more detail in this module.
- It is a **general equilibrium model** because it describes how the equilibrium is established in the economy as a whole, and not only in some particular markets or sectors.
- The model is **stochastic** because it allows for stochastic shocks (ex. financial shoks or interest rate shocks) in its equations. Later in the course, you will see a set of the so-called structural shocks in the key equations for domestic variables, such as aggregate demand shock, cost push shock, exchange rate shock, and monetary policy shock.
- This model also assumes the **rational** formation of **expectations** for inflation and exchange rate or, in other words, model-consistent expectations.
- The QPM is a tool suitable for **monetary policy analysis and forecasting**.
- The QPM is a tool suitable for Balance of Payments and international investment position statistics (BOP-IIPx)

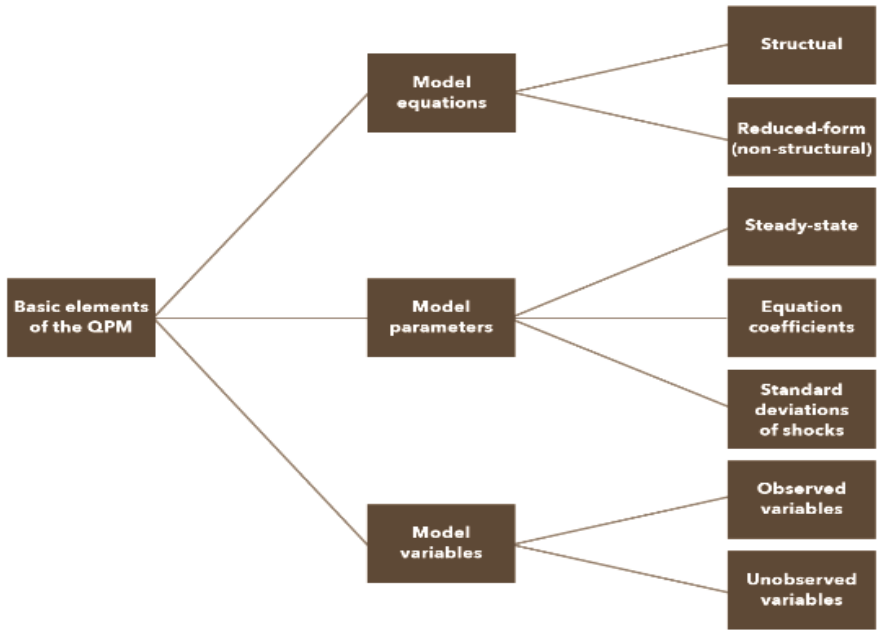

Figure 1: **The building elements of the canonical QPM, classified in three main dimensions.**

Source: International Monetary Fund via EdX platform. https://www.edx.org

I define the macro shock-specific Okun elasticity as the cumulative change in the unemployment rate over the next h periods caused by a macroeconomic shock that changes real GDP by 1 ppt over the next h periods:

$$\beta_h = \frac{\delta \sum_{i=0}^{h} u_{t+i}/\delta_{\varepsilon_t}}{\sum_{i=0}^{h} y_{t+i}/\delta_{\varepsilon_t}}, \text{h} \geq 0 \quad (1)$$

y denotes log real GDP, u the unemployment rate, and $\delta_{y_{t+h}}/\delta_{\epsilon_t}$ is the marginal effect of
an exogenous macroeconomic shock ε_t on $\$y_{t+h}$. $\beta_h$measures relative changes of u and y at
an increasing horizon. This is important because both variables adjust to shocks slowly.
I estimate the macro shock-specific Okun elasticity using the statistic:

$$\beta_h = \frac{\delta \sum_{i=0}^{h} IR_i^u}{\sum_{i=0}^{h} IR_i^y}, \text{h} \geq 0 \quad (2)$$

$IR_i^u$is the causal impulse response of variable y to a macroeconomic shock ε_t at horizon h:

$$IR_i^u = \text{E}(y_{t+h} \mid \varepsilon_t = 1, c_t) - \text{E}(y_{t+h} \mid \varepsilon_t = 0, c_t) \quad (3)$$

where c_t is a vector of control variables. β_h measures the cumulative causal effect of a shock
on the unemployment rate over h periods, relative to the cumulative causal effect of a shock
on output over h periods. With an instrumental variable i_t for the shock ε_t we can estimate the shock-specific Okun elasticity via a sequence of IV regressions.

$$\sum_{i=0}^{h} = b_h \sum_{i=0}^{h} y_{t+i} + d_h' + e_{t+h} \quad (4)$$

where i_t instruments $\sum_{i=0}^{h} y_{t+i}$. I conduct inference on the elasticity using (a) HAC (Newey
and West, 1987) standard errors and (b) a HAC and weak-IV robust method based on inverting the Anderson and Rubin (1949) statistic (see Andrews et al.2019).

Macroeconomic shocks and estimation details.

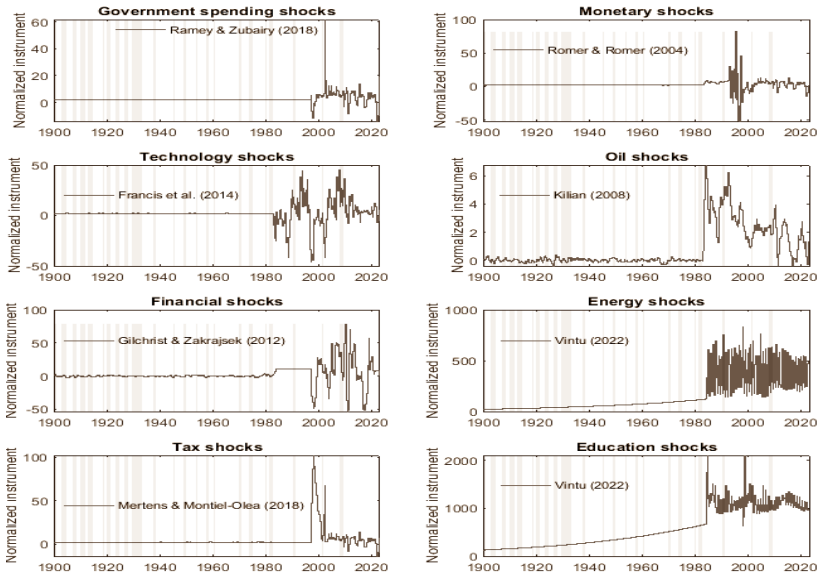

Figure 2. **Instrument for macroeconomic shocks.**
Source: Author's calculation

For financial and technology shocks, we add further controls for identification. Following Ramey and Zubairy's (2018) suggestion, I allow for quadratic deterministic trends in the unemployment rate and log output.

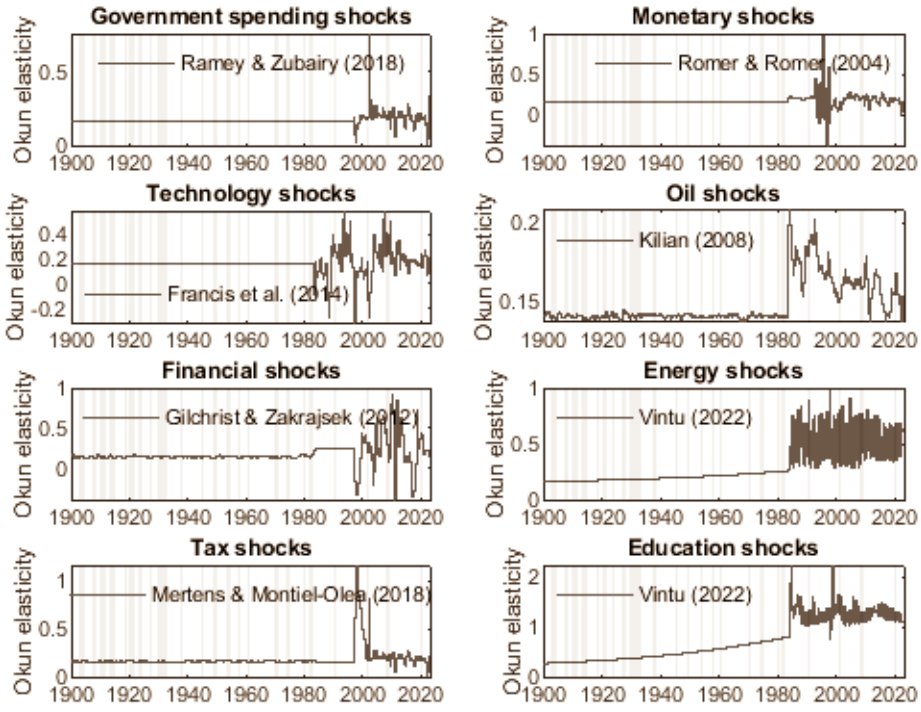

Figure 3. **Macro shocks-specific Okun Elasticity.**
Source: Author's calculation

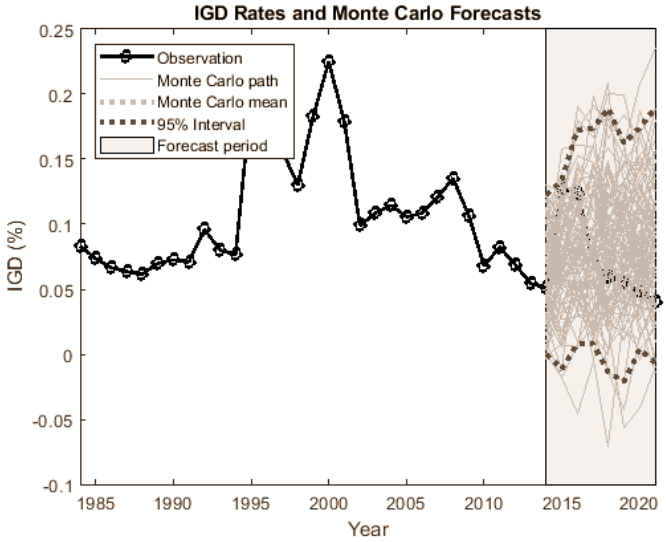

Figure 4. **Behavior of long term interest rate (Keynesian economics): shocks and gaps approach**

Source: Author's calculation

Data. In this sense it should be viewed as an effort to gather and process all the available information in order to cover the gaps in the specific statistical needs to model the euro area. The cut-off date for this update is 27 July 2018 is based on the 18th update of the Area-wide Model (AWM) database. This update, and final version is 3 years out-of-up-to-date, and comparission.

Macroeconomic-Cointed Data Model compared to the previous one carried out in 2017, extends the database to 2017Q4. As in previous versions, it has been constructed using both euro area data reported by the ECB or Eurostat, where available. It has then been backdated using the numbers of the previous version of the database (in general history pre-1996 has been frozen since the 5th update). This paperwhich we created during your experience at "National Institute of Economic Research" . And "Analysis of Financial Stability: The Construction of a New Composite Financial Stability Index for Euro Area"

The coverage of fiscal variables is relatively limited . Users interested in fiscal issues, should refer to the euro area fiscal database, which provides a very rich and more consistent framework for the fiscal series. The AWM database covers a wide range of quarterly euro area macroeconomic time-series. The updated database starts for most variables in 1970Q1 and is now available until 2017Q4. This note elaborates on the methodology and procedures used to update the Area-wide Model database. The first section draws on previous versions of the documentation and briefly explains the sources and methodology to build the historical data. The second section explains how the data for earlier periods are re-scaled to bring the figures in line with recent euro area aggregates. The subsequent sections list the units and seasonal adjustment of the series, elaborates on the main changes with respect to the previous version of the database and gives a tentative timetable for the next

update. The document closes with a summary and an appendix with the codification of the database.

Discussions. In context of Covid 19 and 2020's pandemic, modern advancement has been a significant reason for monetary development. Yield extension has been related with send out advancement, expanded exchange opening, monetary progression and a better business environment in the Republic of Moldova. Nonetheless, net exports and particular government investment have been utilized too.

As neediness in many emerging nations is an overwhelmingly provincial issue, expanded agrarian efficiency is much of the time a key to destitution decrease at the beginning of monetary turn of events. This has been the case for example in Moldova. Nations that have begun their monetary changes - as Moldova did.

With farming change or generally underscored provincial improvement have - toward the start - commonly experienced declining disparity because of a diminishing of country caching down and speed of convergence.

Results and Conclusions. The results from Monte Carlo simulations are displayed in Figure 4. The empirical data are yearly averages from year 2000. In the graph, the results for inflation and share of secondary workers are isolated because they are the results of the optimization in the parameter estimation. The model is able to replicate on average the main quantitative features of the Moldovan economy of the last twenty years in terms of growth and demand structure. The job creation rate reported for the simulation is the variation in the aggregate number of permanent workers. The unit used for labor demand is the number of hours, which is a more suitable proxy for this specific quantity than the number of employees (which we use to measure the distribution of workforce between primary and secondary, in the absence of hourly data). We employ impulse-response function to test the reaction of GDP to a shock in export (figure 2), the reaction of inflation to a shock in the exchange rate, and the response of inflation to a shock in export. In all cases the model satisfactorily mimics the outcome of the real data for direction and duration of the response. However, for the case of inflation and shock of export, the standard deviation appears to be too large to draw a definitive conclusion.

Figure 4 shows that the average individual firms decay in price correlation is faster than the aggregate price as found by Yoshikawa et al. (2015). In terms of outcomes at the firm level, the size of firms measure by capital, number of workers, and sales all display right-skewed distributions. The lognormal distribution well fits the populations for capital and number of workers at each point in time, while for sales the tail is well approximated by a power law, as displayed in figure 7 (see Growiec et al., 2008, for a discussion of the emergence of power law and log normal distributions in firms size).

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SESSION II
THE RURAL ECONOMY AND INCREASINGTHE RESILIENCE OF THE SECTOR FOOD

SECURITATEA ALIMENTARĂ A REPUBLICII MOLDOVA SUB PRESIUNEA SIMULTANĂ A CRIZELOR CLIMATICE, PANDEMICE ȘI ECONOMICE

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Summary

Agricultural activity, being based on the use of relatively and / or absolutely limited sources (for example, agricultural land), being carried out under the "open sky" and oriented towards the stable (sustainable) provision of the country's population with food is, at the same time, excessively sensitive of various risk phenomena. The situation is strongly exacerbated in case of occurrence and simultaneous negative action of several of the risk phenomena with their disastrous "effect" either doubled or tripled, etc.

As the analysis carried out in such situations shows, it is necessary to take radical "anti-crisis" measures, with the massive attraction of internal and (where appropriate) external sources, with the elaboration and practical materialization of regional or national programs on combating, at the very least – reducing, the negative consequences, which are likely to cause significant economic, financial, social, etc. losses.

The aim of the paper *is to identify and assess in advance the various risk phenomena on food security of the country (Republic of Moldova) and to submit socio-economic proposals to combat the serious consequences that may be caused by the above-mentioned risk phenomena.*

The methods applied *Some specific components of the general method of dialectical materialism were used as the main research methods, including: analysis, synthesis, statistical groupings, method of comparison of quantitative indicators, method of scientific abstraction, descriptive method, etc.*

The relevant results*, obtained from the research carried out, are:*

- arguing the need to recognize (at the family level) the risks (risk phenomena) that exist today for the country's population and the adequate preparation of families, first of all - from the rural area, to the negative impact of proportions as a consequence;

- drawing the attention of local public administration bodies, as well as central public administration bodies, to the need to identify economically vulnerable persons (families) in terms of providing material and/or financial assistance for the purpose of overcoming acute situations of negative influence of natural and / or socio-economic crises, listed in the name of the article.

Keywords: *natural risks; anthropogenic risks; risk management; food security; economic crisis; pandemic crisis; climate crisis.*

Activitatea agricolă, fiind bazată pe utilizarea surselor relativ și/sau absolut limitate (exemplu, terenuri agricole), fiind efectuată sub ”cerul deschis” și orientată spre asigurarea stabilă (durabilă) a populației țării cu produse alimentare, este, totodată, excesiv de sensibilă față de diferite fenomene de risc. Situația se exacerbează puternic în caz de apariție și acțiune negativă concomitentă a mai multor fenomene de risc cu ”efectul” lor dezastruos fie dublat, fie triplat etc.

După cum arată analiza efectuată, în asemenea situații sunt necesare a fi întreprinse măsuri radicale de ”anti-criză”, cu atragerea masivă a surselor interne și (după caz) celor externe, cu elaborarea și materializarea practică a programelor regionale sau celor de nivel național privind combaterea, cel puțin, micșorarea consecințelor negative de proporții, care ar putea provoca pierderi esențiale economice, financiare, sociale etc.

***Scopul cercetării** îl constituie identificarea și evaluarea prealabilă a diferitelor fenomene de risc privind securitatea alimentară a țării (Republicii Moldova) și înaintarea propunerilor caracter socioeconomic în vederea combaterii consecințelor grave, care pot fi provocate de către fenomenele sus-nominalizate de risc.*

*In calitate de **metode principale** de cercetare au fost utilizate unele componente specifice ale metodei generale de materialism dialectic, inclusiv: analiză, sinteză, grupări statistice, metoda comparației indicatorilor cantitativi, metoda abstracției științifice, metoda descriptivă etc.*

***Rezultatele relevante,** obținute în urma cercetărilor efectuate, sunt:*

- argumentarea necesității de a recunoaşte (la nivel de familie) a riscurilor (fenomenelor de risc), existente la ziua de astăzi pentru populația țării și pregătirea adecvată a familiilor, în primul rând – din spațiul rural, către impactul negativ de proporții ca și consecință a acestora;

- atragerea atenției organelor de administrare publică locală, la fel ca și a organelor centrale de administrare publică, spre necesitatea de a lua la evidență persoanele (familiile) vulnerabile din punct de vedere economic privind acordarea ajutorului material și/sau celui financiar cu scopul depășirii situațiilor acute de influență negativă a crizelor naturale și/sau socioeconomice, enumerate mai sus.

Cuvinte-cheie: *riscuri naturale; riscuri antropogene; managementul riscurilor; securitatea alimentară; criză economică; pandemie; criză climatică.*

JEL: *Q 10; Q 18; Q 19; Q 54*

UDC: *338.439.02(478)*

Introducere

Necesitatea elaborării prezentului articol a fost determinată de faptul că după seceta severă și prelungită a anului 2020, chiar peste un an, am fost nevoiți să constatăm încă un asemenea fenomen de criză climatică și anume – seceta anului

2022. Pe lângă frecvența neordinară a fenomenelor de secetă (în loc de o dată în 3-5 ani avem o dată în 2 ani), Republica Moldova se confruntă și cu o criză pandemică (COVID-19), criză economică (nivelul prognozat al inflației a. 2022 este de aproximativ 30,0 la sută) și cu consecințele cu adevărat dezastruoase ale conflictului militar din Ucraina, care s-au reflectat prin mai multe efecte negative, în primul rând prin distrugerea practic completă a relațiilor de import-export cu țările est-europene.

Gradul de abordare științifică a temei. Cu toate că acțiunea simultană a crizelor economice naturale sau de altă natură în Republica Moldova se întâlnește foarte rar, cu părere de rău, fenomenul nu se regăsește în literatura științifică. Ca excepție, putem numi articolul analogic din anul 2021 al autorilor sus-nominalizat [1] și o culegere de articole științifice, dedicate problemei managementului riscurilor dezastrelor și fenomenelor climatice adverse, care a fost editată în Republica Moldova în a. 2014 [8].

Rezultatele obținute și discuții.

Totalizând anticipat impactul negativ al evenimentelor, enumerate în denumirea articolului dat, asupra securității alimentare a Republicii Moldova, este greu de apreciat – care din aceste crize sunt cele mai periculoase. Evident, având loc într-un interval relativ scurt de timp, fiind concentrate pe tot teritoriul țării și orientate (foarte agresiv) contra bunăstării cetățenilor ei, toate aceste fenomene de risc devin, cu adevărat, alarmante.

Pentru început – câteva constatări simple. Se apropie de sfârșit luna iunie a.2022. Având în vedere (ca o constatare simplă) lipsa esențială a precipitațiilor din toamna anului trecut și iarna-primăvara anului 2022, agricultura deja la începutul perioadei de recoltare a roadei din prima grupă de culturi grăunțoase, rămâne cu abia 20,0 la sută din volumul necesar al rezervelor de apă, acumulată în sol.

Conform serviciului meteorologic din România, de exemplu, la data de 24 iunie 2022, practic, pe tot teritoriul luncii Prutului "...conținutul de apă pe profilul de sol 0-100 cm, în cultura grâului de toamnă, prezintă valori ... deosebit de scăzute (secetă pedologică puternică și/sau extremă)" [2]. Nu există dubii că o situație analogică s-a creat și pe malul stâng al Prutului, adică, în Republica Moldova.

Reamintim, că anume perioada de toamnă în mod stabil "alimentează" agricultura cu mai mult de un sfert din precipitații anuale. La rândul lor, grâul și orzul de toamnă, la fel de stabil, ne asigură cu aproape 45,0 la sută din totalul de produse cerealiere și leguminoase boabe. Deci, la începutul sezonului de iarnă al anilor 2021-2022 acești indicatori au constituit abia de la 1/5 până la 1/3 din dimensiunile lor obișnuite, constatate pentru o perioadă de lungă durată.

Nu va fi de prisos să subliniem că toamna secetoasă a anului 2021 deja a provocat pierderi esențiale agricultorilor din România și unui șir întreg de alte țări din sudul și sud-estul Europei [3]. Unele surse informaționale din țara vecină Ucraina au numit această toamnă ca cea mai secetoasă din ultimii 20 de ani [4]. De aici tendințele clar evidențiate de creștere a prețurilor la grâul de toamnă în țările din bazinul Mării Negre [5], recunoscut ca unul din principalele regiuni de cultivare a grâului nu numai pentru populația locală, dar și pentru Egipt, Tunisia și alte țări din nordul continentului African. Toate acestea și încă un șir întreg de alte noutăți similare (de ex. – secetă prelungită în California și alte state americane) au determinat reîntoarcerea trendului de creștere a prețurilor de piață la grâul de toamnă spre 357

dol. SUA per tonă.

Cu părere de bine, roada bogată a anului 2021 într-un mod oarecare a compensat situația de criză, posibilă pe piața locală a cerealelor. Totodată, văzând cu ochii lipsa precipitațiilor deja aproape de un an de zile, agricultorii (argumentat) ar trebui să pornească formarea rezervelor de grâu, ceea ce va genera și mai mult atât scumpirea grăunțoaselor, cât și creșterea esențială a prețurilor de piață pentru carne de porc și/sau carne de păsări (specii granivore de animale) nu numai în Republica Moldova, dar și pe tot teritoriul sus-evidențiat.

Nu ne bucură nici situația globală pe piața produselor alimentare. Conform aprecierilor FAO (*Food and Agriculture Organization*) Indexul Global al prețurilor de piață la produsele alimentare, format în baza observațiilor asupra cerealelor, uleiului vegetal, zahărului, produselor din carne și a celor din lapte, prima dată în toată perioada a observațiilor a ajuns la proporții de aproape 30,0 la sută anual [6].

Drept consecință, deficitul alarmant (fie și din cauze diferite) a produselor alimentare se simte chiar și în unele regiuni din Statele Unite ale Americii și China. Având în vedere capacitățile mult mai înalte ale acestor țări privind atât cumpărarea, cât și consumul produselor alimentare de import, nu este logic să așteptăm micșorarea Indexului Global al prețurilor de piață pentru produsele alimentare într-o perioadă de cel puțin până-n toamna anului 2023.

Să nu uităm și despre pandemia COVID-19, valurile puternice ale căreia unul după altul nemilos au atacat populația țării, consecința finală fiind lipsa locurilor de muncă, lipsa salariului (mai ales în domeniile sensibile față de această pandemie, de exemplu – turism, servicii hoteliere, activități de cultură, divertisment etc.), deci, scăderea capacității de cumpărare și, respectiv, de consum.

Este de subliniat, că lăsând amprente adânci (sub o formă sau altă), pandemia este încă în plină desfășurare. Conform opiniei specialiștilor în domeniu, fiind în acțiune distrugătoare deja mai mult de 2 ani, fiind în permanentă modificare și adaptare la condițiile noi de existență (exemplu, ”Omicron”), fenomenul pandemiei COVID-19 este încă departe de a fi depășit [7]. Deci, consecințele negative ale pandemiei vor fi încă resimțite în domeniile economic și demografic de dezvoltare a societății.

După cum a fost deja menționat, efectul cel mai dezastruos asupra securității alimentare a țării (Republicii Moldova și nu numai), a fost și este, totuși, determinat de criza economică generală, reflectată prin nivelul extrem de înalt al inflației, respectiv prin scumpirea alarmantă a carburanților, îngrășămintelor minerale, pesticidelor etc. Drept consecință, accesul economic al majorității covârșitoare a populației țării la produsele alimentare va fi în permanentă scădere atât pentru perioada rămasă a anului 2022, cât și pe parcursul, cel puțin, a următorilor 2-3 ani.

Având ca exemplu (bun de urmărit) eforturile, întreprinse în situațiile analogice în SUA și Republica Populară Chineză, nu ne rămâne decât de a recomanda următoarele:

- oamenilor (familiilor – în primul rând) – de a face rezerve de produse alimentare, care sunt și pot fi adecvat păstrate în condițiile casnice;
- organelor de administrare publică (de toate nivelurile) – de a intensifica activitatea de asistență socială prin identificarea și organizarea ajutorului material persoanelor vulnerabile, mai ales, în spațiul rural al țării.

Vor fi sau nu vor fi practic realizate aceste recomandări – va arăta timpul. Ceea ce este clar și indiscutabil - o constituie necesitatea familiarizării populației țării cu faptul existenței acestei presiuni triple din partea factorilor de risc asupra securității alimentare, chiar, la nivel național.

După cum se știe, orice sistem socioeconomic are lacune și neajunsuri. La fel de bine este cunoscut și faptul că acestea din urmă au o caracteristică specifică – ele se acutizează esențial în perioadele de criză, mai ales, dacă ultimele sunt dublate sau, chiar, triplate, după cum reiese din conținutul acestui articol.

Concluzii.

În calitate de concluzie generală putem confirma că combaterea sau, cel puțin, micșorarea presiunii crizelor asupra populației țării în condițiile acțiunii lor simultane constituie o necesitate stringență și, concomitent, așteptările cetățenilor, mai ales, păturilor social vulnerabile față de Guvernul Republicii Moldova, organele de administrare publică locală, partidele politice ce se află la guvernare etc. Evident, eforturile, întreprinse din partea guvernanților privind depășirea situației de criză vor fi apreciate adecvat din partea beneficiarilor asistenței materiale, financiare etc. și vor contribui la stabilitatea economică și politică a țării.

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COMPARATIVE STUDY ON THE GLOBAL EFFICIENCY IN THE AGRICULTURE OF ROMANIA AND THE REPUBLIC OF MOLDOVA

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Summary

The study examines the global economic efficiency in the agriculture of Romania and Moldova for the period 2014-2021. To assess the economic efficiency, the output-input analysis method was used. Global economic efficiency is analyzed through the resulting value indicators: gross added value, the value of intermediate consumption, the evolution of producers' incomes, gross fixed capital formation, net fixed capital formation, as well as labor productivity. The results of the analyzes show that the agricultural sectors in the two countries reach different levels of efficiency, especially those in Moldova, and that the main factors that influence the level of global economic efficiency, corresponding to the analyzed output indicators, are: production yields, intermediate consumption, input prices and outputs, the level of technological development, salary income, labor force, inflation, weather conditions, etc. The major findings showed that the agricultural sector in the two countries faces similar major challenges, what differs is the size and economic size of agrarian production structures and that agricultural activity takes place in different political environments.

Keywords: *agriculture, production, global efficiency, economic indicators.*
JEL: *D2, D24, E1, O1, O57, Q1, Q18*
CZU: *338, 338.2, 338.3*

Introduction. Agriculture has traditionally been and remains the main pillar of the Moldovan economy. Agricultural land covers 2.48 million hectares or 75% of the country's territory, including 1.82 million hectares of arable land. The agricultural sector employs over 27% of the country's workforce, and agricultural production typically accounts for around 12% of Moldova's GDP. Combined with the food processing industry, the sector accounts for more than 16% of GDP and about 45% of total exports. Moldovan government supports private ownership of land, but foreigners are not allowed to buy agricultural land (Moldova – Country Comercial Guide, *Agriculture,* 2021).

The economy of the Republic of Moldova is not very diversified and remains heavily dependent on the agricultural sector, which makes it less productive and particularly vulnerable to climate change (Directorate-general for Neighbourhood and Enlargement Negotiation, 2022).

In Romania, agricultural land occupies almost 62% of the surface and almost 2 thirds of it is arable. One third of the used agricultural area was classified as a disadvantaged area (the majority located in the mountain area and in the Danube Delta), the other two thirds are mostly medium and high-quality soils. The agricultural sector employs approximately 30% of the employed population.

Compared to other EU countries, Romania's agricultural sector has a relatively high share in GVA, but has lagged behind in terms of labor productivity. Labor productivity in agriculture is only 4,719 euros per full standard equivalent compared to the EU 27 average (MARD, 2015).

On June 23, 2022, the European Council granted the Republic of Moldova the status of a candidate country. The European Council invited the European Commission to submit a report to the Council on the fulfillment of the conditions set out in the Commission's opinion on the application for accession (EU enlargement policy, 2022).

Romania's accession to the European Union and the inclusion of agriculture and rural areas in the mechanisms of the common agricultural policy created an opportunity to improve the economic efficiency of agriculture and the situation of the rural population on the labor market. Due to the EU accession intentions, already expressed by Moldova, we consider that Romania's experience in the field of agricultural development can prove to be valuable for Moldova and its efforts in this field (Rdzanek, D., 2021).

The evaluation of the global efficiency in agriculture is important for the development of appropriate strategies for the development of agriculture and rural areas. The study contributes to the evaluation of the sector situation, both in Romania and in the Republic of Moldova.

Literature review. The concept of economic efficiency, found in specialized literature, is defined as a *fundamental criterion in the options regarding the proportions, the pace of development of the national economy as a whole, of branches and sub-branches, generally in the options of economic policies and planning.* The category of economic efficiency illustrates the useful effect or result obtained in relation to the expenditure of resources carried out in a certain period. There are several approaches to the concept of economic efficiency: *economic efficiency at the level of each economic agent, economic efficiency in the traditional approach, economic efficiency in the systemic approach, economic efficiency in the cybernetic approach*, all of which symbolically reflect the ratio between outputs and inputs or the ratio between effects and effort (Dona, I., 2000).

There are other types of economic efficiency: *allocative efficiency, productive efficiency, technical efficiency, dynamic efficiency, social welfare efficiency* (Economic efficiency: Definition and How it affects Society, 2022).

In another expression, the concept of economic efficiency is approached through the prism of the resources consumed in an economic activity, (Iatisin, T., 2022). Other authors have studied the efficiency of agriculture from the perspective of allocative efficiency or "price efficiency", the level of efficiency being reached when the enterprise is able to use inputs at the lowest cost (Chrastinová, Z. & Burianová, V., 2012).

Regarding the comparative studies in the agri-food sector, between Romania and Moldova, we refer to the analysis of the performance of the agricultural sector, carried out by comparing the dynamics of some agricultural parameters: crop yield, employment rate, total gross value added, the value gross added value of the agricultural sector, etc., aiming to identify the long-term trend in order to develop prediction models

for the development of support strategies and the legislative framework of the sector (Simionov, I. et al., 2020).

Material and method. The present work aims to find answers to the questions: what is the contribution of agriculture to the formation of the Gross Domestic Product? What are the current challenges affecting agriculture? What are the factors influencing global economic efficiency? What the biggest challenge for agriculture?

The economic performance of the agricultural sector is analyzed with the help of a system of resulting value indicators, from the National Accounts of Romania and Moldova. In the analysis we will use the following set of data, which establish the output-input relationship, to quantify the global economic efficiency (Zahiu, L. et al., 2010):

Outputs: the share of intermediate consumption in the value of agricultural production, the share of GVA in the valuation of agricultural production, GVA per 1 leu of intermediate consumption, the share of income in the value of production, global productivity calculated at the value of production, labor productivity valued at GVA.

Inputs: the value of agricultural production, the value of intermediate consumption, the income of agricultural producers, the labor force in agriculture.

In order to highlight the existing differences in the evolution of the mentioned indicators, the following indicators were determined from descriptive statistics: minimum, maximum, average, standard deviation, coefficient of variation (CV %) and annual growth rate (%). The coefficient of variation (CV) is a relative measure of the dispersion of the data. CV represents the evaluation of the standard deviation in relation to the arithmetic mean. In order to compare the data, the classification groups of the coefficient of variability will be used to assess the homogeneity of a statistical population: CV < 10% homogeneous population; 10% < CV < 20% relatively homogeneous population; 20% < CV < 30% relatively heterogeneous population; 30% < CV heterogeneous population (Maniu, D., 2022).

The relationship between the variables was illustrated graphically by the regression equation. The development of the dependence has a form of the second-degree polynomial, expressed by the equation $y = a + bx + cx2$. The determination index (R^2) was used as a criterion for choosing the mode of the regression function (Chrastinová, Z. & Burianová, V., 2012).

The reference data is for the time horizon 2014-2021.

Results and discussion. The value agricultural production of Romania, in the period 2014-2021, is characterized by the predominance of vegetable production (between 63.4%, the lowest level in 2015 and 71.5%, in 2021, the highest level). The share of animal production in the total value of the production of the agricultural branch stands at an average of 23.1% for the analyzed interval, the minimum values were reached in 2021, due to the restrictions imposed by the pandemic and the reduction of livestock. This structure is not stable, which is also reflected in the level of ensuring the consumption of the population throughout the country. Services occupy an average weight of 1.6%, the maximum of 2.3%, being reached in 2020. Compared to 2020, in 2021 the value of agricultural production is 97.9 million lei, increasing by 31.9%. Vegetable production contributed 71.5% to the value of agricultural production (standing at a difference of 6.6 pp compared to 2020), while animal production and services were decreasing by 4.3 pp, respectively 0, 7 pp, compared to 2020.

Table 1: **Structure of the production value of the agricultural branch (at basic prices)**

Romania	2014	2015	2016	2017	2018	2019	2020	2021	Average (%)
Agricultural production (million lei)	67,672	62,305	63,028	72,630	80,038	83,384	74,226	97,893	**100,0**
Vegetable (%)	72,5	63,4	65,1	67,8	70,9	70,0	64,9	71,5	68,2
Animal (%)	26,1	26,0	24,5	23,5	20,4	20,7	24,1	19,8	23,1
Agricultural services (%)	1,5	1,3	1,3	1,2	1,4	2,0	2,3	1,6	1,6

Source: Calculations based on EUROSTAT data series, years 2014-202, https://ec.europa.eu/eurostat/data/database (accesat 20 iunie 2021) Economic accounts for agriculture - values at current prices [aact_eaa01]

Table 2: **The structure of the production value of the agricultural branch**

Moldova	2014	2015	2016	2017	2018	2019	2020	2021	Average (%)
Agricultural production (mil. LMD)	27,254	27,193	30,362	34,142	32,637	34,597	30,061	46,387	**100,0**
Vegetable (%)	63,6	66,5	69,5	71,6	70,1	71,3	67,8	77,9	69,8
Animal (%)	34,6	31,6	28,9	26,9	28,2	26,7	30,4	20,2	28,4
Agricultural services (%)	1,8	1,9	1,6	1,5	1,7	2,0	1,8	2,0	1,8

Source: Calculations based on data series National Bureau of Statistics Republic of Moldova, Global agricultural production by branches of agriculture, categories of households, previous year =100, 1990-2021, https://statbank.statistica.md/

In Moldova, the value of vegetable production occupies an average weight of 69.8%, animal production 28.4%, and services occupy an average weight of 1.8% in the value of agricultural production. The value of agricultural production, for the year 2021, was 46.4 million LMD, increasing by 54.3% compared to 2020. Vegetable production contributed 77.2% to the total value (representing an increase of 10 pp compared to the year 2020), while animal production and services contributed 2.4% (the difference compared to 2020 being 10 pp), respectively 70% (the difference compared to 2020 being 0.2 pp). Table no. 2. Compared to 2014, the value of agricultural production increased by 70.2%.

The increase in the value of agricultural production (in 2021 compared to 2020) is due, on the one hand, to the increase in production (yields per hectare), but also to a slight increase in producer prices, and on the other hand, due to the inflation that contributed to the value increase of production (Petre, I.L., 2022). The decrease in the value of animal production is due to the increase in feed purchase prices, restrictions in the transport of animals to processing/direct sale on the market, the decrease in the export of live animals, etc., due to the restrictions of the Covid 19 pandemic. These restrictions have generated losses among livestock breeders, animals by prohibiting labor mobility, the impossibility of delivering raw materials to processors,

stopping processors' deliveries to retail and HoReCa, reasons that contributed to the economic destabilization of farmers (Alexandri, C., 2020). In order to compare and highlight the dynamics of the value of agricultural production, in the period 2014-2021, the information resulting from the calculations reveals the following aspects:

The production value of the agricultural branch has an annual growth rate of 5.4% for Romania and 7.9% for Moldova; The coefficient of variability calculated as the ratio between the standard deviation and the mean, (10% < CV < 20%) defines the threshold for the data sample of the production value of the agricultural branch, as being a relatively homogeneous grouping from a statistical point of view; Table no. 3 col. 6 and col. 7.

Table 3: **The value of the production of the agricultural branch**

Nr. Crt.	The value of the production of the agricultural branch (million lei)	Indicators of descriptive statistics					
		Min	Max	Media	Stdev	Coefficient of variability (%)	Annual growth rate (%)
0	*1*	**2**	**3**	**4**	**5**	**6**	**7**
1	*Romania*	62305 (2015)	97893 (2021)	75147	11856	15,8	5,4
2	*Moldova*	27193 (2015)	46387 (2021)	32829	6156	18,8	7,9

Source: Own calculations

Gross value added (GVA) at basic prices corresponds to the value of production minus the value of intermediate consumption. The basic price is defined as the price received by the producer after deducting all product taxes, including all product subsidies (INSSE: Economic Accounts from Agriculture (EAC), 2022).

Romania's GVA, in 2021, was 25.4% higher than in 2020, and 58.9% higher than in 2014, and Table no. 4.

Table 4. **Gross value added (millions of lei)**

	Romania	2014	2015	2016	2017	2018	2019	2020	2021
1	GDP	669704	711930	763653	857896	951729	1058973	1058926	1181918
2	GVA agriculture	31595	28901	29358	35244	38761	41711	40035	50218
3	% of GDP	4,7	4,1	3,8	4,1	4,1	3,9	3,8	4,2

Source: Database Eurostat, 2022 - Economic accounts for agriculture - values at current prices [aact_eaa01] https://appsso.eurostat.ec.europa.eu/nui/submitViewTableAction.do (accesat 31 mai 2022)

	Moldova	2014	2015	2016	2017	2018	2019	2020	2021*
1	PIB	131964	146740	159010	176007	189063	206256	199734	241871
2	GVA agriculture	18569	18814	19844	21472	19184	20957	18708	25119
3	% of GDP	14,1	12,8	12,5	12,2	10,1	10,2	9,4	10,4

Source: Economic statistics >> National accounts Resource categories >> Reconciliation of quarterly GDP calculations with annual ones, resource categories, current prices, 2014-2020, https://statbank.statistica.md

* ***Source*****:** *Trends in the Economy of Moldova*, National Institute of Economic Research, No, 44/2022 (trim, IV, 2021), ISSN 1857-3126, page, 98.

Moldova's GVA was 34.3% higher than in 2020, and 35.3% higher than in 2014. Table no. 4.

The contribution of agriculture to the formation of the gross domestic product (GDP) shows an overall reduction trend and a slight increase, in 2021 compared to 2020, of 1 pp for Moldova and 0.4 pp for Romania. Table no. 4. The evolution is a normal one, but as investments in agriculture increase, the weight of agriculture will decrease, and according to analysts, agriculture will remain an important engine for local economies, representing a potential for growth and attracting investments (Rosca, C., 2021).

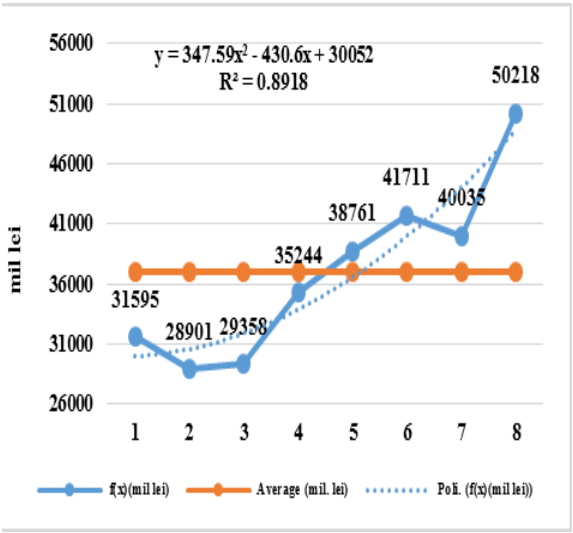


Fig.1: **The evolution of GVA in Romanian agriculture**

***Source*:** Database Eurostat, 2022 - Economic accounts for agriculture - values at current prices [aact_eaa01] https://appsso,eurostat,ec,europa,eu/nui/submitViewTableAction,do (accessed 31 May 2022)

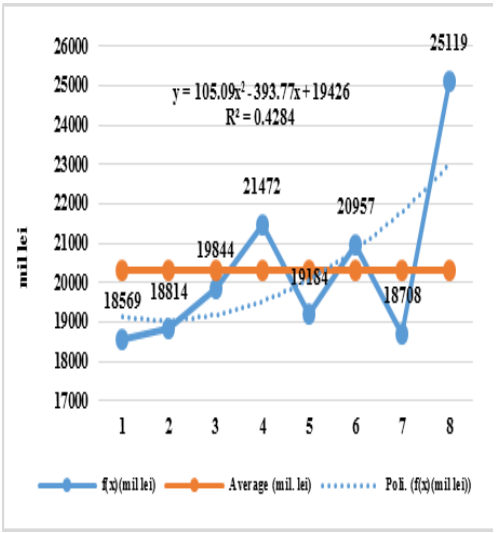


Fig. 2: **The evolution of GVA in Moldovan agriculture**

Source: : Economic statistics >> National accounts >> Resource categories >> Reconciliation of quarterly GDP calculations with annual ones, resource categories, current prices, 2014-2020, https://statbank,statistica,md

* ***Source***: Trends in the Economy of Moldova, National Institute of Economic Research, No, 44/2022 (trim, IV, 2021), ISSN 1857-3126, page, 98

The regression equation expresses statistically how the outcome characteristic y (VAB) changes as a result of the change in the factor characteristic x (year of production). Regarding the evolution of GVA, we can appreciate the fact that the dependent variable (GVA) is expressed by the independent variable (year) in a proportion of about 89.18% for Romania and in a percentage of 42.84% for Moldova. When there is an increase in the independent variable x by one year, there is a decrease in the dependent variable y by 430.6 million lei/year in the case of Romania (figure no. 1) and a decrease, on average, of 393.77 million lei/year for Moldova (figure no. 2)

Table 5: **Gross Value Added (GVA)**

Nr. Crt.	Gross value added (million lei)	Indicators of descriptive statistics					
		Min	Max	Media	Stdev	Coefficient of variability (%)	Annual growth rate (%)
0	*1*	**2**	**3**	**4**	**5**	**6**	**7**
1	*Romania*	28901 (2015)	50218 (2021)	36978	7226	19,5	6,8
2	*Moldova*	18569 (2014)	25119 (2021)	20333	2211	10,9	4,4

Source: Own calculations based on the INSSE Tempo-online statistical series and on the basis of the National Bureau of Statistics data series of the Republic of Moldova

The gross added value has an annual growth rate of 6.8% for Romania and 4.4% for Moldova. Table no. 5, col. 7.

The coefficient of variation calculated as the ratio of the standard deviation to the mean, (10% < CV < 20%) defines the threshold for the gross value added data sample as a statistically relatively homogeneous grouping. Table no. 5, col 6.

Intermediate consumption represents the value of goods and services (excluding consumption of fixed capital), which are either transformed or consumed entirely during the production process (INSSE: Economic accounts from agriculture (CEA), 2022). Inputs are important for agricultural production and for the competitiveness of agriculture, because they make possible the application of more and more efficient production technologies (Alexandri, C., 2020). Intermediate consumption includes the main inputs used in agricultural technologies, as follows: energy, fertilizers, plant protection products, veterinary drugs, feed, agricultural services, others. In the 2020-2021 period, the input market represented a way of transmitting the disturbances on international markets caused by the Covid crisis, and starting from 2022, the geopolitical conflict in Ukraine.

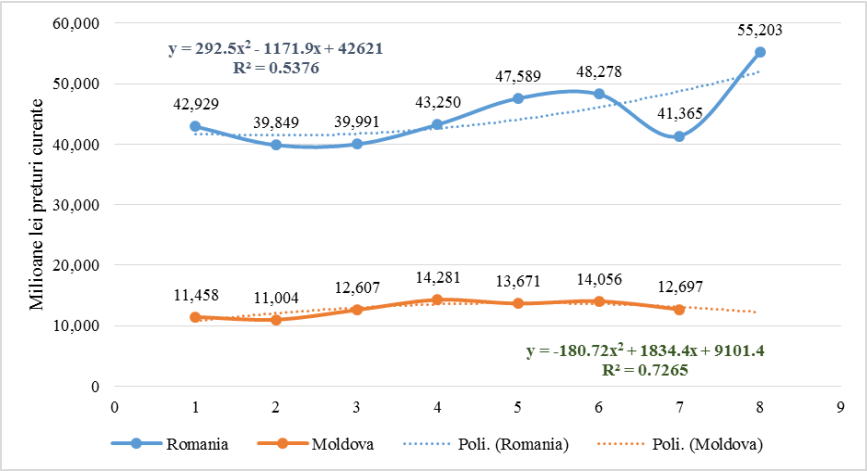


Fig. 3. **Intermediate consumption in the agriculture of Romania and Moldova**
Source 1 (Romania): Calculations based on EUROSTAT data series, years **2014-2021,** https://ec,europa,eu/eurostat/data/database (accesat 20 iunie 2021),
Source 2 (Moldova): Intermediate consumption, CAEM Rev.2 on Economic Activities, Years and Prices https://statbank.statistica.md/

The regression coefficient b highlights that the value of intermediate consumption is decreasing in Romanian agriculture, on average by 1171.9 million lei/year, the coefficient of determination being 53.76%, which means that the year of agricultural production had a greater influence little significant on intermediate consumption, their decrease being determined, in proportion of 46.24%, by other factors. In Moldova's agriculture, there is an increase in intermediate consumption, on average by 1834.4 million lei/year, the coefficient of determination being 72.65%, and the contribution of other factors 27.35%. (Fig. no. 3).

Table 6: **Intermediate consumption**

Nr. Crt.	Intermediate consumption (million lei)	Indicators of descriptive statistics					
		Min	Max	Media	Stdev	Coefficient of variability (%)	Annual growth rate (%)
0	*1*	**2**	**3**	**4**	**5**	**6**	**7**
1	*Romania (2014-2021)*	39849 (2015)	55203 (2021)	44807	5257	11,7	3,7
2	*Moldova (2014-2020)*	11004 (2015)	14281 (2019)	12825	1265	9,9	1,7

Source: Own calculations based on the INSSE Tempo-online statistical series and on the basis of the National Bureau of Statistics data series of the Republic of Moldova

Intermediate consumption has an annual growth rate of 3.7% for Romania and 1.7% for Moldova. Table no. 6, col 7;

The coefficient of variability calculated as the ratio between the standard deviation and the mean, (10% < CV < 20%) defines the threshold for the data sample of the intermediate consumption value, as being a relatively homogeneous (Romania) and homogeneous grouping (CV < 10%), (Moldova) from a statistical point of view. Table no. 6, col 6.

Output indicators

In Romania, *the share of intermediate consumption in the value of the production of the agricultural branch* varies from a minimum of 50.8% (in 2020) to a maximum of 58% in 2015, compared to Moldova, where the shares are below 50%. The explanation lies in the fact that they register high values as a result of the increase in purchase prices, with negative effects on the efficiency of their use under conditions of increased production yields. This means that the output achieved and, respectively, its value per unit of input have a low level; Fig. no. 4.

Figure no. 5, illustrates the share of GVA in the production value of the agricultural branch. For Romania, this remains at a low level (42% in 2014, with an increasing trend from 2019) although agriculture procures part of its inputs from within the branch. Due to the increase in the prices of inputs from the industry, the trend of the indicator shows an increase in efficiency under the conditions of an increase in average returns (L. Zahiu, et al., 2010). Compared to Romania, in Moldova the share of GVA in the value of the production of the agricultural branch exceeds the value of 50%.

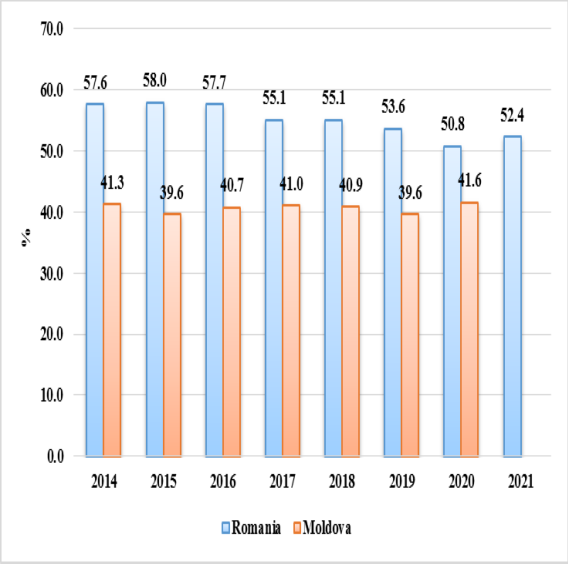


Fig. 4: The share of intermediate consumption in the value of agricultural production

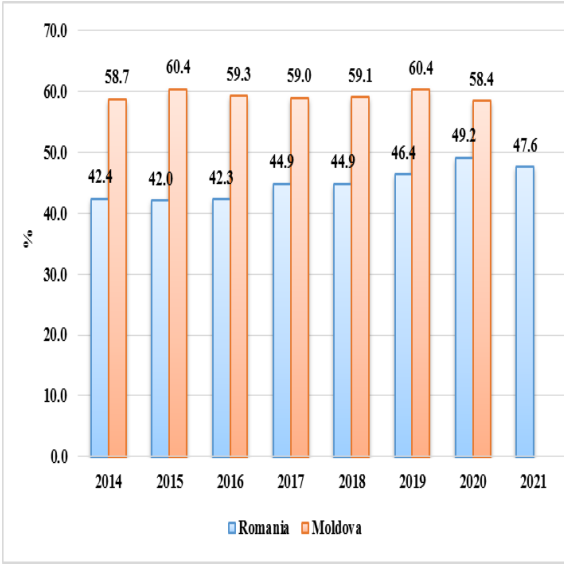
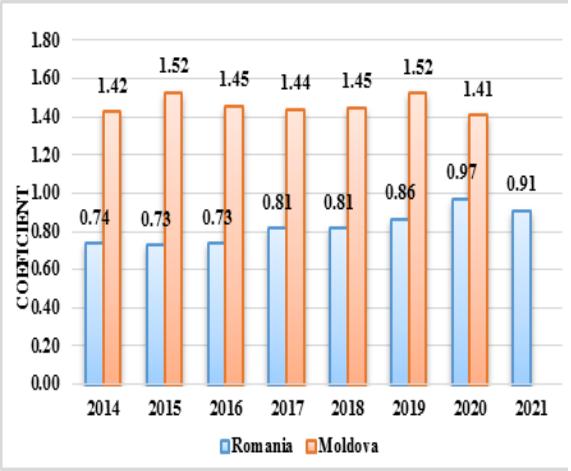


Fig. 5: The share of GVA in the value of agricultural production

Source 1 (Romania): Calculations based on EUROSTAT data series, years 2014-2021, https://ec,europa,eu/eurostat/data/database (accessed June 20, 2021) Economic accounts for agriculture - values at current prices [aact_eaa01]
Source 2 (Moldova): Calculations based on data series National Bureau of Statistics Republic of Moldova, https://statbank,statistica,md/

In comparison with Moldova, for Romania, the GVA per 1 leu intermediate consumption varies from 0.73 in 2015 and 2016 to 0.97 in 2020, which means that we produce with decreasing gross added value or that the development of the Romanian economy is achieved with a decrease in the contribution of agriculture to the total gross added value, compared to Moldova where this coefficient is above unitary for the entire analyzed period Fig. no. 6.

The gross fixed capital formation shows the net procurement of goods and services by resident units, produced in the considered period, but not consumed. It includes the gross formation of fixed capital, the variation of stocks (INSSE: Economic accounts from agriculture (CEA), 2022).



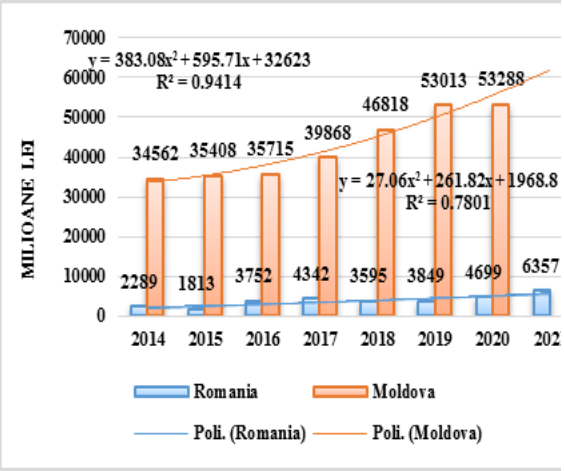


Fig. 6: VAT per 1 leu intermediate consumption

Fig. 7: Gross fixed capital formation

Source 1 (Romania): Calculations based on EUROSTAT data series, years 2014-2021, https://ec,europa,eu/eurostat/data/database (accessed 20 June 2021) Economic accounts for agriculture - values at current prices [aact_eaa01]

Source 2 (Moldova): Calculations based on data series National Bureau of Statistics Republic of Moldova https://statbank,statistica,md/

According to the regression equation, in Romania, *gross fixed capital formation* represents an increase, on average, of 261.82 million lei/year, the coefficient of determination, which signifies what percentage of the dependent variable is explained by the regression equation, being of 78.01%. In Moldova, the gross formation of fixed capital registers an average increase of 595.71 lei/year, the coefficient of determination being 94.14%, which means an increase in the pace of investments that contribute to the efficient use of intermediate consumption Fig. no. 7.

Producers' incomes (compared to 2014) tend to increase in conditions where the growth of intermediate consumption is lower than these trends, and the stock of fixed capital decreases. The share of producers' income in the value of production is 34.9% in 2021 compared to 31.6% in 2014. The lowest level of income is recorded in 2015 (30.2%) Fig. no. 8 and Fig. no. 9.

Labor productivity, representing the ratio between the value of agricultural production and the agricultural labor force with total working time, was on average 4843 lei/month in Romania, and 33.9% lower in Moldova (1642 lei/month/person occupied with total working time), which means that in the case of small agricultural producers the level of labor productivity is extremely low. For the maintenance of families and the performance of a minimum of agricultural work, the amounts achieved are insufficient, even in the conditions in which direct subsidies and other forms of support are added to them. On the other hand, the ratio of the gross added value to the labor force in agriculture in Romania was 2195 lei/month/employed person, and in Moldova it was 13.4% less (a difference of 295 lei).

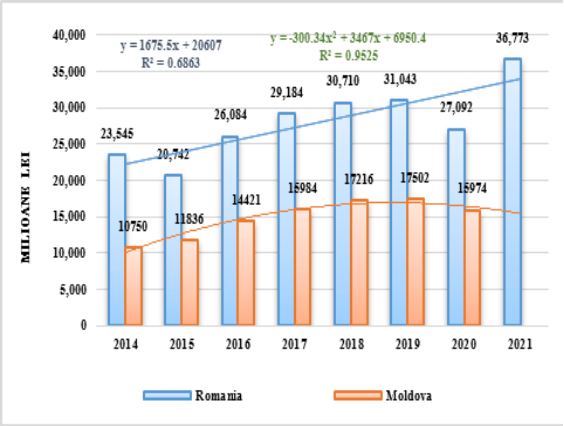


Fig. 8: Dynamics of producers' incomes

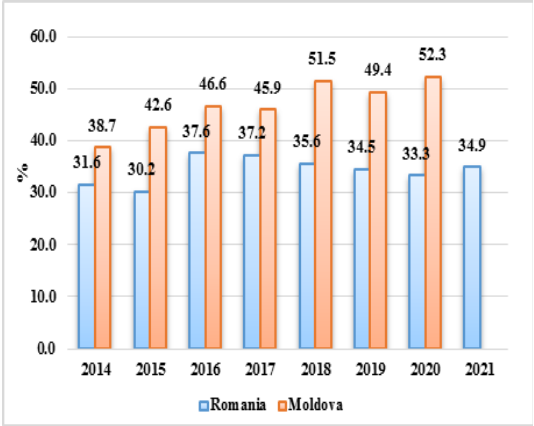


Fig. 9: Share of producers' incomes in the value of agricultural production

Source 1 (Romania): Calculations based on EUROSTAT data series, years 2014-2021, https://ec,europa,eu/eurostat/data/database (accessed June 20, 2021) Economic accounts for agriculture - values at current prices [aact_eaa01]

Source 2 (Moldova): Calculations based on data series National Bureau of Statistics Republic of Moldova, Economic Statistics >> Entrepreneurship >> Administrative data sources >> Activity of economic agents by size and types of activity, https://statbank,statistica,md/

The level and evolution of labor productivity in agriculture reflects a variation in labor efficiency in the conditions where labor occupies a significant share in the agricultural economy. These amounts represent the average for agriculture as a whole. Due to the dependence of agriculture on climatic factors, the annual variation of agricultural production strongly influences the level of economic efficiency.

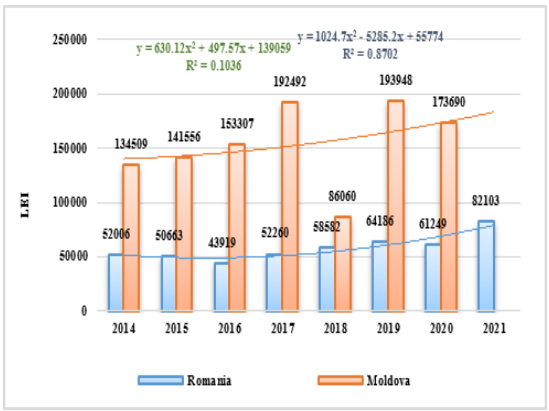


Fig. 10: Labor productivity in agriculture calculated at the value of agricultural production

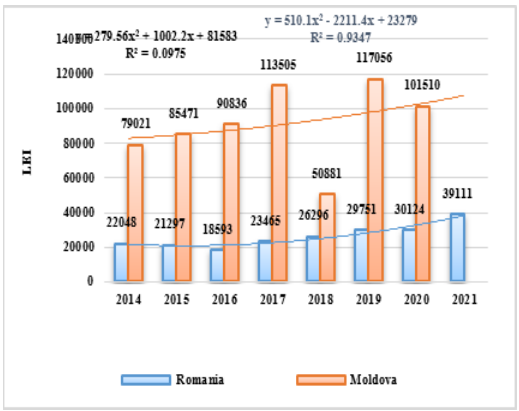


Fig. 11: Labor productivity in agriculture calculated at the GVP value

Source 1 (Romania***):*** Calculations based on EUROSTAT data series, years 2014-2021, https://ec,europa,eu/eurostat/data/database (accessed June 20, 2021) Economic accounts for agriculture - values at current prices [aact_eaa01]

Source 2 (Moldova): Calculations based on data series National Bureau of Statistics Republic of Moldova, >> Social statistics >> Labor force and wage earnings >> AFM - Employment and ***unemployment*** , https://statbank,statistica,md/

In the period 2014-2021, *labor productivity in Romania* is decreasing, on average, by 5285.2 lei/year Romania, while *in Moldova labor productivity* was increasing, on average by 497.57 lei/year. Decreases are also recorded in labor productivity calculated at the gross added value, on average by 2211.4 lei/year, compared to Moldova where labor productivity increases, on average by 1002.2 lei/year. In Moldova, the factors that led to the increase in labor productivity calculated at the GVP value are due to the increase in the quantity of goods and services, for the same number of employed persons, but also due to lower intermediate consumption in agriculture and salary expenses Fig. no. 8.

Conclusions. The study highlights the existing differences at the level of the resulting value indicators in the agricultural sector in the economy of Romania and Moldova, for the time horizon 2014-2021. From the point of view of the input factors that contribute to obtaining agricultural goods and services, the value dimension of the indicators, expressed as a percentage, was followed, making their comparison possible. The reason would be a simple one, presented in the introduction, namely that the agricultural land in Moldova represents 2.48 million hectares, which in Romania represents only the arable surface cultivated with corn. The study indicates the increase in labor productivity, calculated at the GVP value, which means that the agricultural sector of Moldova is a producer of goods and services with increasing value, the sector being efficient from an economic point of view. In Romania, the negative values of labor productivity indicators are due both to the large number of labor force working in agriculture, as well as due to the high intermediate consumptions found in the high purchase prices of inputs.

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CONSUMERS' PERCEPTION TOWARDS QUALITY CERTIFICATIONS: IS THIS THE KEY TO HELP RURAL AREAS' RESILIENCE?

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Summary

The still ongoing COVID-19 pandemic and the current Russia-Ukraine war have deeply impacted the world, with aftermath that will long last. The whole EU food supply chain has been placed under unprecedented stresses and consumers are one of the most impacted stakeholders as, on the one hand, they have concerns related to price increase, and on the other they are attracted by certified food, characterized by a combination of environmental and human factors which are linked to a specific territory.

Purpose: *The purpose of this paper is to investigate in two different EU countries the extent to which voluntary quality marks such as Protected Designation of Origin (PDO) and Protected Geographical Identification (PGI) may influence consumers' choices, trying to evaluate if their use can help the resilience of the agri-food supply chain.*

Research methods: *The method consists of an empirical survey of young consumers in Italy and Poland. The sample groups were chosen from University students in both countries. A statistical evaluation of the differences found between the two sample groups is provided. The survey includes a preliminary qualitative research phase with personal dialogues useful for the formulation of the questionnaire, based on the real needs and expectations of consumers.*

Results: *The answers are slightly different in the two analysed countries. In Poland, the COVID-19 pandemic has been perceived as an average factor of habits changes while the Russia-Ukraine conflict has not influenced shopping behaviours. For the Italians, instead, these two crises have not changed University students' attitudes. The results show the importance of quality labels in consumer choice and the interest in PDO and PGI certifications which play a crucial role in the resilience of the rural economy by keeping those areas populated and rural traditions alive.*

***Keywords**: rural economy, resilience, quality marks, quality certification, questionnaire, protected designation of origin, protected geographical identification, empirical survey.*
***JEL:** A13, D10, D91, Q56*
***UDC**: 366.6*

Introduction. Having a sustainable food chain in a world where global food demand keeps increasing has been a goal for many years. Among the several factors that can help achieving the desired sustainability, reconciling natural ecosystems with agricultural production is one of the most important (Lamarque & Lambin, 2015), together with consumers' attitude and choices towards criteria such as local sourcing, fair trade, environmental sustainability and sustainable foods labels (Aprile et al., 2012). This kind of attention towards food quality, origin and production methods has risen since the early 1990s, when food-related crises and scandals – such as the dioxin contamination and the mad cow disease – were widespread all over the world (Chenhao & Jukes, 2013), (Mol, 2014), (Varese & Cesarani, 2016), (Tarabella et al., 2019), leading to the implementation of new legislation in order to protect consumers (such as improvements on animal welfare law, new hygienic laws throughout several States such as China).

Moreover, the importance of this topic is reflected also by its inclusion in the United Nations' "2030 Agenda for Sustainable Development" (United Nations, 2015) which sets 17 Sustainable Development Goals (SDGs) to achieve a fairer and healthier world (Varese et al., 2022). Specifically, ending hunger, achieving food security, improving nutrition and promoting sustainable agriculture are included in Goal 2 (United Nations, 2015). Unfortunately, the United Nations' Sustainable Development Goals Report 2022 highlights that the COVID-19 pandemic and the Russia-Ukraine crisis triggered food shortages which are hitting the world's poorest individuals hardest (United Nations, 2022). Furthermore, climate-related shocks and growing inequality drive today's world on the verge of a global food crisis (United Nations, 2022).

Therefore, in this particular moment, it is of the utmost importance to investigate University students' experience and perception towards quality certifications, environment and food manufacturing. To this purpose, a broad and general topic was chosen also from a geographical point of view. In this preliminary study, which is still in progress, the Authors aim to compare data from at least two different cities (one in Italy and one in Poland), supposing that the students' approach to Protected Designation of Origin (PDO) and Protected Geographical Indication (PGI) products varies due to both a different feeling towards quality marks related to the territory and the differences between the economic systems (Verbeke et al., 2012).

The structure of this paper is as follows: Section 2 presents a brief literary review on the research subject, and Section 3 clarifies the research methodology. Thereafter, in Section 4, the results and a brief discussion regarding the research findings are given. Finally, Section 5 provides conclusions, limits and future research perspectives.

Literature review. An important source for the investigation of consumers' preference schemes can be found in the "Europeans, Agriculture and the CAP"

reports issued by the European Commission. Its latest report (European Commission, 2022) shows that more than nine out of ten interviewed Europeans believe in the importance of a short supply chain. Moreover, it states that slightly more than eight out of ten believe that respecting local tradition and know-how is a value in food products and that eight out of ten European citizens affirm that it is important to know which geographical area the food they want to purchase comes from. Similarly, the report highlights those eight out of ten European citizens believe that seeing a specific label that ensures quality of the product is important in their decision-making process (European Commission, 2022). These findings confirm previous scholars' studies on the same topic (Dimara & Skuras, 2005) which, in short, argue that certifications are the only instrument that may ensure food quality. On average, the above-mentioned figures do not significantly differ from the ones collected in the past by the European Commission (European Commission, 2020; European Commission, 2017). On the other hand, some differences may be found at specific country levels. For instance, by comparing quality label importance between 2020 and 2022, it appears that in Italy and Poland the importance has risen – respectively – by 3 and 1 percentage points while in Spain and Portugal it has fallen of 9 percentage points.

Nevertheless, European Union (EU) consumers do not seem to be fully aware of the importance of Geographical Indications (GIs) such as PDO and PGI. These schemes, which were initiated in 1992 with the goal of supporting the rural communities' income and informing consumers that production methods meet certain standards (Tarabella et al., 2019), (Flinzberger et al., 2022), are still not used at their best value.

In fact, the latest European Commission report (European Commission, 2022) shows that the most well-known logo is the organic one (recognised by more than six out of ten European citizen), while only four out of ten people know the PGI logo and less than two out of ten people know the PDO logo. Therefore, even if the EU already initiated and financed marketing measures to promote the knowledge of GIs, both internally and externally (Goudis & Skusas, 2020), these quality labels still need further efforts to be recognised and chosen, because familiarity with them does not increase sufficiently among EU consumers. In fact, since 2020 the knowledge percentage for organic logo, PGI and PDO almost did not increase (European Commission, 2020; European Commission, 2022).

Nevertheless, as proved by several previous studies, there is a link between GIs and rural areas because these places can retain resources, obtain higher farmers' incomes, retain and consolidate social capital (Paffarini et al., 2019), (Schimmenti et al., 2021), (Poetschki et al., 2021).

Some scholars have furthermore highlighted that EU citizens believe that quality marks and labels as well as other certifications warranting that production methods meet certain standards can be used to promote sustainable land use, even if it means having to pay higher prices (Lamarque & Lambin, 2015), and to have healthier and safer products for human consumption (Toma et al., 2021).

Previous studies were conducted to analyse the relationship between voluntary quality marks and consumers' purchase intention on specific regional products (Likoudis et al., 2016), (Toma et al., 2021), (Sgroi & Modica, 2021), or on supply chain stakeholders' income (Mancini et al., 2019), (Paffarini et al., 2021), while this research covers a gap in literature as it investigates – at a national level and in two

different EU States – whether and how the COVID-19 pandemic and the Ukrainian crisis have modified consumer choices and whether the outcomes of the previous studies are still valid nowadays.

Method. The objective of our in-progress empirical study is to assess the knowledge of Italian and Polish University students with reference to quality marks, such as PDO and PGI, and to verify whether, during this particular period characterised by the still ongoing COVID-19 pandemic and the Russia-Ukraine conflict, they have increased purchase of these products, as well as whether they believe that these certification schemes can help the resilience of the agri-food supply chain. Our contribution focuses on designing a survey questionnaire which is tested in this pilot phase: some preliminary results are presented in this paper; the full research will be carried out during the next academic year.

With the purpose to achieve the above-mentioned objective, the following research questions (RQs) were answered:

- RQ1) Which of the two unpredictable crises affected University students' habits and which factors do they take into consideration in grocery shopping?
- RQ2) Have consumers changed their habits with reference to the purchase of PDO/PGI products during the two crises?
- RQ3) Are University students aware of the connection between territory and PDO/PGI products and of the positive impact they can generate while buying these products?

To answer these questions, an anonymous electronic survey was designed for bachelor, master and Ph.D. students, attending an Italian and a Polish University (University of Torino and Cracow University of Economics).

The investigation was conducted in both Universities between July, 1, and August, 31, 2022: considering that these months are in both countries a holiday period in the academic year, this research has to be considered as a preliminary one.

As suggested by Vermeir and Verbeke (2008), students were chosen because they represent a demographic target as «*they are in the end stage of forming their personal identity and developing a personal system of beliefs and values. Very likely, they will take their habits into their older age and therefore provide policy makers with ample possibilities to create sustainable food consumption habits within the [...] population*». In accordance to the above-mentioned authors, as students have a great potential to encourage and support new grocery shopping habits, their opinion can drive the consumption of foods bearing certification schemes, helping the resilience of the whole agri-food supply chain. Students will probably be key stakeholders for more conscious future consumption.

After an in-depth literature review on PDO and PGI certifications, a brief questionnaire was designed. It was developed considering that final consumers should be enabled to understand the meaning of these quality marks in order to experience the use of quality food linked to a specific territory, and to contribute to the resilience of the agri-food supply chain. Questionnaires used in previous published studies were also considered as inspiration (Mancini et al., 2019), (Toma et al., 2022). With the aim to find any imprecisions and to measure any limitations of the questionnaire (Vecchio and Annunziata, 2013), a pilot version of the survey was first tested on University students

in both countries. Following a few adjustments, a final version, fit to be managed through the "Computer-Assisted Web Interview" (CAWI) technique, was defined.
The questionnaire is divided into four different sections: the first aims at collecting general information on students' grocery habits and to verify if and how they changed during the pandemic and the Russia-Ukraine conflict, considering factors such as price, food quality and food country of origin.

The second is specifically designed to assess consumers' PDO and PGI products shopping attitudes. The third part aims at understanding whether the interviewees are aware of the connection between territory and PDO/PGI products and of the positive impact they can generate while buying these products. The last is a general section which collects personal data (age, gender, nationality etc.). The sample was recruited among students participating in summer University activities, such as exams. A link to the questionnaire was provided and results consider only completed questionnaires respecting the following inclusion criteria: students enrolled at the University of Torino (Italy) and at the Cracow University of Economics (Poland), aged between 18 and 27, which gave informed consensus to participate in the study. Data were collected and analyzed ensuring anonymity and confidentiality.

During the academic year 2020/2021, Italy counted almost 1.8 million University students (Ministero dell'Università e della Ricerca, 2022) while Poland had nearly 1.2 million (Statistics Poland, 2022). This preliminary study has included 88 students (62.5 Italian and 37.5 Polish). Questions have been tested using a 5-point Likert scale (Likert, 1932) with endpoints 1 and 5.

Results and discussion. The pilot phase herein discussed results in the collection of 88 questionnaires. Table 1 presents the current situation of the collected answers. Most of the respondents are in both countries' female (Italy: 65.45%; Poland 57.58%). With reference to age, in Italy 52.73% are aged 23-27 while in Poland most of the interviewed (63.64%) belong to the previous age-range (18-22). Finally, in both countries, most of the students (Italy: 58.8%; Poland: 78.79%) are enrolled in the Bachelor degree.

Table 1: Characteristics of the collected answers at the current stage

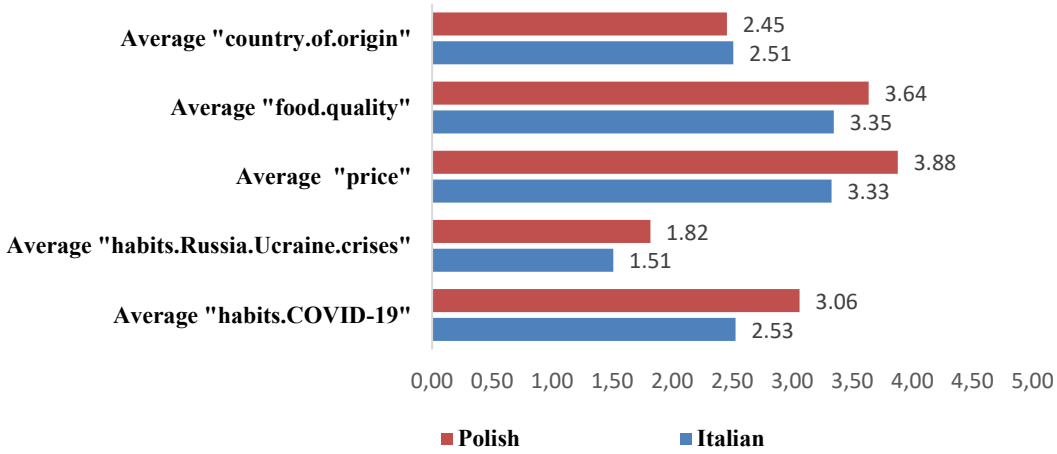
		Total			
		Number of respondents (N.)		**Percentage (%)**	
		Italy	**Poland**	**Italy**	**Poland**
Gender	Female	36	19	65.45	57.58
	Male	18	14	32.73	42.42
	Prefer not to tell	1	-	1.82	-
	Total	*55*	*33*	*100.00*	*100.00*
Age	18-22	26	21	47.27	63.64
	23-27	29	12	52.73	36.36
	Total	*55*	*33*	*100.00*	*100.00*
Degree of enrolment	Bachelor	32	26	58.18	78.79
	Master or MBA	22	7	40.00	21.21
	Ph.D.	1	-	1.82	-
	Total	*55*	*33*	*100.00*	*100.00*

Source: Own survey.

Which of the two unpredictable crises affected University students' habits and which factors do they take into consideration in grocery shopping?

The answers are slightly different in the two analysed counties. In Poland, the COVID-19 pandemic has been perceived as an average factor of habits changes while the Russia-Ukraine war has not influenced shopping behaviours. For the Italians, instead, these two crises have not changed University students' attitudes.

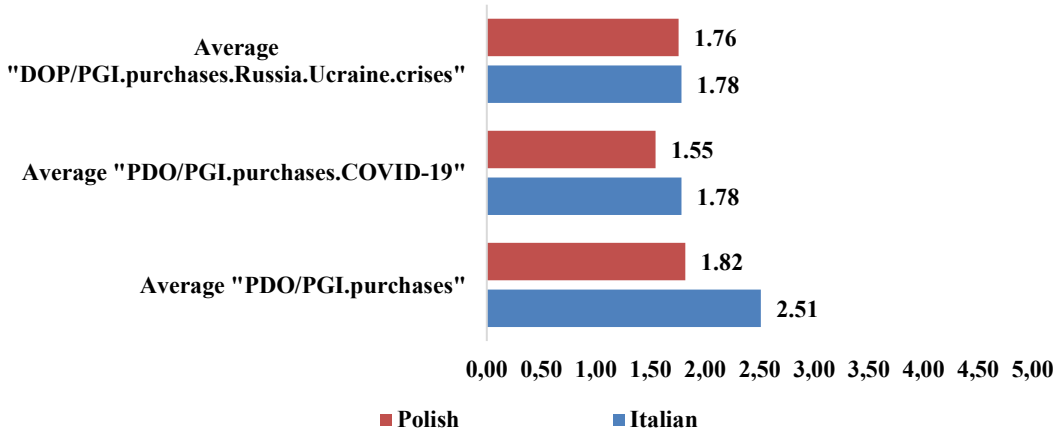
With regard to "price", it can be seen that Polish students affirm to pay much more attention to food price than Italians. "Food quality" and "country of origin" are almost considered in the same way in the two countries (Graph 1).



Graph 1: Q1. Source: Own survey.

Have consumers changed their habits with reference to the purchase of PDO/PGI products during the two crises?

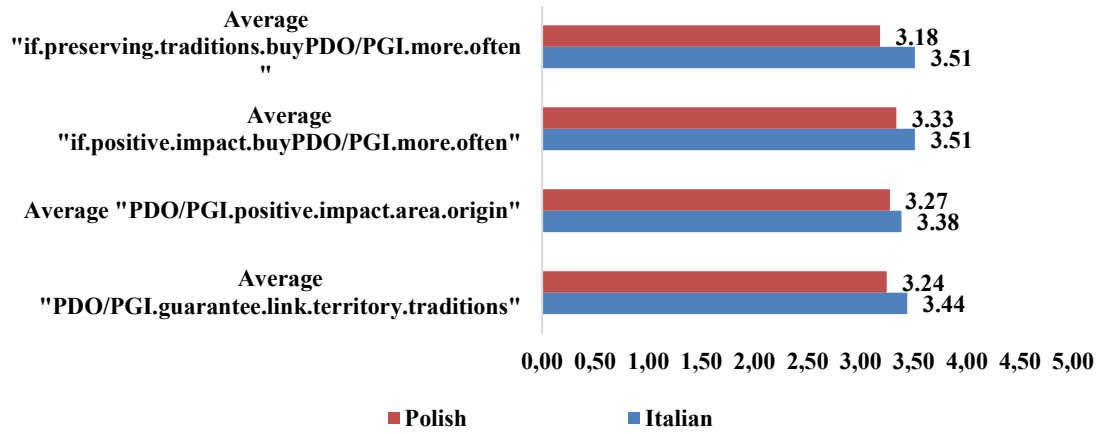
The answers in this section show that the surveyed University sample has a lower propensity to spend on PDO and PGI products. Furthermore, both research samples demonstrate a decrease in the purchases of these products during COVID-19 and the Russia-Ukraine conflict (Graph 2).



Graph 2: Q2. Source: Own survey.

Are University students aware of the connection between territory and PDO/PGI products and of the positive impact they can generate while buying these products?

This section also shows that Italian students are more sensitive to these topics. In fact, they demonstrate more consciousness about the relationship between PDO and PGI products and the territory and they are aware of their positive impact. These attitudes increase when they become aware the link between purchase of these products and impacts on the territory and on preservation of traditions (Graph 3).



Graph 3: Q3. Source: Own survey.

Conclusions, limits and future research. The present study sets out a preliminary analysis on two different University cities, one in Italy and one in Poland, aimed at understanding whether the students' approach to PDO and PGI products is different in the two countries, since distinctive levels of awareness towards the territory and its quality marks (Verbeke et al. 2012) and differences in the two economic systems were proved.

The idea of preparing this study is based on previous works which led the authors to raise some general research issues, suitable to be answered using a questionnaire based on a set of harmonized questions.

At the moment, the survey questionnaire was prepared and a pilot dissemination was carried out in the above-mentioned cities.

Some preliminary conclusions can be drawn from the updated data.

In both countries the two crises have not influenced grocery shopping habits. These results are rather surprising, because this kind of events usually have a deep impact on the population.

As assumed in the preparation of the questionnaire, Italian students are keener than Polish to purchase PDO and PGI products. In fact, in Italy such geographical certifications are more known, as they rely on ancient traditions and practices. On the contrary, Poland reflects the trend of the Northern European countries, which mostly link the concept of food quality to food safety.

The conclusions described above find further confirmation in relevant European Union data. In Italy, the registered PDO and PGI products (food, wine and spirit drink) are 841, while in Poland the count stops at 34 (eAmbrosia, 2022).

In general, the results show the importance of quality labels in consumer choice and the interest in PDO and PGI certifications which play a crucial role in the resilience of the rural economy by keeping those areas populated and rural traditions alive.

The discussion of the preliminary results obtained needs to be deepened with larger samples; a more extensive administration of the questionnaire is currently carried out for this purpose. A possible broadening of the research concerns the opportunity to consider countries not yet investigated.

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THE CONTRIBUTION OF THE MEMBER STATES TO THE CONSOLIDATION OF THE EU'S ROLE ON THE CEREALS MARKET, IN THE CONTEXT OF THE CURRENT GEOPOLITICAL INSTABILITY

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Summary

In the conditions of the current geopolitical instability, the EU is strengthening its position on the world grain market. The study captures the evolution of the cultivated areas with wheat and corn, the harvested productions obtained in the period 2015-2021, as well as the yields, through the lens of the EU member states.

For the analysis, was processed data provided by the official statistics website of the EU - Eurostat, by the General Directorate of AGRI, Agriculture and Rural Development, as well as by the Romanian Ministry of Agriculture and Rural Development.

At the level of 2021, in terms of the cultivated areas, France was ranked first in terms of wheat, with 5,277.05 thousand ha, followed by Germany - 2,939.00 thousand ha, Poland 2,390.52 thousand ha and Romania - 2,151.19 thousand ha, while for corn Romania was the leader with 2,572.56 thousand ha, followed by France - 1,547.12 thousand ha and Hungary with 1,043.11 thousand ha. In terms of harvested productions, the ranking is the following: for wheat in first place - France, with 36,607.12 thousand tons, followed by Germany - 21,459.20 thousand tons, Poland with 11,893.55 thousand tons, and Romania - 11,386.41 thousand tons, while for corn France ranked first, with 15,285.68 thousand tons, followed by Romania - 15,186.12 thousand tons and Poland - 7,321.91 thousand tons.

The study will be finalized with a series of conclusions and recommendations regarding the prospects of the sector at the European level and the role of each individual member state.

Keywords: *wheat, corn, cultivated area, harvested production, efficiency.*
JEL: *Q10*
UDC: *338.439.5:633.1*

Introduction. Cereals have been a basic food for the world's population since ancient times, the first attestations dating back to 6000-5500 B.C. (Pânzaru et al., 2018).

Grains have many properties that are very important for human survival, activity and health, namely: a 1:6 ratios between proteins and carbohydrates, which is very beneficial for the human body, they contain dextrose, which is used in dietary nutrition, providing about 65% of daily calories and 45% of proteins (Cofas & Soare, 2013).

World consumption of oilseeds has increased in recent years due to population growth. At the same time, worldwide, there is a gap between the supply and demand of cereals between developed and developing countries. In this sense, the European Union plays a crucial role, providing about one fifth of the world's total production. The growing preference for the production of cereals, which accounts for about 31% of total global consumption, is due to the strong ecological plasticity and the annual yields of plants producing large crops in a relatively short period of time compared to the units of the surface (Gimbasanu & Tudor, 2019). Trade in cereals on international markets is negatively affected by global and European geopolitical instability, as well as by global warming and pollution, those mentioned above, leading to the global food crisis that is looming (Tobias, 2022).

At present, food producers are confronted with the needs of European consumers, the mechanism of the common agricultural policy, European rules and standards, etc. which can be addressed through four major lines of action: solidarity, sustainable production, trade, multilateralism (Dona & Mătusa (Dumitru), 2012; MADR, 2022).

Degree of approach of the topic in scientific literature. Ion (2010) in his paper entitled Fitotehnie / Phytotechnics, defines grains as crops of great importance, both for human and animal nutrition and for industry. Information about cereals can be found in various studies, carried out in most regions of the world, both from a technological point of view (Cofas & Soare, 2013), food (Pânzaru et al., 2018) and from the perspective of economic indicators and social effects (Grab, 2021; Plant, 2022; Popescu et al., 2018). The differences reported spur decision-makers in the cereal sector to act differently from one region to another. In this context, the countries of the European Union are currently coordinating, through the conclusions of the Council, agreed in June 2022, a series of actions to help their own population and also those in the regions heavily affected by disasters and geopolitical instability.

It should be noted that information such as cultivated areas, obtained cereals, etc. can be found on the sites of the European Union, where a series of official, analytical documents on the mode of action, strategies, policies, as well as related statistical data are published.

Research Methodology. The statistical data underlying the realization of this research was provided by the EU - Eurostat, by the DG for Agriculture and Rural Development, as well as by the Romanian Ministry of Agriculture and Rural Development. The main indicators considered in order to achieve the cereals market analysis were: the total production of wheat and maize obtained in the main producing states, worldwide; the area cultivated with wheat and maize in the EU Member States, the total production and the yield obtained from these crops. To highlight the essential aspects of the cereals market in EU studies, journals and specialty books were consulted.

Main results. Common Agricultural Policy (CAP) of the EU passed, within the last twenty years, through successive reforms aiming agricultural production, especially related to cereals, in terms of market orientation, market share and price adjustment towards the world ones. To analyse the contribution of each member states we have to consider the role in the place of EU within the world cereals market through total wheat and maize production in the main producing states.

Table 1. **Total wheat production in the main producing states, worldwide, million tons**

Specification	**2019/2020**	**2020/2021**	**2021/2022**	**2022/2023 forecast**
World	760.7	774.3	781.0	778.0
*EU – 27**	*155.0*	*125.7*	*138.3*	*132.0*
China	133.6	134.3	136.9	138.0
India	103.6	107.9	109.6	105.0
Russia	73.6	85.4	75.0	87.6
USA	52.6	49.8	44.8	48.5
Canada	32.7	35.2	21.7	33.0
Ukraine	29.2	25.4	33.0	19.4
Australia	14.5	33.3	36.3	31.0

**including UK up to 2020*
Source: (European Commission, 2022)

We note that EU stands first worldwide in terms of total wheat production (Table 1), despite the fact that it fluctuated during the period under review. The forecast for the 2022/2023 agricultural year shows a decrease of about 5% compared to the similar period, while the total production will increase by 1%. At the same time, we mention the constant growth trend recorded by China by about one million tons per year, which will allow it to dethrone the EU in the near future.

The current geopolitical instability can be easily observed by the evolution of Russia on the grain market, characterized by oscillations of plus/minus 12,000,000 tons from year to year, which could be dependent on climatic conditions. Simultaneously, Ukraine will record the lowest level of production in the analyzed period and it will represent only 60% compared to the previous year (2021/2022). At the level of the 2021/2022 agricultural year, the total EU wheat production accounted for 17.71% of the world's production.

Global maize production, presented in Table 2, indicates the following: first place is occupied by the USA, followed by China and Brazil, while the EU ranks 4th, with a production about six times lower than that of the United States in the period under review.

Table 2. **Maize production in the main producing countries, worldwide, million tons**

Specification	2019/2020	2020/2021	2021/2022	2022/2023 forecast
World	1,131.4	1,136.1	1,219.5	1,178.6
USA	346.0	358.4	383.9	364.7
China	260.8	260.7	272.6	273.0
Brazil	102.5	87.1	114.7	123.1
EU	*68.1*	*68.0*	*70.3*	*59.6*
Argentina	58.4	60.5	57.0	60.6
Ukraine	35.9	30.3	42.1	27.7
Russia	14.3	13.9	14.6	14.6

**including UK up to 2020*
Source: (European Commission, 2022)

At the level of the 2021/2022 agricultural year, EU maize production accounted for 5.76% of the world production. The forecast for the agricultural year 2022/2023 shows a decrease in maize production for the EU, while an increase is expected worldwide and for the top three countries.

Figure 1 shows the yields recorded on cereals by the main types cultivated in the EU (common wheat, maize and barley), for the period 2019/2021 and forecast for 2022/2023. As it can be seen, common wheat has the highest yield and the forecast for 2022/2023 is 126 million tonnes. We note that, in all the categories analysed, compared to the previous year, the forecasts for 2022/2023 indicate a decrease in the obtained crops.

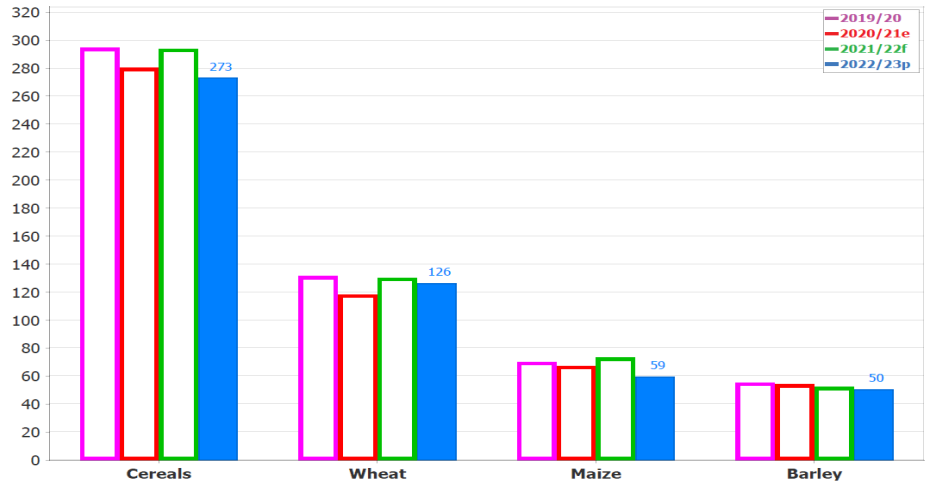

Figure 1. **Registered production for the main cereals grown in the EU, million tons**
Source: (European Commission -DG AGRI, 2022)

In the EU, the main cultivating states of total wheat are France – 5,277.05 thousand ha, Germany – 2,939.00 thousand ha, Poland – 2,390.00 thousand ha and Romania - 2,151.19 thousand ha, in 2021 (Figure 2).

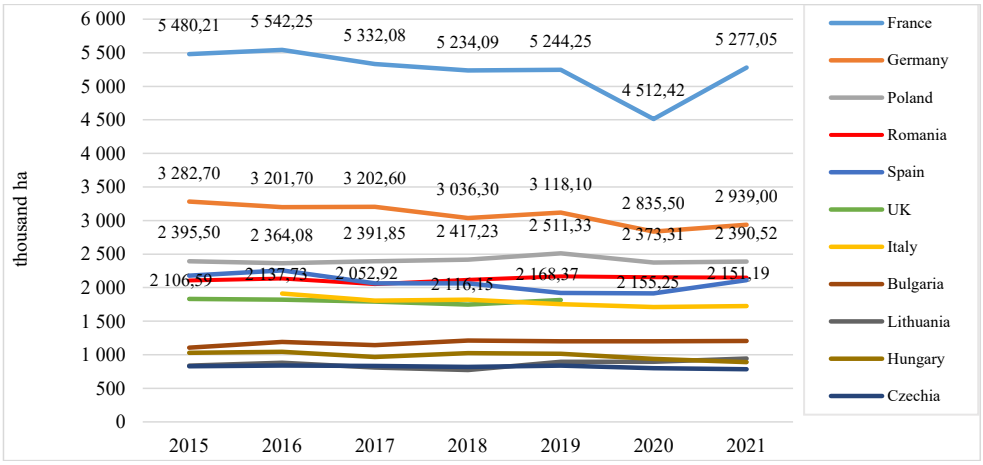

Figure 2. **Evolution of wheat areas in the main growing states of the EU, thousand ha**

Source: (Eurostat, 2022, processed by authors)

Except for Romania, Bulgaria and Lithuania, which recorded increases of the conquered areas of 2.12%, 9.07%, respectively 12.91%, in 2021, compared to 2015, in the other states were reported decreases: France – 3.71%, Germany – 10.47%, etc. the highest being 13.48% for Hungary. At the level of 2021, the areas cultivated with wheat were distributed as follows: France – 26%, Germany – 14%. Poland – 12%, Romania – 11%, etc. which means that the first states in the ranking held more than 50% of the EU area for total wheat.

The largest total wheat producers in the EU are, in order, France – 36,607.12 thousand tons, Germany – 21,459.20 thousand tons, Poland – 11,893.55 thousand tons and Romania – 11,386.41 thousand tons, in 2021 (Figure 3).

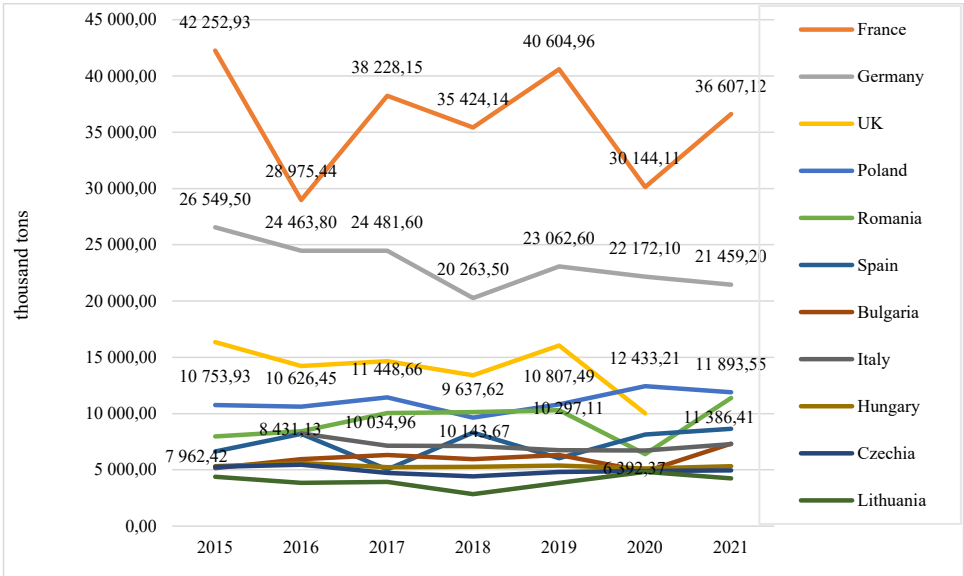

Figure 3. **Development of wheat production in the main EU producer countries, thousand tons**

Source: (Eurostat, 2022, processed by authors)

For the analyzed period, 2015-2021, there were both increases and decreases in production. Increases were reported for Poland, Romania, Spain and Bulgaria, the highest being obtained by Romania – 43% and then by Bulgaria – 42.53%, which corresponds to the increases of the areas cultivated in these countries (Figure 2). For the other states there were decreases: France – 13.36%, Germany – 19.17%, which held the highest value, etc. Over 50% of the total wheat production of 2021 was obtained by the first states in the ranking, as follows: France – 31%, Germany – 18%, Poland – 10% and Romania – about 10%, etc.

Table 3 shows the yield for total wheat obtained in the main EU producer countries (tons/ha). The data available on the Eurostat website indicate the countries with the highest values for this indicator. We notice in 2021, on the 1st place, Ireland – 10.05 tons/ha, followed by Belgium – 7.80 tons/ha. The main producers of total wheat, France, Germany, Poland and Romania ranked 6th, 5th, 18th and 17th, respectively. For the analyzed period, 2015-2021, there were both increases and decreases in the wheat yield.

Table 3. **Yield for wheat obtained in the main EU producer states, tons/ha**

	Specification	2015	2016	2017	2018	2019	2020	2021	2021/2015,%
1	Ireland	10.00	8.99	9.46	8.37	9.38	7.76	10.05	100.50
2	Belgium	9.33	6.64	8.56	8.49	9.33	8.95	7.80	83.60
3	Netherlands	*	7.84	*	8.62	9.38	8.56	*	0
4	Denmark	*	7.12	8.15	6.16	8.10	8.10	7.53	0
5	Germany	8.09	7.64	7.64	6.67	7.40	7.82	7.30	90.23
6	France	7.71	5.23	7.17	6.76	7.75	6.68	7.23	93.77
7	Slovakia	5.50	*	4.74	4.77	4.81	5.52	*	0
8	Croatia	5.36	5.70	5.87	5.44	5.59	5.87	6.70	125.00
9	Czechia	6.36	6.50	5.67	5.39	5.73	6.14	6.32	99.37
10	Sweden	7.22	6.33	6.99	4.35	7.41	7.16	6.31	87.40
11	Bulgaria	4.65	4.98	5.52	4.91	5.27	4.01	6.07	130.54
12	Hungary	5.18	5.37	5.43	5.12	5.30	5.47	5.97	115.25
13	Luxembourg	6.35	5.08	5.49	6.19	6.16	6.07	5.92	93.23
14	Slovenia	5.11	5.19	5.03	4.38	5.23	5.80	5.77	112.92
15	Switzerland	6.06	4.42	6.17	5.72	5.82	6.29	5.74	94.72
16	Austria	5.67	6.18	4.82	4.64	5.74	5.93	5.53	97.53
17	Romania	3.78	3.94	4.89	4.79	4.75	2.97	5.29	139.95
18	Poland	4.48	4.46	4.79	3.98	4.31	5.24	4.98	111.16
19	Lithuania	5.26	4.37	4.82	3.67	4.29	5.39	4.50	85.55
20	Latvia	5.03	*	4.79	3.43	4.81	5.34	4.48	89.07
21	Italy	*	4.31	*	*	*	3.92	4.22	0
22	Estonia	4.79	2.77	4.20	2.91	5.07	5.00	4.09	85.39
23	Spain	3.05	3.63	2.44	4.03	3.15	4.25	4.09	134.10
24	Finland	4.16	3.88	4.18	2.82	4.62	3.46	3.23	77.64
25	Greece	2.44	3.10	2.46	2.65	2.79	3.08	2.71	111.07
26	Portugal	2.09	2.44	2.13	2.59	2.70	2.77	2.42	115.79
27	Cyprus	3.01	0.85	1.97	1.50	2.78	2.58	2.02	67.11

*data not available

Source: (Eurostat, 2022, own calculation)

In 2021, the main corn-growing states in the EU (Figure 4) were Romania – 2,572.56 thousand ha, France – 1,547.12 thousand ha, Hungary – 1,043.11 thousand ha and Poland – 998.47 thousand ha. For the analyzed period, 2015-2021, there were both increases and decreases in the areas cultivated with corn. Increases were reported for: Poland – 48.96%, Bulgaria – 14.92% and the highest for Lithuania – 52.60%. Decreases were recorded in: Romania – 1.36%, France – 5.5% and Denmark – 71.1% the most.

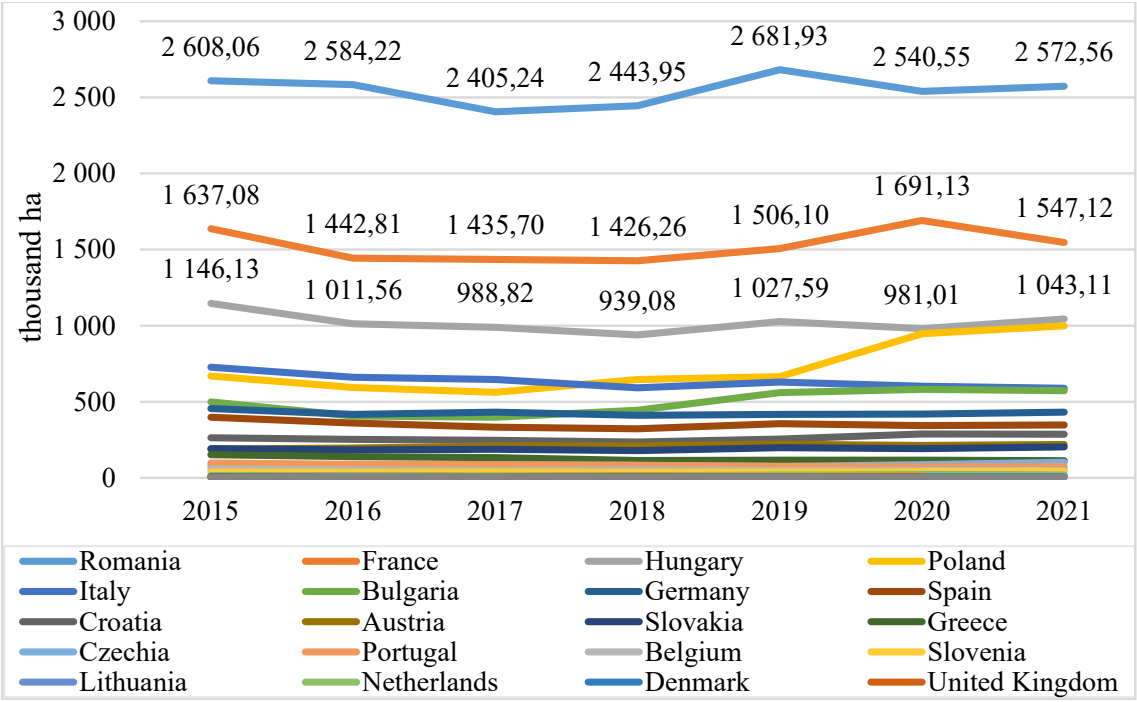

Figure 4. **Evolution of maize areas in the EU states, thousand ha**
Source: (Eurostat, 2022, our design)

At the level of 2021, the areas cultivated with wheat were distributed as follows: Romania – 28% France – 17%, Hungary – 11%. Poland – 11%, etc., which means that the first states in the ranking have owned more than 50% of the EU surface dedicated to corn.

The largest maize producers countries in the EU are, in order, France – 15,285.68 thousand tons, Romania – 15,186.12 thousand tons, Poland – 7,321.91 thousand tons and Hungary – 6,264.74 thousand tons, year 2021 (Figure 5).

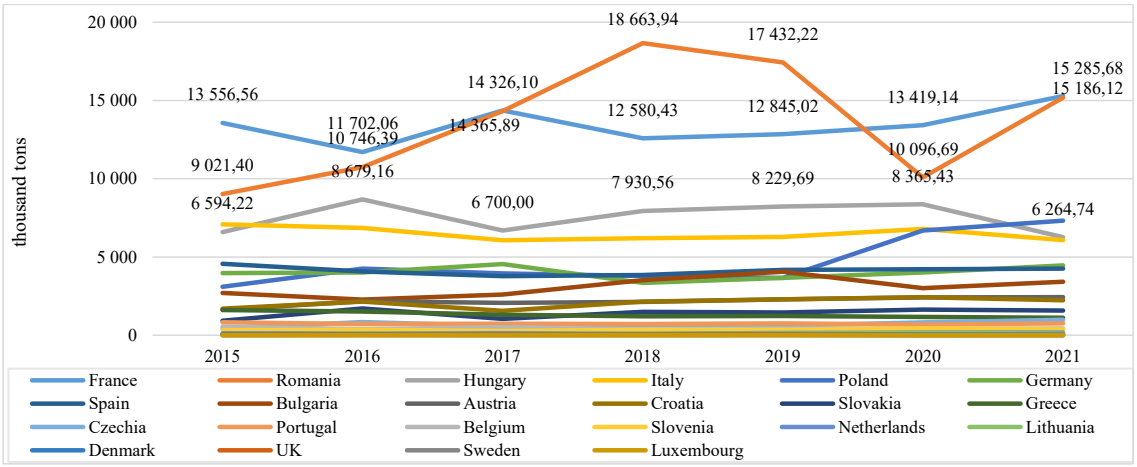

Figure 5. **Development of maize production in the main EU producing States, thousand tons**

Source: (Eurostat, 2022, our design)

For the analyzed period, 2015-2021, there were both increases and decreases in production. Increases were reported for Romania, France and Poland, the highest being obtained by Romania – 81.5%, Poland – 22% and France – 13.5%, while Hungary registered a slight decrease of about 15%.

From the point of view of efficiency (Table 4), we note, that Romania (the 2nd corn producer in the EU) is on the penultimate place of the ranking in terms of the yield obtained. Romania had a minor advantage over Lithuania in 2021, but the yield obtained was only 48% of the one of Spain (12.29 tons/ha), the country that occupied the first place for this category.

Table 4. **Yield for maize obtained in the main EU producer states, tons/ha**

	Specification	2015	2016	2017	2018	2019	2020	2021	2021/2015 %
1	Spain	11.46	11.33	11.32	11.92	11.73	12.26	12.29	107.24
2	Austria	8.68	11.16	9.91	10.15	10.42	11.35	11.16	128.57
3	Germany	8.88	9.65	10.53	8.14	8.81	9.59	10.36	116.67
4	Italy	10.47	10.38	9.88	10.13	10.05	11.27	10.33	98.66
5	Portugal	8.45	8.02	8.61	8.56	9.80	9.35	10.10	119.53
6	Greece	10.59	10.84	9.86	10.63	10.68	10.09	10.09	95.28
7	Netherlands	8.30	6.46	10.16	6.49	7.80	8.54	9.96	120.00
8	France	8.28	8.11	9.97	8.79	8.48	7.93	9.88	119.32
9	Czechia	5.54	9.79	6.84	5.98	8.29	9.46	9.65	174.19
10	Slovenia	8.97	9.51	7.11	9.45	9.27	10.79	9.39	104.68
11	Belgium	9.40	7.47	10.28	7.00	8.83	8.11	9.15	97.34
12	Sweden	5.76	8.03	7.33	4.18	6.96	6.77	8.60	149.31
13	Croatia	6.50	8.50	6.30	9.13	9.01	8.43	7.77	119.54
14	Slovakia	5.47	7.76	5.61	8.41	7.39	8.29	7.77	142.05
15	Poland	4.62	7.15	7.02	5.88	5.52	7.08	7.33	158.66
16	Denmark	6.13	7.59	7.54	5.63	7.56	6.25	7.07	115.33
17	Luxembourg	5.36	5.45	7.00	5.07	4.62	5.49	6.41	119.59

18	Hungary	5.75	8.58	6.78	8.44	8.01	8.53	6.01	104.52
19	Bulgaria	5.43	5.60	6.56	7.92	7.24	5.18	5.99	110.31
20	Romania	3.46	4.16	5.96	7.64	6.50	3.97	5.90	170.52
21	Lithuania	4.81	6.94	5.74	6.54	7.67	7.01	5.86	121.83

Source: (Eurostat, 2022, own calculation)

At the same time, Romania recorded the second highest increase (70.52%) after the Czech Republic (74.19%), followed by Poland (58.66%) and Sweden (49.31%).

Discussion of the results, conclusions. Cereals are and will be the staple food for most of the world's population, which is fast approaching 8 billion. In this context, important players envisage different ways to increase cereal production and expand market share. The European Union makes no exception and is trying to maintain its leader position in the wheat sector and to strengthen its presence on the world market for maize. Of course, the limited circulation and disruptive impact of the COVID-19 pandemic on major food producing countries such as France, Germany, Italy, Spain, etc. had a negative impact on the total production and efficiency of the measurement unit.

Another concern is that extreme weather events exacerbated by climate change may lead to greater volatility of food production, affecting global supplies and prices, which will seriously affect this year's production due to record temperatures in the last months of summer and, subsequently, unprecedented droughts on the one hand and catastrophic floods on the other.

The current geopolitical instability has the potential to lead to major changes in the structure of exporting countries in the medium term, which will have the following regional implications:

- The current macroeconomic environment is a source of uncertainty. Cereal prices could be affected by a potential economic downturn due to lower investment, especially in fast-growing economies,
- World food markets remain uncertain due to inflationary pressures and real exchange rate movements, especially in exporting countries,
- Energy prices may directly affect the prices of inputs such as fertilisers and agrochemicals,
- Political environment will matter. Increased food security, a focus on the sustainability of future reforms (EU) and the development of biofuel policy (EU, Brazil and US) will affect food demand,
- Crop pests, crop diseases and animal diseases remain factors that could disrupt food supply and demand.

At the same time, the structure of the wheat and maize areas in the member countries will remain approximately similar, with a focus on expanding the irrigated areas, implementing precision agriculture, combating pests through natural enemies, developing new varieties that can withstand changing climatic conditions, etc.

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НЕКОТОРЫЕ ОСОБЕННОСТИ ПРИМЕНЕНИЯ ГРАФИКОВ В ЭКОНОМИЧЕСКИХ ИССЛЕДОВАНИЯХ

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Summary

It is noted that the graphic method has become so firmly established in the arsenal of means of scientific generalization and the methodology of scientific research that modern science cannot be imagined without its application. The role of this method is especially great in statistical research, where complex relationships, trends, patterns of socio-economic phenomena and processes in dynamics and space are studied. When studying the yield dynamics of two or more crops, it is far from always possible to present their values on one graph, since the indicators are very close in their value to each other, which is why the main advantage of the graphs is lost - visibility. This drawback can be easily eliminated by using an additional vertical axis on which the scale is changed. Various options for using graphs in economic research are shown: instead of biaxial graphs, triaxial graphs are used, the vertical axes of which have a single unit of measurement. There are also three-axis graphs with two different vertical axes. The necessity of using combined linear and column charts is substantiated. An example of complex triaxial graphs is given, the clarity of which predetermines their use. The purpose of the study is to show the possibility of using charts for a more intelligible presentation of economic relationships, the dynamics of their changes. In the course of the study, the economic-statistical method, as well as the methods of comparative analysis and the graphical method, were used. They made it possible to fully achieve the goal of the study. The study was conducted on the examples of five agricultural enterprises in the southern zone of the Republic of Moldova based on the results of activities for 2016-2020. The necessity of using various variants of two- and three-axis graphs in economic research is emphasized.

Keywords: *2-axis and 3-axis graph, line and bar charts, stacked graphs, wheat, net profit*

JEL: *C40, M21, Y 10*

UDC: *311.218:33 (075)*

Графический метод настолько прочно вошел в арсенал средств научного обобщения и методику научных исследований, что современную науку невозможно представить себе без его применения. Особенно велика роль этого метода в статистических исследованиях, где изучаются сложные взаимосвязи, тенденции, закономерности социально - экономических явлений и процессов в

динамике и пространстве [1,с.3].

При изучении, например, динамики урожайности двух и более культур далеко не всегда можно их значения представить на одном графике, так как показатели очень близки по своему значению друг к другу, отчего теряется главное преимущество графиков–наглядность (рис.1).

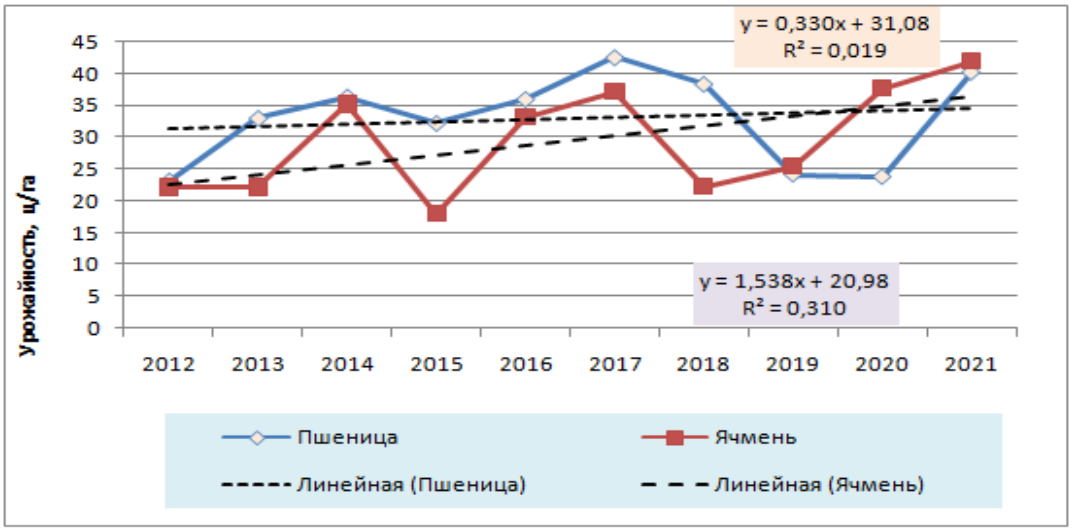

Рис.1. **Динамика урожайности пшеницы и ячменя в SRL«Daalar Duzu» за 2012-2021годы**

Источник: по данным финансовой отчетности предприятия

Данный недостаток легко может быть устранен при применении дополнительной вертикальной оси, на которой изменен масштаб(рис.2).

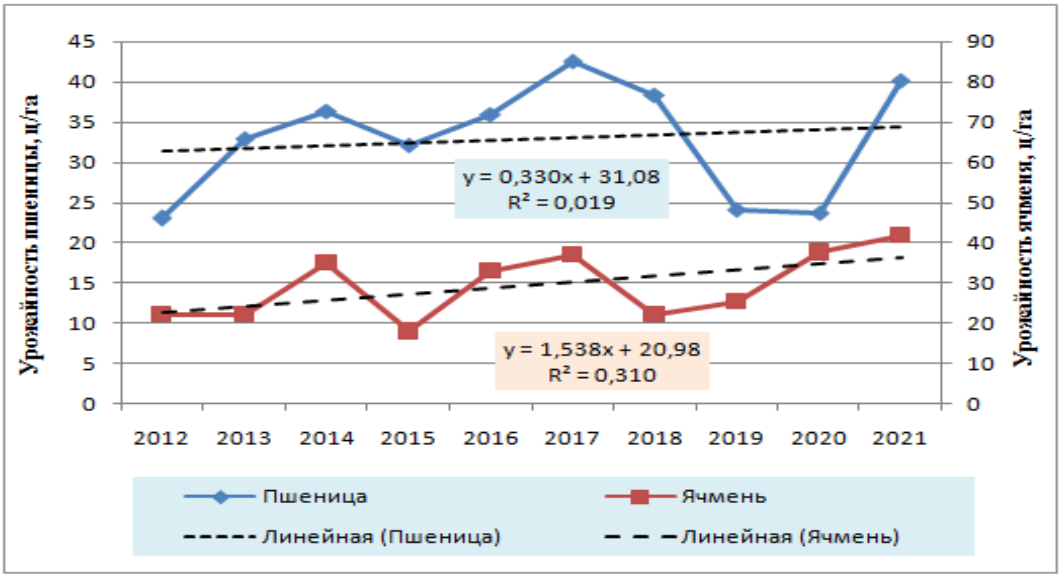

Рис.2. **Динамика урожайности пшеницы и ячменя в SRL«Daalar Duzu» за 2012-2021годы (скорректированный вариант)**

Источник: по данным финансовой отчетности предприятия

Часто в экономических исследованиях взаимосвязь двух показателей трудно, а порой и невозможно, объяснить словами. В тоже время их представление на графике является достаточно убедительным. Например, зависимость запаса финансовой прочности и операционного левериджа от уровня урожайности весьма доходчиво и просто может быть представлена на графике (рис.3).

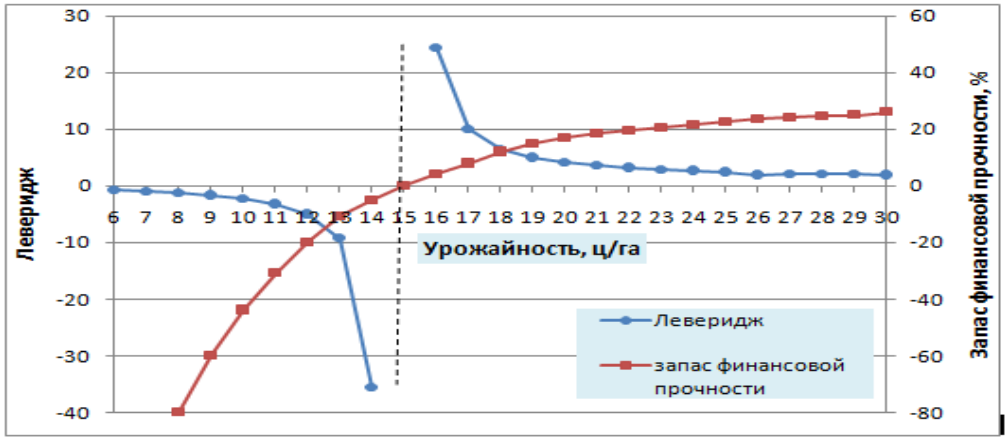

Рис.3. **Зависимость запаса финансовой прочности и операционного левериджа от урожайности пшеницы в SRL «Iri Carmen» за 2021 год**

Источник: по данным финансовой отчетности предприятия

При проведении экономического анализа часто используются графики для визуального восприятия взаимосвязи показателей. Практика применения графиков показала необходимость использования совмещенных графиков. Например, линейные и столбиковые графики можно использовать одновременно на одной диаграмме, что позволяют наглядно представлять экономические показатели и их взаимосвязи (рис.4) [2, с.57].

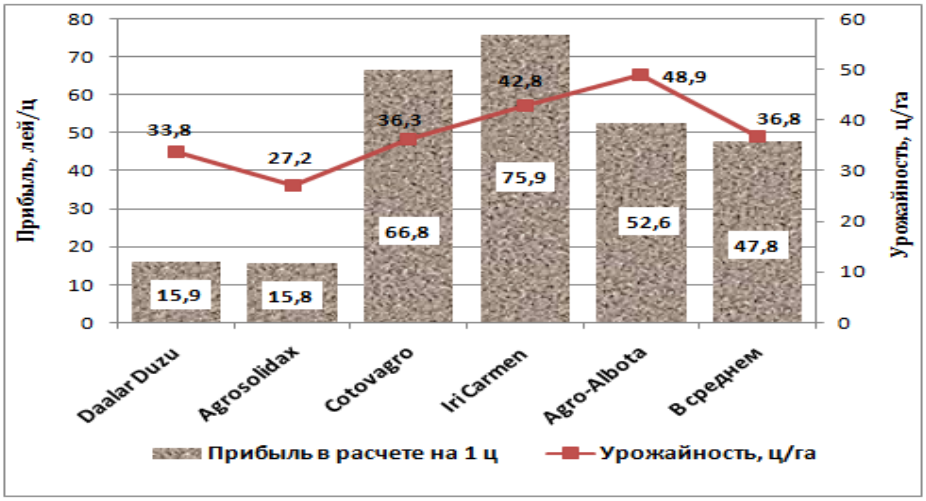

Рис.4. **Показатели эффективности производства и реализации пшеницы в SRL «Daalar Duzu», «Agrosolidax», «Iri Carmen», «Cotovagro» и «Agro-Albota» в среднем за 2016-2020 гг.**

Источник: по данным финансовой отчетности предприятия

Рассмотрим далее динамику чистой прибыли, сложившейся на предприятии в SRL «Daalar Duzu» за 2011-2020годы (рис.5).Данные графика показывают, что ежегодно предприятие теряло 162,2 тыс. леев прибыли от реализации ($y = -162{,}2x + 3246$). Здесь же полиномиальный тренд показывает, что в первый период предприятие наращивало ежегодный объем прибыли, однако далее, как видно из графика, наступил период спада. Данное обстоятельство подсказывает нам на необходимость анализа исследуемого показателя за два периода. В связи с этим, разделим период на два равных временных периода. В первом периоде (рис.6) наблюдается ежегодный прирост объемов чистой прибыли на сумму 203,6 тыс. леев ($y = 203{,}6x + 1887$), а во втором периоде (рис.7) в среднем за год предприятие теряло 1180 тыс.леев чистой прибыли ($y = -1180x + 5749$).

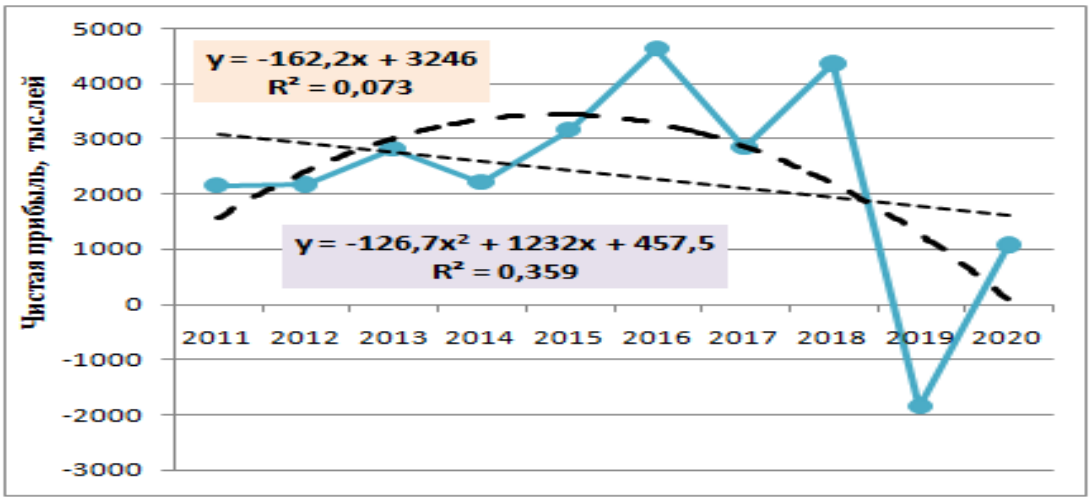

Рис.5. **Динамика чистой прибыли в SRL «Daalar Duzu» за 2011-2020 гг.**
Источник: данные рисунка 1

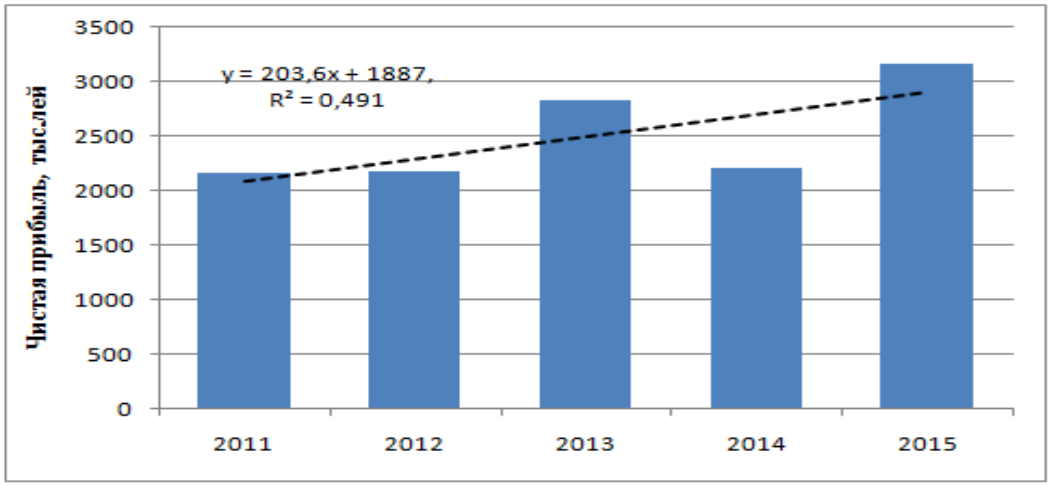

Рис.6. **Динамика чистой прибыли в SRL «Daalar Duzu» за 2011-2015 гг.**
Источник: данные рисунка1

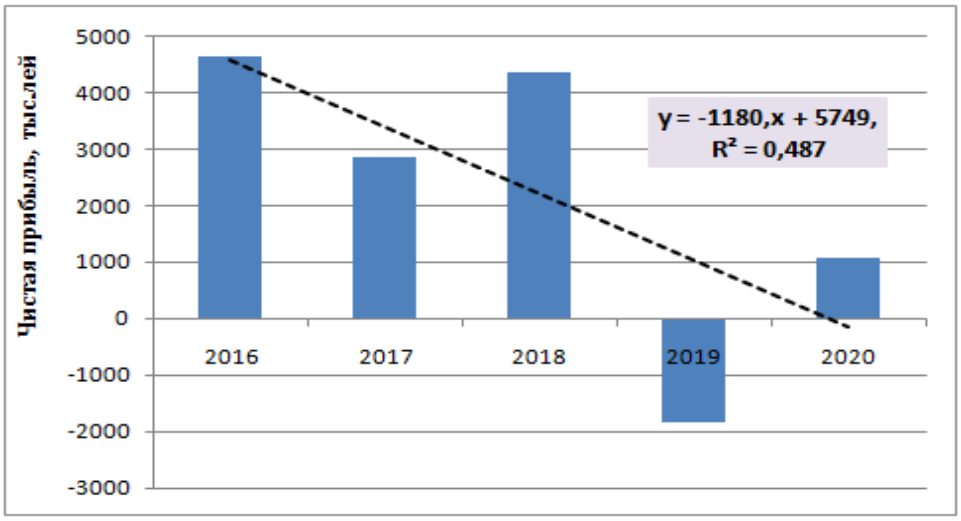

Рис.7. **Динамика чистой прибыли в SRL «Daalar Duzu» за 2016-2020 гг.**
Источник: данные рисунка1

Вышеизложенное подтверждает необходимость применения различных вариантов двух- и трехосевых графиков в экономических исследованиях.

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SMALL AGRIBUSINESS IN UKRAINE

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Summary

Today, small farmers perform the most important functions to support the economy of the country – such as providing food and accommodation to people, especially for internally displaced people, who have suffered from the invasion. Farmers continue working despite the insane risks to their own lives. It is the households that do not allow the Ukraine's food system to collapse.

The purpose of the study is to characterize the features of the small business functioning in the agricultural sector of Ukraine's economy. Research methods are monographic, statistical, graphical and tabular, method of comparative analysis.

In the production of agricultural products, households rely mainly on their own resources, and their products are mainly aimed to self-sufficiency and partial sale in local markets. Before the full-scale war, small producers produced about 40% of the total volume of Ukrainian agricultural products, not participating in state support programs. There are many obstacles in Ukrainian law for small farmers to receive the financial support they need. In fact, farms that have up to 50 hectares of agricultural land remain outside the state support system. In the near future, it is necessary to include small farmers in state support programs, as has long been introduced in EU member states, where small farms are the leading organizational and legal form of the agricultural sector.

In 2022, the decline in production of small producers in rural areas, from which the population was not completely displaced as a result of military activities, will be insignificant. This partially compensates for the loss of production by large agricultural enterprises. Household activities are tied to a specific rural area, and field or farm work cannot be postponed. However, production volumes will decrease in some regions due to internal and external displacement of rural residents from areas that are under full or partial control of the occupiers.

Keywords: *small farmers, agricultural products, agricultural sector.*
JEL: *Q1; Q12; Q18.*
UDC: *631.115.1(477)*

Introduction. Small business, in particular agrarian, plays an important role in dealing with current socio-economic issues in the development of Ukraine's economy. The essence and importance of small business are the following: it is a socially significant sector of the market economy; it is the basis of a small-scale production; it ensures freedom of market choice, saturation of the market with

consumer goods and services of everyday demand, introduction of innovations, additional jobs; it has high mobility.

Activity of households plays an important role in the process of agricultural production. It is the resistance of individual farm to unfavorable changes in the environment, its flexibility and adaptability, focus on meeting own needs, makes it an integral part of the agricultural market. Its activity partially contributes to solving village social problems, establishing sustainable development of rural areas and supporting the income of rural population. A third of the total population lives in rural areas of Ukraine.

The main products, which are produced in households, are sold in small batches as agricultural raw materials at extremely low prices to intermediaries or directly to processors of agricultural products on the domestic market. This is due to the fragmentation of small farms and, as a result, the inability to compete with large agricultural producers.

After the invasion of Russian troops on the territory of Ukraine, households demonstrated their key role in preservation and development of local markets and food supply chains, thus proving the sustainability and possibility of ensuring the existence of small producers.

Literature review. The agricultural sector occupies an important place in the national economy, where the main areas of production significantly depend on natural conditions, resources and biological factors. The development of agricultural sector contributes to the following: growth of material well-being of the people, export potential of the country, strengthening the economic and food security of the state. The share of the agrarian industry in the consolidated budget of Ukraine in the pre-war years was on average 20%, and in the product structure of exports – it was more than a 25%, ensuring the leading positions in the world market of sunflower oil, the second place was – in the export of cereals. Ukraine confidently takes one of the leading places in the agrarian sector of the world economy, constantly increasing both the volumes of agricultural production and the volumes of its export in compliance with food safety standards.

The structure of agriculture of Ukraine includes: corporate sector consisting of large agricultural enterprises (including agricultural holdings) with a significant share of foreign capital, focused on the constant expansion of monoculture and export, and private (individual) sector, which is focused on traditional goods and the domestic consumer market, ensuring domestic food security.

Development of small business in the agrarian sector has become especially relevant with the start of economic reforms, changes in socio-economic orientations and the creation of conditions for entrepreneurship among active citizens. The problems of formation and functioning of small agribusiness were studied by such Ukrainian scientists as O. Amosov, D. Krysanov, P. Makarenko, M. Malik, V. Mesel-Veseliak, O. Shpychak, O. Onyshchenko, P. Sabluk, M. Sakhatskyi, V. Yurchyshyn and others.

Small and medium-sized businesses are structural element of the agricultural sector of the Ukrainian economy. Small agribusiness is households that usually independently determine the direction of their activity. The main features of the small business in the agrarian sector are: personal participation of the family or its members

in the implementation of the activity; small volumes of production or provision of services; intuitive nature of entrepreneurial activity, lack of strategy for the future; use of unskilled or low-skilled labor (low level of education, lack of professional skills); informal nature of relationships in the course of conducting their activities; high dependence on natural and climatic factors that determine the seasonality of production; high probability of risk, which complicates access to financial and credit resources; weak support or its absence from the state (Bondar, 2010).

Research methodology. For the research, it has been used data by State Statistics Service of Ukraine. In carrying out this study, general scientific and comparative methods were used.

Main results. *The place of small agribusiness in the food supply of Ukraine.* The agrarian transformations that have taken place in Ukraine in recent years have led to an increase in the gross production of agricultural products. However, this did not contribute to the socio-economic development of rural areas and raising the standard of living of the rural population. Nowadays, there is a need for a comprehensive approach to solving the problems of the rural areas development, which is based on the principles of sustainable development.

The Ukrainian authorities officially recognized that the agrarian sector of the economy (the basic component of which is agriculture) forms food, to a certain extent economic, ecological and energy security, ensuring the development of technologically related branches of the national economy and the creation of socio-economic conditions for rural development (Cabinet of Ministers of Ukraine, 2015).

Small farms are the least protected and competitive in the market, but at the same time they have a significant share in the production of certain types of agricultural products and are the main activity for many rural residents.

The main factors that significantly hinder the development of small agrarian business, as evidenced by practice, include: imperfection of the legislative framework; imperfection of the mechanism of interaction between the state and small business entities; low level of availability of credit resources; insufficient level of development of the innovation base, which makes it impossible to use modern technological equipment, etc.

Small business entities in the agrarian sphere have a number of significant advantages along with more powerful forms of management, namely: quick response to changes in the market; main source of innovative ideas in production; certain advantages in marketing and sales conditions due to personal contact with the consumer; combination of an entrepreneur (owner), a manager and an employee in one person, which ensures the best alignment of interests and maximum motivation in achieving the goals of activity (Boyko, Krupa, 2019), and also focus on organic production; observance of agriculture culture and ecological production; exert a positive impact on the development of rural areas, etc. (Samoylik, 2015).

Large farms retain leadership in the production of cereals (wheat, barley, corn) and industrial crops (sunflower), whereas small agribusiness is engaged in the cultivation of labor-intensive crop products, which require partial involvement of special equipment and production technologies, namely potatoes, vegetables, fruits and berries. Before the full-scale war, small commodity producers produced about 40% of the total volume of Ukrainian agricultural products, including more than 3/4

of all potatoes, vegetables, fruits and berries, as well as 2/3 of dairy raw materials without participating in state support programs.

The majority of vegetables and melon food crops are grown by small producers. If in 1990 their share in crops was 26.4%, in 2021 it was 93.5%. In Ukraine, the further development of vegetable growing in households will be carried out on small areas, but in a wider range than at present. The production of vegetables by large producers will be reduced to the cultivation of the required number of the most technological vegetable crops for sale to harvesting and distribution organizations, on spontaneous and organized markets and supply of raw materials to the industry.

In addition, the advantage of households in the production of livestock products is indispensable. In 2021, according to the State Statistics Service of Ukraine, they produced 67,873 tons of honey (or 99.0% of the total volume), 5,946,200 tons of milk (68.2%), and 7,058.5 million eggs (50.2%), 717.9 thousand tons of meat (or 29.4% of the total volume), etc.

Dairy farming is one of the strategic branches of animal husbandry in Ukraine, which determines the food security of the state and the quality of food for the population. Its main importance in the national economy is determined by the fact that dairy products are one of the sources of high-calorie food, as well as raw materials for the food industry. Milk and dairy products occupy a significant part in the diet of the vast majority of the Ukrainian population and belong to the basic necessities. Thus, a stable supply of these products to consumers is an important condition for achieving food security.

In recent years, the situation in the field of dairy cattle breeding is characterized by a reduction in the number of dairy cows and the production of dairy raw materials mainly by households. Currently, the problems of increasing milk production and improving its quality in order to fully meet the needs of the population of Ukraine are being actualized.

Agriculture under martial law. The war started after February 24, 2022, after the attack of the Russian Federation on the territory of Ukraine. Currently, active military operations are being conducted on a large territory of the country with the involvement of a large amount of material and human resources. As a result of the full-scale invasion of Russian troops on the territory of Ukraine, farmers found themselves in difficult and sometimes critical conditions. Agricultural production is not possible in temporarily occupied territories and in areas where hostilities are taking place.

The Russian invasion led to colossal direct losses: damage and destruction of agricultural machinery, mining of a certain part of agricultural land, migration of the rural population, all of this currently cannot be finally assessed. Even greater losses are of a collateral nature: destruction of logistics, supply chains, partial blocking of ports led to huge losses in the agricultural sector.

In 2022, there will be a decline in production volumes of almost all types of agricultural products due to the lack of physical ability to conduct agricultural activities in the regions affected and suffering from hostilities; temporary absence of the possibility of restoring the work of destroyed and damaged factories; lack of and limited access to material and technical resources; changes in the structure and reduction of cultivated areas of agricultural crops; damage to plantations and crops;

increasing risks of loss of means of production, harvest, livestock and finished products, etc. It is predicted that the harvest of 2022 may be 40% lower compared to 2021 (Ucab, 2022).

Military actions and limited access of producers to resources will have a negative impact on the production of agricultural products in all regions of the country, but those areas where hostilities are taking place will be the most affected. The production of grain crops will decrease the most in Kharkiv, Sumy, and Chernihiv regions, and of vegetables, fruits, berries, melon crops, poultry products, and oil crops in Mykolaiv, Kherson, and Zaporizhzhia regions. The war significantly complicated the functioning of large-scale agricultural production due to the blocking of agricultural product sales markets, environmental disasters on livestock complexes, etc.

In the conditions of hostilities, the primary task of the Ukrainian agricultural sector was to provide the population with agricultural products and food. Farmers and households provided food for both their own families and internally displaced persons, thus proving the sustainability and possibility of ensuring the existence of small producers. During the introduction of martial law, when store shelves were empty, urban retail food markets did not work, households became almost the only supplier of vegetable and dairy products for the local population.

In 2022, the decline in production of small producers in rural areas where the population was not completely displaced as a result of military actions, will be insignificant, which partially compensates for the loss of production by large agricultural enterprises.

Household activities are tied to a specific rural area, and work in the field or on the farm cannot be postponed indefinitely or delayed. However, production volumes will decrease in some regions as a result of the internal and external displacement of rural residents from areas under full or partial control of the occupiers. In Ukraine, in the spring and early summer, the issue of providing vegetables has already arisen. Before the full-scale war, this function was performed by the southern regions. Due to the occupation of Kherson region, Ukrainians experienced a shortage of vegetable products and high prices for radish, potato, tomato, cucumber, and cabbage.

One of the positive examples of the dairy industry development in the realities of war is the creation of a network of mini milk processing workshops, as well as cluster associations of milk producers and processors in the communities of Sumy region. To implement ideas in the region it is planned to transfer 500 Simmental cows to private peasant farms and attract UAH 73.9 million (1.8 thousand USD) within international and state aid. Attracting grant funds will make it possible to increase competitiveness and increase the volume of dairy processing products, in particular due to the active implementation of innovative technologies, improving the safety and quality of food products, increasing their range and creating conditions for healthy competition in the food market (Milkua, 2022).

State support for agriculture in Ukraine. State support of the agrarian sector of the economy is one of the forms of state regulation, as well as the main mechanism for the implementation of state policy in the agrarian sphere, which is accompanied by the creation of favorable economic, organizational, legal and other conditions for

the development of agrarian production, which is provided by financial and material resources (Petlyuk, Medvedkova, 2021).

The purpose of state support is to promote the economic efficiency of agricultural enterprises, the development of agricultural product markets, the creation of jobs in rural areas, the observance of ecological production standards, and the representation of national producers on world markets.

Agricultural production in the majority of developed countries is subsidized. Providing subsidies to the agricultural sector contributes not only to maintaining competitiveness, but also to ensuring the sustainable development of rural areas and creating conditions for comfortable living and working of rural residents.

To ensure state support of Ukrainian agricultural producers, the Law "On the State Budget of Ukraine" annually provides a certain amount of funds for a number of budget programs, the implementation of which is carried out in accordance with the Procedures for the use of funds, approved by resolutions of the Cabinet of Ministers of Ukraine (Government).

In particular, the Procedure for the use of funds allocated in the state budget for financial support of agricultural producers, approved by Resolution No. 77 of the Cabinet of Ministers of Ukraine dated 08.02.2017 (with amendments), establishes a list of areas of state support that can be implemented during the budget year under the budget program "Financial Support to agricultural producers". The allocation of funds between specified areas is established by the order of the chief administrator of budget funds and may change during the budget year depending on the actual volumes of their use.

In 2021, the adoption of amendments to the Law of Ukraine "On State Support for Agriculture in Ukraine" made it possible to declare at the legislative level the principles of transparency, predictability and fairness of state support for agricultural producers, to determine its priorities and to introduce support for a number of new directions (sheep breeding, goat breeding, aquaculture, organic production , irrigation, drainage restoration, agricultural advisory activities, etc.), and also to establish the priority of providing state support to small farms, including family farms that own and/or use no more than 100 hectares of agricultural land and whose annual income from the sale of products does not exceed UAH 5 million (125 thousand USD).

At the current stage, state support for agriculture takes place in the following directions: partial compensation of the cost of agricultural machinery; financial support for activities in the agricultural sector by making loans cheaper; financial support of farms; financial support the fields of animal husbandry, potato growing, horticulture, viticulture and hops, purchase of domestically produced equipment; state support for niche cultures, state support for the use of reclaimed land; state support for organic production (Agropolit, 2022).

Military aggression by the Russian Federation significantly affected the development of the agricultural sector of Ukraine. All branches of the legislative and executive authorities promptly combined efforts to review approaches to the formation and implementation of state agrarian policy, state policy in the areas of food security and land relations.

The state budget of Ukraine for 2022 provides subsidies to farmers in the amount of UAH 4.4 billion. Every spring, farmers need additional financing for the

sowing period. In addition, this year, farmers still do not have the opportunity to sell the harvest collected last year for export. As a result, farmers have a lack of working capital to carry out agricultural activities.

In March 2022, the state introduced additional measures to support farmers under martial law. According to the Ministry of Agrarian Policy of Ukraine, the Resolution "On Amendments to Certain Acts of the Cabinet of Ministers of Ukraine on Providing Credit Support to Agricultural Producers" was adopted. State support is provided in the form of interest rate compensation for borrowed loans. Credits provided for the implementation of agricultural activities (sowing) during the period of martial law exclusively to small and medium-sized agricultural producers with a turnover of no more than 20 million euros per year, which is the equivalent of an enterprise that cultivates up to 10,000 hectares (the maximum amount of credit to which interest rate compensation applied is UAH 50 million) (Rada, 2022).

The Ministry of Agrarian Policy and Food of Ukraine developed programs of non-refundable grants for farmers to create gardens and greenhouses as part of the "eRobota" project (in June 2022, the programs were approved at a government meeting). The programs are designed to support business entities, agricultural producers, create jobs and ensure the food security of the state.

According to the program of partial compensation for the cost of creating greenhouses, the amount of the grant is from UAH 5 to 7 million (the total budget of the program is UAH 7 billion). The expected number of grants is 1,000 per year. Participants of the program can be both private entrepreneurs and agricultural companies and farms that own or lease land for a period of at least 25 years (Agropolit, 2022).

Funds from the grant can be spent on the direct construction of the complex, the purchase of technical equipment for its operation, the purchase of seed material and fertilizers. The principle of co-financing will be introduced: for the first thousand of participants, 70% of the cost of the project will be financed by the state and 30% by the agrarian. In addition, according to the Ministry of Agrarian Policy of Ukraine, the state will allocate a total of UAH 4 billion for the program to support horticulture, berry growing and viticulture for partial compensation of the cost of gardens. Farmers will receive from 150,000 to 400,000 UAH per hectare of gardens - this is about 70% of the average cost of planting. These are grants for planting 10,000 hectares of new gardens. In total, the state will allocate UAH 16 billion for three programs (development of horticulture, berry growing, and viticulture) of the "eRobota" project. Part of the funds for support will be allocated by foreign partners (KMU, 2022).

In Ukrainian legislation, there are many obstacles for small agricultural producers to receive the financial support they need. In fact, farms that use up to 50 hectares of agricultural land remain outside the system of state support. In the near future, it is necessary to include small agricultural producers in state support programs, as it has long been implemented in EU member states, where small farms are the dominant organizational and legal form of the agricultural sector.

Discussion and conclusions. The degree of development of small farms in the agricultural sector affects the saturation of the market with goods, the level of employment, the social development of the village and contributes to the increase of the economic efficiency of agricultural production. Households play a significant role

in the production of agricultural products, food security of the state, their activity partially contributes to solving social problems of the village, establishing sustainable development of rural areas and supporting the income of the rural population.

In the in future, the households should, carry out the primary processing of agricultural products using low-capacity equipment (oil press, grain mill, etc.) by joining groups or associations of producers for joint management. It is also worth creating conditions for the transformation and development of small farms as subjects of entrepreneurial activity, the creation of family farms on their basis.

Small business is the least protected on the market, taking a significant share of the production of certain types of products in the country in general and it is the main activity for many rural inhabitants. Instruments of state support should be provided long-term and correspond to the peculiarities of the functioning of various categories of agricultural producers. In the near future, it is necessary to include small agricultural producers in state support programs, as it has long been implemented in EU member states, where small farms are the dominant organizational and legal form of the agricultural sector.

In the conditions of hostilities, farmers and households provided food for the local population and internally displaced people, thus proving the stability and possibility of ensuring the existence of small producers. The consequences of the war will be felt in the agricultural sector for years to come.

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MEDITARE ASUPRA ÎNVĂȚĂMÂNTULUI SUPERIOR AGRICOL DIN REPUBLICA MOLDOVA

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Summary

The declaration of independence of the Republic of Moldova (August 27, 1991) imposed the reformation and harmonization of the development of the national economy. In the Republic of Moldova, agriculture was and remains the strongest balancing factor in harmonizing the development of the national economy. Moreover, agriculture was and remains the backbone of the national economy, having a significant contribution to the formation of the country's gross domestic product.

The conception of the agrarian reform and the socio-economic development of the village, adopted by the decision of the Parliament of the Republic of Moldova on February 15, 1991, claims that "the main link of the agrarian reform is the reform of land relations". The main orientation of the reform of land relations was the de-monopolization of state ownership of land and ... the affirmation in practice of different types of ownership in agriculture".

As a result, "... the peasant household (farm type), based on real economic independence" appeared. The continuation of the agricultural reform of the Republic of Moldova was foreseen by 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" which was signed and initialed by the authorities of the Republic of Moldova in 2013. The need to intensify reforms in the national economy, including in agriculture, is imposed by the acceptance in 2022 of the Republic of Moldova as a candidate for the European Union.

It is natural to return to the human potential available for national agriculture, especially to the organization of university studies for the training of specialists in the fields of agriculture. The article reflects on the training system aimed at training and developing the knowledge, skills, professionalism and creativity of specialists for national agriculture. The authors come up with some proposals that would contribute to ensuring agriculture with specialists that would ensure increased results in this sector of the national economy.

Keywords: *agriculture, efficiency, specialists, professionalism, reformation, university*

JEL: *Q12, Q15, Q17*

UDC*: 378.663(478)*

Introducere. Schimbările în agricultura națională au fost inițiate de „Concepția reformei agrare și a dezvoltării social–economice a satului” (în continuare concepția), adoptată prin hotărârea Parlamentului Republicii Moldova din 15 februarie 1991. Se susține că „principala verigă a reformei agrare este reforma relațiilor funciare. Orientarea principală a reformei funciare este demonopolizarea proprietății de stat asupra pământului și ... afirmarea în practică a diferitelor tipuri de proprietate în agricultură”. În rezultat a apărut „ ... gospodăria țărănească (tip fermă), bazată pe o reală independență economică”.

Continuarea reformării agriculturii Republicii Moldova a fost prevăzută de „Acordul de Asociere între Republica Moldova, pe de o parte, și Uniunea Europeană și Comunitatea Europeană a Energiei Atomice și Statele Membre ale acestora, pe de altă parte”, care a fost semnat și parafat de autoritățile Republicii Moldova în 2013. Necesitatea intensificării reformelor în economia națională, inclusiv în agricultură, se impune prin acceptarea în anul 2022 a Republicii Moldova drept candidat pentru aderarea la Uniunea Europeană.

Nivelul dezvoltării agriculturii, inclusiv a gospodăriei țărănești, este dependent de resursele naturale și materiale care sunt puse în valoare de potențialul uman disponibil. Sigur, printre cei antrenați în sectorul agroalimentar cei mai importanți sunt specialiștii care trebuie să amplifice efortul de a căpăta generații noi de produse, de a elabora și aplica tehnologii adecvate de obținere a acestora, ceea ce ar exclude sau, cel puțin, ar limita riscurile și incertitudinea.

Situația respectivă, ne-a încurajat să revenim la studiul pregătirii specialiștilor pentru agricultura națională ce trebuie să ne îndrume corect în lunga călătorie spre „mai bine”.

Stadiul cunoaşterii problemei. Studiul sistemului de învățământ, inclusiv a celui pentru agricultura națională, se regăsește în cercetările naționale și internaționale. Însă, chiar dacă această problemă a fost abordată la sesiuni științifice, expusă în diverse publicații naționale și internaționale, ea rămâne a fi actuală.

Situația respectivă ne-a îndemnat să revenim la studiul pregătirii specialiștilor pentru agricultura țării noastre și a reformelor sistemului universitar. Investigațiile ne-au oferit posibilitatea să conturăm unele recomandări privind reformarea universitară în domeniul instruirii specialiștilor în agricultură din Republica Moldova.

Ma**terial şi metodă.** Din materialele utilizate în cercetare fac parte actele normative ale UE și R. Moldova, manuale, monografii și alte publicații specifice, care ne-au permis să identificăm factorii ce influențează reformarea sistemului universitar de pregătire a specialiștilor pentru agricultură.

Analiza cantitativă se realizează pe datele selectate și prelucrate de autori în baza anuarelor statistice ale Republicii Moldova și altor informații oficiale ale instituțiilor din țara noastră și din Uniunea Europeană. Studiul informației empirice, analiza legăturilor ne-a furnizat semnificații și explicații pertinente în raport cu fenomenele sau procesele reformării sistemului universitar de pregătire a specialiștilor pentru agricultură din Republica Moldova.

Rezulate şi discuţii.

Agricultura în economia națională

Agricultura, fiind în general cel mai puternic factor de echilibru în armonizarea dezvoltării economice a oricărei țări, constituie coloana vertebrală și a economiei

Republicii Moldova. Contribuția agriculturii la formarea Produsului Intern Brut (PIB) se reduce de la 29.3% în 1995 (tabelul 1) la 11.2% în 2010, dar este mai semnificativă decât aportul industriei la PIB-ul național, După anul 2010 până în 2020 ponderea agriculturii în PIB s-a mai redus cu 3.5 puncte procentuale și în 2021 a crescut la 10.4 la sută.

Ponderea industriei în PIB are aceeași tendință de a se micșora. Contribuția agriculturii la produsul intern brut național, practic, este puțin mai mare decât a industriei.

Tabelul 1. **Contribuția agriculturii la formarea produsului intern brut, %**

	1995	2000	2005	2010	2015	2020	2021
Produsul intern brut	100	100	100	100	100	100	100
inclusiv: - agricultura,	29.3	25.4	16.4	11.2	11.5	8.7	10.4
- industrie	22.0	14.0	13.0	10.0	12.0	10.0	9.0
- construcții, servicii și altele	48.7	60.6	70.6	78.8	76.5	81.3	80.6

Sursa: elaborat de autori în baza informației de pe http://data.worldbank.org/indicator, accesat 23 august 2022

Dacă contribuția agriculturii la formarea PIB-ului în Republica Moldova în anii 1995-2021 s-a micșorat cu 18.9 puncte procentuale (tabelul 2), în România se reduce continuu de la 18.2% în 1995 la 4.3% în anul 2021 sau cu 18.38 puncte procentuale. În Ucraina, o altă țară vecină, contribuția variază cu o ușoară tendință spre micșorare de la 13.8% în 1995 la 10.6% în 2021.

Tabelul 2. **Contribuția agriculturii, silviculturii și pescuitului la formarea produsului intern brut, %**

	1995	2000	2005	2010	2015	2020	2021
Estonia	4.1	3.9	3.3	3.2	2.9	2.2	2.1
Letonia	7.8	4.5	3.7	4.1	3.5	4.0	4.0
Lituania	9.9	5.6	4.3	3.0	.4	3.2	3.3
România	18.2	10.9	8.5	5.0	4.2	4.0	4.3
R. Moldova	29.3	25.4	16.4	11.2	11.5	8.7	10.4
Ucraina	13.8	14.0	8.9	7.4	12.1	9.3	10.6
R. Federația Rusă	6.7	5.8	4.3	3.3	3.9	4.0	3.8

Sursa: elaborat de autori în baza informației de pe http://data.worldbank.org/indicator, accesat 24 august 2022

Contribuția agriculturii naționale la formarea PIB-lui din țara noastră în 1996 a fost de 1.6 ori mai mare decât în România și de circa 2.1 ori mai mare decât în Ucraina, în 2021 era de 2.4 ori mai mare decât în România și echivalentă cu cea din Ucraina. Deci, agriculturii îi revine un rol extrem de important în economia Republicii Moldova.

Agriculturii Republicii Moldova încă îi mai revine un rol extrem de important în comerțul internațional, chiar dacă ponderea exportului produselor agroalimentare și silvice se reduce de la 78.5% în 2005 (tabelul 3) la 57.7% în anul 2020. S-a majorat și

ponderea importului produselor agroalimentare și silvice în totalul producției importate de la 12.2% în 2005 la 15.6 la sută în 2020.

Tabelul 3. **Comerțul internațional**

	2005	**2010**	**2015**	**2020**
Export total, miliarde $	1090.9	1541.5	1966.8	2467.1
inclusiv: produse agroalimentare și silvice	856.6	762.6	947.5	1424.2
%% din total	78.5	49.5	48.2	57.7
Import total, miliarde $	2292.3	3855.3	3986.8	5416.0
inclusiv: produse agroalimentare și silvice	279.6	591.5	586.6	846.1
%% din total	12.2	15.3	14.7	15.6
Balanța comercială, total, miliarde $	-1201.4	-2313.8	2020.0	-2448.9
inclusiv: produse agroalimentare și silvice	__+856.6_	+171.1	+161.5	+578.1
Gradul de acoperire a importului cu exportul, %	47.6	40.0	49.3	45.6
inclusiv: produse agroalimentare și silvice	306.4	128.9	161.5	168.3

Sursa: calculele autorilor în baza informației selectate din Anuarului Statistic al Republicii Moldova, ediția 2021

Semnificativ este că Republica Moldova exportă mai multe produse agroalimentare și silvice decât importă. Mai mult, gradul de acoperire a importului cu exportul crește de la 128.9% în 2010 la 168.3% în anul 2020. Cu regret, exportul total al Republicii Moldova acoperea doar 40% în 2010 și 45.6 la sută în anul 2020 din importul total.

Demonopolizarea proprietății de stat asupra pământului efectuată conform „Concepției reformei agrare și a dezvoltării social–economice a satului", adoptată prin hotărârea Parlamentului Republicii Moldova din 15 februarie 1991, a contribuit esențial la evoluția structurii deținătorilor terenurilor agricole. Suprafața terenurilor agricole deținute de exploatațiile agricole de stat, societățile pe acțiuni, gospodăriile colective a crescut de la 841.2 mii ha (37.26% din total) în 2005 (tabelul 4) la 925.7 mii ha (41.6% din total) în anul 2021.

*Tabelul 4***. Terenurile agricole după categoriile deținătorilor, la începutul anului, mii ha**

Indicii	2005	2010	2015	2020	2021
Total	2257.4	2236.9	2235.4	2227.9	2225.7
din care: întreprinderi și organizații	841.2	871.3	884.0	912.8	925.1
gospodării țărănești (de fermier)	692.9	661.4	645.0	601.8	588.4
- inclusiv cu suprafața medie a terenurilor mai mică de 10 ha	601.9	565.6	508.4	421.8	397.4
gospodării anexe auxiliare (loturi pe lângă casă și grădini)	299.1	313.6	323.0	335.8	334.3
Alți deținători de teren	424.2	390.6	383.4	380.5	377.9

Sursa: calculele autorilor după Rezultatele cercetării statistice privind activitatea agricolă a micilor producători agricoli în Republica Moldova, Ed. Statistica Chișinău

De menționat că creșterea suprafeței terenurilor agricole deținute de exploatațiile agricole de stat, societățile pe acțiuni, gospodăriile colective s-a produs din contul gospodăriilor țărănești suprafața totală a cărora s-a micșorat de la 692.9 mii ha (30.69% din total) în 2005 la 588.4 mii ha (26.4% din suprafața totală) în anul 2021.

În 2005 suprafața terenurilor agricole deținute de gospodăriile țărănești cu suprafața medie a terenurilor mai mică de 10 ha era de 601.9 mii ha (86.87% din suprafața totală a gospodăriilor țărănești) și chiar dacă s-a redus până la 397.4 mii ha (67.5% din suprafața totală a gospodăriilor țărănești) în 2021 astfel de gospodării țărănești rămân suficient de importante pentru agricultura Republicii Moldova.

Situația în agricultură și în gospodăriile țărănești, inclusiv în cele cu suprafața medie a terenurilor mai mică de 10 ha, incontestabil, este dependentă de resursele naturale și materiale, care sunt puse în valoare de potențialul uman disponibil.

Potențialul uman în agricultura națională

Totalul populației s-a micșorat de la 3604 mii în 1995 (tabelul 5) la 3582 mii în anul 2010 sau cu 22 mii persoane. Mai pronunțat s-a redus numărul mediu anual al populației cu reședință obișnuită la 1 ianuarie de la 2835 mii în 2015 la 2620 mii în 2020 sau cu 215 mii. Numărul populației ocupate în economia națională are tendința clară de a se micșora de la 1673 mii în 1995 la 834 mii în anul 2022 sau de două ori. Ponderea celor ocupați în totalul populației Republicii Moldova s-a redus de la 41.6% în 1995 la 32% în 2020 sau cu 9.6 puncte procentuale.

Categoric de la 711 mii persoane în 1995 la 176 mii persoane în 2020 sau de circa 4 ori s-a micșorat numărul celor ocupați în agricultură, silvicultură și pescuit în Republica Moldova, alcătuind în 2020 doar a cincea parte din cei ocupați în economia națională.

Tabelul 5. **Populația ocupată în agricultura Republicii Moldova, mii persoane**

	1995*	**2000***	**2005***	**2010***	**2015****	**2020****
Populație, total	3604	3639	3595	3582	2835	2620
Inclusiv, populația ocupată în economie	1673	1515	1319	1143	989	834
% din total	41.6	41.6	36.6	32.1	35	32
din care ocupată în agricultură, silvicultură și pescuit	711	765	537	315	338	176
% din totalul celor ocupați în economie	42.8	50.5	40.7	27.5	34.2	21.1

* informația selectată de autori din Anuarul Statistic al Republicii Moldova al anilor 2002 și 2011

**numărul mediu anual al populației cu reședință obișnuită la 1 ianuarie selectată din Anuarul Statistic al Republicii Moldova al anului 2021

Totalul populației ocupate s-a micșorat de la 1204 mii persoane în anul 2015 (tabelul 6) la 834.2 mii în 2020 sau cu circa 30%. Numărul celor ocupați în agricultură în aceeași ani s-a redus cu 51 la sută. Dacă în totalul populației ocupate domină cei cu vârsta 25-34 ani atât în 2015 cât și în 2020 apoi printre cei ocupați în agricultură domină cei cu vârsta 45-54 ani.

Tabelul 6. **Repartizarea populației ocupate în agricultura Republicii Moldova după vârstă, mii persoane**

	Total		Inclusiv											
			15-24		25-34		35-44		45-54		55-64		65 și peste	
	2015	2020	2015	2020	2015	2020	2015	2020	2015	2020	2015	2020	2015	2020
Populația ocupată	1204	834.2	93.6	45.6	300	292.1	293	213.7	290	191.6	190	156.2	37	24.9
din care: -în agricultură	358.4	175.0	30.9	8.0	62.7	31.2	81.6	30.4	87.4	45.0	71.8	44.1	23.9	7.3
%	29.7	20.7	33.0	17.5	20.9	10.7	27.8	14.2	30.1	23.5	37.8	28.2	64.6	29.3

Sursa: Calculele autorilor în baza informației selectate de pe http/www.statistica.md

Atenționăm că în anul 2020 ponderea celor ocupați în agricultură în totalul populației ocupate alcătuia 23.5% și chiar dacă numărul celor cu vârsta 55-64 este puțim mai mică. ponderea lor în totalul celor ocupați este mai mare cu 4.7 puncte procentuale. Cea mai mare este ponderea celor ocupați în agricultură în totalul celor ocupați cu vârsta 65 ani și peste.

În anii 2015-2020 cel mai pronunțat, cu 25.4%, s-a redus populația ocupată cu vârsta 15-
24 ani. Numărul celor cu vârsta 15-24 ani ocupați în agricultură s-a micșorat de la 30.9 mii persoane în 2015 la 8 mii persoane în anul 2020 sau cu circa 75 la sută. Informația prezentată în tabelul 5 demonstrează convingător că populația ocupată în agricultură are tendința de îmbătrânire.

În totalul populației ocupate în economia națională domină salariații, ponderea cărora calculată pe baza informației din tabelul 7 are tendința de creștere de la 63% în 2005 la 65% în 2015 și la 78% în 2020. Ponderea salariaților ocupați în agricultură s-a micșorat de la 24.9% în 2005 la 15.3% în 2015 și s-a majorat până la 36.6% în anul 2020.

Tabelul 7. **Populația ocupată după natura locului de muncă, mii persoane**

	Total			din care în agricultură		
	2005	2015	2020	2005	2015	2020
Total	1318.7	1203.6	834.2	512.5	358.4	175.9
Salariați	830.6	787.6	651.8	127.6	54.8	64.4
Lucrători pe cont propriu	464.7	362.8	134.4	372.0	258.6	75.4
Lucrători familiali neremunerați	14.6	45.9	35.9	12.8	44.6	35.6
Patroni	8.7	7.2	12.1	1.69	2.88	0.5

Sursa: Calculele autorilor în baza informației selectate de pe http/www.statistica.md

Ponderea lucrătorilor pe cont propriu în totalul populației ocupate s-a redus de la 35.2% în 2005 la 30.1% în 2015 și la 16.1% în 2020. Ponderea lucrătorilor pe cont

propriu în agricultură în totalul celor pe cont propriu ocupați în economia națională se micșorează de la 80.1% în 2005 la 71.3% în 2015 și la 56.1% în 2020. Practic toți lucrătorii familiali neremunerați sunt din agricultură.

Agricultura, în mod special cea în care mai mult de jumătate dintre cei ce o practică activează pe cont propriu, cere oameni productivi și eficienți care trebuie să obțină generații noi de produse, să elaboreze și să aplice tehnologii adecvate, să organizeze afacerile în agricultură ce ar exclude sau, cel puțin, ar limita riscurile și incertitudinea în acest segment important al economiei naționale. Calitățile enumerate se obțin prin educație. A-i face pe oameni productivi prin educație,- susține Peter Drucker [4,76],- este „prima dintre provocările epocii noastre".

Populația cu studii superioare ocupată în economia națională este în creștere de la 223.8 mii persoane (17% din totalul populației ocupate) în 2005 (tabelul 8) la 294 mii persoane (24.4% din totalul populației ocupate) în 2015 și se micșorează numeric până la 236.1 mii persoane dar crește ponderea în totalul populației ocupate până la 28.3% în 2020 sau cu 11.3 puncte procentuale mai mult decât în anul 2005.

Tabelul 8. **Populația ocupată după nivelul de instruire, mii persoane**

	anul	Total	inclusiv cu studii					
			superioare	medii speciale	secundare profesionale	liceale	gimnaziale	primare, fără studii
Populația ocupată, total	2005	1318.7	223.8	194.3	331.2	294.9	235.0	39.5
	2010	1143.4	262.8	180.2	277.2	236.8	178.1	8.3
	2015	1203.6	294.0	170.6	268.1	239.1	224.8	7.0
	2020	834.2	236.1	119.1	188.5	146.5	142.0	2.0
inclusiv în agricultură	2005	512.5	11.5	29.4	119.2	154.7	161.7	36.1
	2010	295.9	9.1	22.0	81.6	80.8	95.8	6.5
	2015	358.4	12.7	29.4	87.3	90.6	132.6	5.8
	2020	175.9	9.5	16.2	42.4	45.6	61.2	1.0

Sursa: Calculele autorilor în baza informației selectate de pe http/www.statistica.md

Numărul persoanelor cu studii superioare în agricultură se micșorează de la 11.5 mii (2.2% din totalul populației ocupate în agricultură) în 2005 la 9.1 mii (3.1% din totalul populației ocupate în agricultură) în 2010, apoi crește până la 12.7 mii (3.5% din totalul populației ocupate în agricultură) în 2015 și din nou se reduce la 9.5 mii (5.4% din totalul populației ocupate în agricultură) în 2020.

Numărul persoanelor cu studii medii speciale ocupate în economia națională se reduce de la 194.3 mii (14.7% din total) în 2005 la 119.1 mii (14.3% din total) în anul 2020. Numărul persoanelor cu studii medii speciale ocupate în agricultura națională s-a micșorat de la 29.4 mii (5.7% în 2005 și 8.2% în 2015 din totalul celor ocupați în agricultură) la 16.2 mii (9.2% din totalul celor ocupați în agricultură) în anul 2020. Dacă în 2005 aproape toți cei cu studii primare și fără studii erau ocupați în agricultură apoi în 2020 – doar jumătate.

Specialiștii cu studii superioare pentru agricultura națională se formau în unica instituție universitară specializată din Republica Moldova - Universitatea de Stat din Moldova (UASM), Universitatea de Stat din Moldova era cea mai veche instituție de învățământ superior în Republica Moldova. La 9 aprilie 1933 Regele României Carol al II-lea a promulgat Legea despre transformarea a Secției de Științe Agricole a

Universității din Iași în Facultatea de Științe Agricole cu sediul la Chișinău. În august 1940 prin Hotărârea Sovietului Comisarilor Norodnici al URSS și CC al PC(b)U în baza Facultății de Agronomie s-a organizat Institutul Agricol din Chișinău cu trei facultăți: Viticultură, Fitotehnie și Zootehnie.

În anul 1944, practic încă în timpul celui de al doilea război mondial, institutul și-a reluat activitatea cu 4 facultăți: Agronomie, Viticultură și enologie, Pomicultură și legumicultură și Zootehnie. În noiembrie 1991 Institutul Agricol „M. V. Frunze din Chișinău prin Hotărârea Guvernului Republicii Moldova este trecut din Jurisdicția URSS în jurisdicția Republicii Moldova și reorganizat în Universitatea Agrară de Stat din Moldova. Universitatea Agrară de Stat din Moldova avea acreditare națională, era parte a Asociației Universităților Europene, a Asociației Universităților Francofone, întreținea relații de colaborare cu 83 de universități și instituții de cercetare din Europa, Asia și America de Nord. În cadrul universității funcționează 16 laboratoare de cercetare științifică, inclusiv unul acreditat de Centrul Național de Acreditare din Republica Moldova.

În cele aproape nouă decenii UASM a format peste 55 mii specialiști pentru agricultura națională și peste 1000 specialiști pentru 67 de țări, care s-au afirmat prin rezultate remarcabile în agricultură. Concomitent cu formarea specialiștilor, UASM atât cadrele didactice, cât și absolvenții s-au afirmat în cercetările științifice de mare importanță atât în țară, cât și peste hotare prin elaborarea soiurilor și hibrizilor noi de plante, prin combinații genetice pentru crearea noilor specii de păsări și animale, prin dezvoltarea tehnologiilor în cultivarea plantelor și creșterea animalelor. Când unul din autorii prezentului studiu a vizitat firma Pioner în SUA a fost surprins de întrebarea dacă-l cunoaște pe academicianul Vasile Micu care încă la anul II al facultății de agronomie a început să se ocupe de selecția porumbului. Se cere a fi menționat că unii absolvenți ai USAM au urcat pe cele mai înalte trepte administrative și politice.

În semn de înaltă apreciere a meritelor în dezvoltarea învățământului universitar, contribuție la pregătirea specialiștilor și activitate metodico-științifică prin Decretul nr. 820-VII din 4 octombrie 2013 Universității Agrare de Stat din Moldova i s-a conferit cea mai înaltă distincție de stat „Ordinul Republicii”.

Personalul cu studii medii speciale pentru agricultura Republicii Moldova se formează în Colegiul Agricol din Ţaul, raionul Dondușeni, Colegiul Național de Viticultură și Vinificație din Stăuceni, municipiul Chișinău, Colegiul Agroindustrial din Grinăuți raionul Ocnița, Colegiul de Zootehnie și Medicină Veterinară din Brătușeni raionul Edineți, Colegiul agroindustrial din orașul Râșcani, Colegiul Tehnic Agricol din orașul Soroca, Colegiul Tehnic Agricol din Svetlîi raionul Comrat, Colegiul Agroindustrial din orașul Ungheni

Pe parcursul anilor s-au produs schimbări importante în structura și conținutul atât a studiilor medii speciale pentru agricultură, cât și în învățământul superior având ca obiectiv satisfacerea cerințelor agriculturii. În 27 iunie 2022 Ministrul Educației și Cercetării (MEC) Anatolie Topală a anunțat intenția de a moderniza învățământul superior și cercetarea științifică care, între altele, presupunea comasarea Universității Agrare de Stat din Moldova cu Universitatea Tehnică.

Acest anunț a provocat multiple proteste. Sigur, a protestat corpul didactic al UASM care a rămas surprins că decizia n-a fost consultată cu mediul academic al universității, A contestat această intenție Societatea de Horticultură din Republicii

Moldova printr-o adresare către Președintele Republicii Moldova, Doamna Maia Sandu, Președintelui Parlamentului Republicii Moldova, Domnul Igor Grosu, Prim-ministrului Republicii Moldova , Doamna Natalia Gavriliță. Și-au exprimat dezacordul multe personalități cunoscătoare a agriculturii din țară cum ar fi, spre exemplu, doctorul habilitat, profesorul și fost ministru al agriculturii Vasile Bumacov. Anunțul respectiv a fost criticat dur de producătorii din sectorul agroalimentar.

Să ne fie iertată lipsa de modestie, și noi am adresat o scrisoare către Maia Sandu, Președintele Republicii Moldova, Igor Grosu, Președintele Parlamentului Republicii Moldova, Anatolie Topală, Ministrul Educației și Cercetării al Republicii Moldova cu privire la reforma din învățământul superior, prin comasarea mai multor universități și centre de cercetare, pus vineri, 1 iulie 2022, în dezbaterea publică, potrivit căruia „Universitatea Tehnică va absorbi Universitatea Agrară...” la care n-am primit răspunsul solicitat. Practic toți își exprimau indignarea și îngrijorarea că atât exploatațiile agricole cât și știința agroalimentară va rămâne fără specialiști și riscă să ajungă la periferie.

În pofida protestelor la 13.07.2022 Guvernul Republicii Moldova a adoptat Hotărârea nr. 485 „Cu privire la reorganizarea prin fuziune (absorbție) a unor instituții din domeniul educației, cercetării și inovării și modificarea unor hotărâri ale guvernului”, publicată în Monitorul Oficial Nr. 208-216 din 15.07.2022. Potrivit punctului 2 din această hotărâre „Instituția Publică Universitatea Tehnică a Moldovei (persoană juridică absorbantă) se reorganizează prin fuziunea (absorbția) următoarelor instituții publice (persoane juridice absorbite):

Instituția Publică Universitatea Agrară de Stat din Moldova;

Hotărârea a fost semnată de Prim-ministru Natalia Gavrilița și contrasemnată de Ministrul educației și cercetării Anatolie Topală, Ministrul agriculturii Vladimir Bolea, Ministrul culturii Sergiu Prodan, Ministrul finanțelor Dumitru Budianschi și Ministrul afacerilor interne Ana Revenco. Din curiozitate am consultat sursele disponibile ce studii are Ministrul agriculturii Vladimir Bolea. Am aflat că „a învățat la Școala Superioară Militar-Politică de Apărare Antiaeriană din Leningrad, Federația Rusă (Ленинградское высшее военно-политическое училище противовоздушной обороны) și la Universitatea de Stat din Moldova inițial la Facultatea de Istorie, apoi la cea de Drept, iar ulterior a făcut și masteratul în drept economic.

În materialul „Lichidăm risipa banilor”, publicat de europalibera.org, , Topală susține, dar nu argumentează, că, după reformă, universitățile:

- „vor fi mult mai mari;
- vor asigura o calitate mult mai bună a studiilor;
- programele de studii vor fi mult mai apropiate de cerințele pieței muncii;
- echipele din cadrul universităților vor fi mai mari;
- universitățile (...) vor fi mai bine poziționate în clasamentele internaționale;
- mai multe fonduri vor fi redirecționate spre cercetare și educație;

și va fi integrată cercetarea în universități.

Un comunicat oficial de pe site-ul MEC menționează că argumentele principale pentru această reformă constau în faptul că „la ora actuală, avem prea puțini studenți și prea multe universități” și că există o „influență slabă a cercetării asupra procesului de instruire”. Adresăm întrebările pentru MEC după „reorganizează prin fuziunea (absorbția) UASM de Universitatea tehnică vor fi mai mulți studenți la

specialitățile agroalimentare ?, constatând că după lichidarea Universității Agrare, se atestă un interes scăzut al tinerilor pentru specializările agrare deschise la Universitatea Tehnică a Moldovei (UTM).

La 8 august rectorul UTM, Viorel Bostan, a anunțat rezultatele primei etape de admitere potrivit cărora la cele trei facultăți noi - Medicină Veterinară, Horticultură și Agronomie - au fost înscriși la programele de studii finanțate de la bugetul de stat circa 100 de tineri. La specializările agrare, instituția mai are disponibile 70 de locuri la buget, dintre care 50 sunt la Medicină Veterinară și 20 – la științe agronomice.

De menționat că potrivit ordinilor din august 2020 emise în baza hotărârilor comisiei de admitere la anul întâi la facultatea de agronomie au fost înmatriculați 59 studenți, la facultatea de horticultură 31 studenți și la facultatea de medicină veterinară 39 studenți.

O altă întrebare pentru MEC „cum va influența cercetarea din Universitatea tehnică asupra procesului de instruire a viitorilor agronomi, medici veterinari ?" Domnul Viorel Bostan, rectorul UTM într-un interviu a menționat „Toți studenții care, în prezent, își fac studiile la Universitatea Agrară (UASM) sunt studenții Universității Tehnice (UTM). Specialitățile din cadrul universităților care au fuzionat fie se contrapun, iar studenții urmează să însușească un singur program de studii, fie continuă să existe ca specialități aparte în cadrul unor noi facultăți create".

Generalizând, considerăm că tot sistemul de învățământ din Republica Moldova de la cel preșcolar și până la cel postdoctoral necesită a fi reformat. Actuala situație din complexul agroalimentar al economiei naționale a Republicii Moldova impune necesitatea de a ajusta formarea specialiștilor în Universitatea Agricolă de Stat din Moldova prin reformarea profundă a acestea și nu „reorganizare prin fuziune (absorbție)".

3.3. *Sugestii cu privire la reformarea învățământului universitar agricol național*

În speranța că încă nu-i târziu să se revină la reformarea învățământului universitar agricol din Republica Moldova, venim cu unele sugestii pentru cei responsabili de acest proces.

Mai întâi pentru a organiza fuziunea universităților și a instituțiilor de cercetare, considerăm că era imperios necesar a se studia practica țărilor europene care au trecut prin astfel de procese. Spre exemplu, conform Fundației Friedrich-Ebert-Stiftung (FES), „drept urmare a necesității de reformare a sistemului de învățământ superior, în ianuarie 2006, ministrul învățământului superior din Danemarca a expediat scrisori către 11 universități și 15 instituții/centre de cercetare solicitându-le să examineze posibilitatea fuziunilor. Consiliile rectorilor, precum și reprezentanții academici și tehnici ai universităților au luat parte la procesul de discuții/raționalizare. Procesul de negociere și raționalizare a avut loc fără negociatori externi. Universităților li s-a acordat 12 luni pentru a fuziona. După această perioadă, Ministrul urma să intervină pentru a finaliza procesul în locul universităților/instituțiilor de cercetare. Acest lucru nu s-a întâmplat, deoarece procesul de fuziune a fost finalizat la timp și în mod voluntar.

Dacă s-ar aplica o astfel de practică reformarea învățământului universitar agricol din Republica Moldova ar fi mai aproape de cerințele complexului

agroalimentar al economiei naționale. Noi considerăm necesar ca în Republica Moldova, țară agrară, Universitatea Agrară de Stat din Moldova să-și păstreze statutul de instituție publică.

Incontestabil, în actuala situație din agricultura Republicii Moldova se cere a fi reformat sistemul de învățământ agricol universitar. Celor antrenați în reformarea învățământului universitar agricol le recomandăm să țină cont de următoarele particularități ale agriculturii care esențial o deosebesc de celelalte ramuri ale economiei naționale:

- între momentul aplicării efortului pentru a obține produsul agricol și obținerea acestuia, de regulă, este o distanță de timp considerabilă și agronomul trebuie să cunoască comportarea plantelor, altfel zis fiziologia plantelor și medicii-veterinari fiziologia animalelor;
- marea majoritate a produselor agricole se obțin pe terenurile agricole sub cerul liber și orice agronom trebuie să cunoască pedologia, organizarea terenurilor agricole și cerințele plantelor față de solul pe care ar urma să fie cultivate;
- pentru obținerea oricărui produs alimentar natural există un număr impunător de soiuri a plantelor, specii de păsări și animale, ce impune necesitatea cunoștințelor în selecția și genetica plantelor sau animalelor;
- în condițiile dezvoltării mașinilor și mecanismelor agricole, automatizării proceselor în agricultură specialiștii trebuie să cunoască exploatația acestora pentru a selecta și le folosi pe cele mai eficiente;
- apariția numeroaselor gospodării țărănești (de fermier) care activează pe cont propriu în condițiile dictate de economia concurențială se cere ca fermierii să cunoască managementul afacerilor în agricultură,

Conform DEX-ului reforma este „transformarea politică, economică, socială, culturală, cu caracter limitat sau de structură, a unei stări de lucruri, pentru a obține o ameliorare sau un progres ...”. Pornind de la tălmăcirea DEX-ului a termenului „reforma” și susținând intenția Ministerului de Educație și Cercetare de a „consolida sistemul universitar și de cercetare prin concentrarea resurselor, atât umane cât și financiare, să apropie cercetarea științifică de studenți prin integrarea instituțiilor de cercetare în structura universităților” propunem următoarea structură pentru Universitatea Agrară de Stat din Moldova:

- Departamentul de Agronomie, care ar include actuala facultate de agronomie cu catedrele necesare pentru formarea agronomilor; Institutul de Pedologie, Agrochimie și Protecția Solului „Nicolae Dimo” din Chișinău; Institutul de Cercetări pentru Culturile de Câmp „Selecția” din

Bălți: Institutul de Fitotehnie „Porumbeni” din comuna Pașcani raionul Criuleni; segmentul de Genetică și Fiziologia Plantelor din Institutul de Genetică, Fiziologie și Protecția Plantelor al Academiei de Științe a Republicii Moldova.

- Departamentul de Horticultură și Protecția Plantelor, care ar include actuala facultate de horticultură cu catedrele necesare pentru formarea viticultorilor, pomicultorilor, silvicultorilor și specialiștilor în domeniul grădinilor publice; segmentul de Horticultură din Institutul Științifico-Practic de Horticultură și Tehnologii Alimentare din orășelul Codru, municipiul Chișinău; segmentul Protecția Plantelor din Institutul de Genetică, Fiziologie și Protecția Plantelor al Academiei de

Științe a Republicii Moldova; Grădina Botanică Națională (institut) „Alexandru Ciubotaru” din Chișinău; gospodăria didactică „Chetrosu” din raionul Anenii Noi.
- Departamentul de Medicină Veterinară cu catedrele necesare pentru formarea medicilor veterinari; Institutul Științifico-Practic de Biotehnologii în Zootehnie și Medicină Veterinară.
- Departamentul de prelucrare și păstrare a produselor agricole prin transferul facultății „Tehnologia Alimentară” de la Universitatea Tehnică a Moldovei; Sectorul Tehnologii Alimentare din Institutul Științifico-Practic de Horticultură și Tehnologii Alimentare.
- Departamentul Inginerie Agrară în baza facultății Inginerie Agrară și Transport Auto cu catedrele necesare pentru formarea specialiștilor pentru formarea sistemelor de mecanizare și automatizare a proceselor în agricultura Republicii Moldova;

Departamentul Administrarea Afacerilor Agroalimentare în baza facultății de economie cu restructurarea catedrelor și orientarea lor spre instruirea fermierilor în Administrarea Afacerilor; secția economia agrară din Institutul Național de Cercetări Economice din Moldova.

Integrarea instituțiilor de cercetare științifică în structura universității va permite studenților să cunoască culturile și/sau speciile studiate pe viu nu pe desene sau machete și deprinderi practice în efectuarea procesului tehnologic pentru obținerea produselor agricole.

Transformarea structurii Universității Agrare de Stat din Moldova se cere a fi însoțită de ajustarea structurii catedrelor pentru fiecare departament și conținutului cursurilor pentru fiecare catedră. Pentru aceste schimbări extrem de complicate propunem să se formeze un grup de experți dintre profesorii universității cu experiență, colaboratori ai instituțiilor de cercetare instituțiile publice și, principalul, dintre fermieri, agricultori care activează în domeniul respectiv.

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MILK AND MEAT MARKET BETWEEN 2015-2020 - A SWOT ANALYSIS

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Summary

Market information is an important tool to respond to changes in the economic environment and to identify potential domestic and export market opportunities, helping producers, traders and processors to know market requirements and consumer preferences. The SWOT analysis used in the paper as a research method is based on the results of a series of technical-economic analysis, statistics and market information, which led to highlighting the strengths, weaknesses, opportunities and risks of the cow's milk market and of beef, sheep, pork and poultry market from Romania. Thus, the Romanian agri-food sector was characterized by a low integration of participants in the agri-food supply chains. The Romanian animal products market is dominated by imported products, at lower sales prices, which makes that the products of Romanian farmers do no longer find their place in the stores, as higher domestic costs lead to higher prices, discouraging autochthonous producer. But the recovery of trust in Romanian products has already taken place by consumer. There is now a need to regain trust between producers, to create production, distribution and marketing chains, to create markets that will also receive quality products from Romanian farmers.

Keywords: *market, SWOT analysis, milk, meat, import, export*
JEL: *Q02, Q11, Q13, Q17*
UDC: *338.439.5: [637.1+637.5]*

Introduction.

Literature review. Increasing population and income levels are a challenge for the dynamics of dairy and meat markets (Delgado, C., 2005). These developments indicate a need to increase production, optimize the use of food resources, and adapting of market levels (Saadullah, M., 2002). The supply of markets with high-quality milk and meat products must be a constant concern of the economic agents involved in this field (Ilie, D. M., Marin A., Turek-Rahoveanu P., Voicilă D.N., 2021).

Market strategies must take into account the potential market of the product in question, the amount of agri-food products that can be absorbed in the market under the existing economic-financial and socio-political conditions (purchasing power, prices, regulations and restrictions). The penetration of the product on an existing

market must rely on the sales opportunities, especially when that market is insufficiently saturated and the products are in the growth phase. The sale of the product in new markets must take into account the identification of new consumers who can use the product (Constantin M., 2007).

The organization of the dairy and meat supply chains is based on a legislative and institutional framework, according to which it can adapt to new situations and ensure regulations designed to maintain market balance, avoid crises, facilitate trade liberalization in conditions of increasing competitiveness and efficiency (Zahiu, L., 2005).

In the case of milk and meat supply, there are a multitude of influencing factors, among which can be mentioned: the number of milk / meat producing animals, per capita yield (which, in turn, depends on biological potential, production system, technology used), the workforce involved in the production sector concerned, the means of financing and credit facilities, the access and market stability of milk / meat producers, climatic factors that may influence feed production, milk / meat price offered on the market, the price of resources used in the production process, etc. (Alexandri, C., 2006).

Romanian milk and meat producers have to face the competition that manifests both at national and European level, in order to adapt to market fluctuations. Thus, the level of their professional training, technical equipment, applied technologies and farm management are the premises of ensuring economic efficiency and competitiveness on market (Popescu, A., 2017).

Research methodology. The SWOT analysis used as a research method in this study aims to assess the performance, competition, risks and potential of the Romanian milk and meat markets, over a period of time under the impact of a multitude of economic and social challenges, and we can mention here the African swine fever and the COVID-19 pandemic.

This type of analysis is the basis for assessing the potential of the milk and meat market, internal limitations, opportunities and probable / possible threats from the external environment. It visualizes the positive and negative factors in the market and highlights its trends, which can underpin the decision-making process.

Main results.

SWOT analysis of the cow's milk market

Strengths

- Romanian consumers have again started looking for and buying domestic products, to the detriment of those imported from abroad. There is an increase in consumer confidence in Romanian products, given the unfavorable experiences over the years on the questionable quality of some imported dairy products. The development of online sales networks of dairy products, directly from the producer, also contributed to this trend, the information on the origin and processing of the products being presented in a convincing way and then verified by consuming the products delivered to consumers. Thus, even through these short chains of delivery, it was possible to rebuild trust in local products.

- Potential for certification of geographical indication of products. There is already a wide range of dairy products for which the certification of geographical indication can be an advantage for increasing market competitiveness and attracting new customers, both domestically and internationally.
- The supply of cow's milk on the market increased by 9.5% in 2020 compared to 2015. This can be seen as a strong point, but the growth was based not on the increase in domestic production, but on doubling of imports (*Figure 1*).

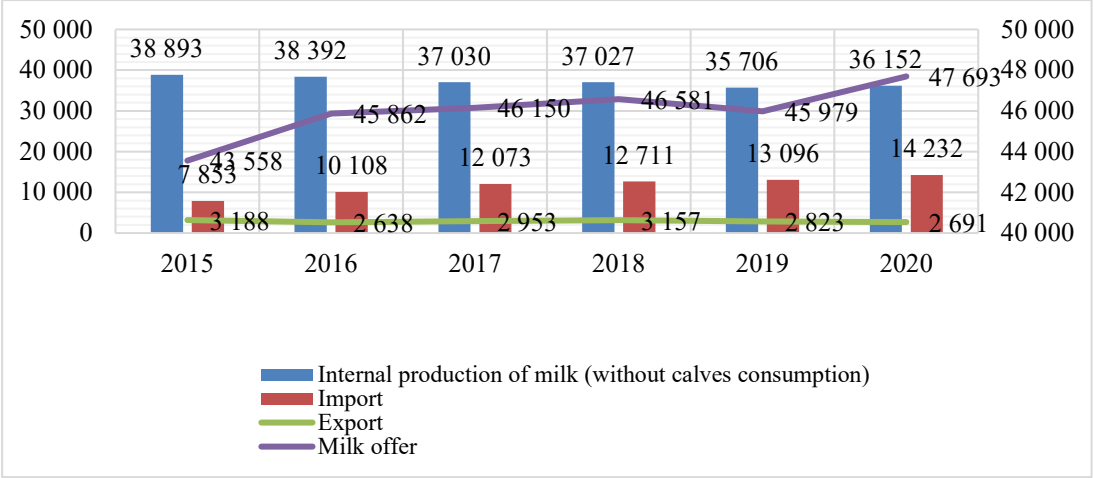

Figure 1. **Milk offer** (thousand hectoliters)
Source: NIS; MARD - operative data; own calculations

- Tendency to increase the share of commercial farms, which sell their production on the market. This trend is being constant for a number of years, with a decrease in the number of individual households producing for self-consumption and a simultaneous increase in the number of large farms selling their products on the market (*Figure 2)*.

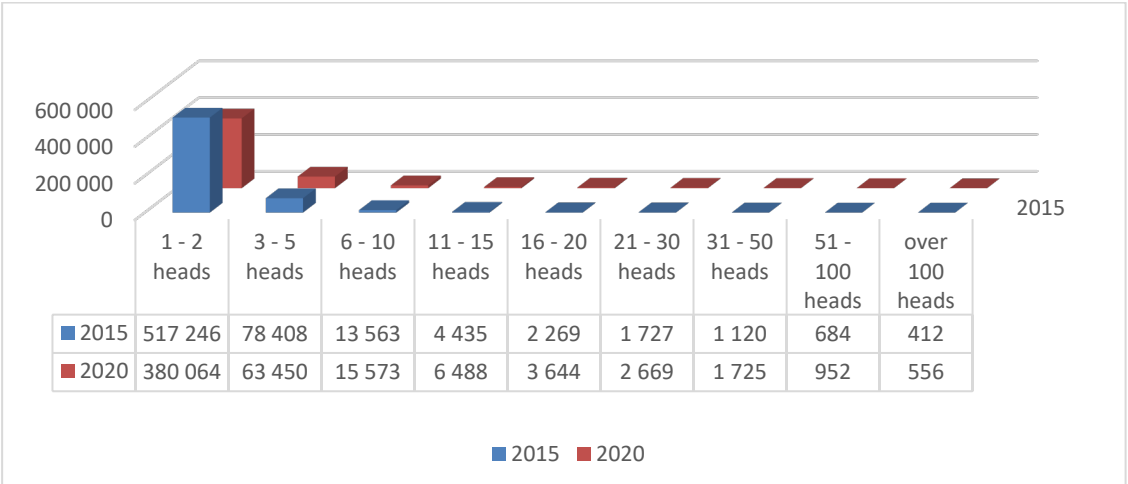

Figure 2. **Number of farms, on categories of size**
Source: MARD - operative data

Weaknesses

❖ During 2015-2020, the evolution of cattle herds shows a constant decreasing trend, from 2,092 thousand heads to 1,875 thousand heads (-10.4%); also, the number of cows, buffaloes and heifers decreased from 1,311 thousand heads to 1,231 thousand heads (-6.1%); these evolutions are due to the decrease in number of animals in households, which, from a statistical point of view, were included in the category of holdings of 1-2 heads (*Figure 3*).

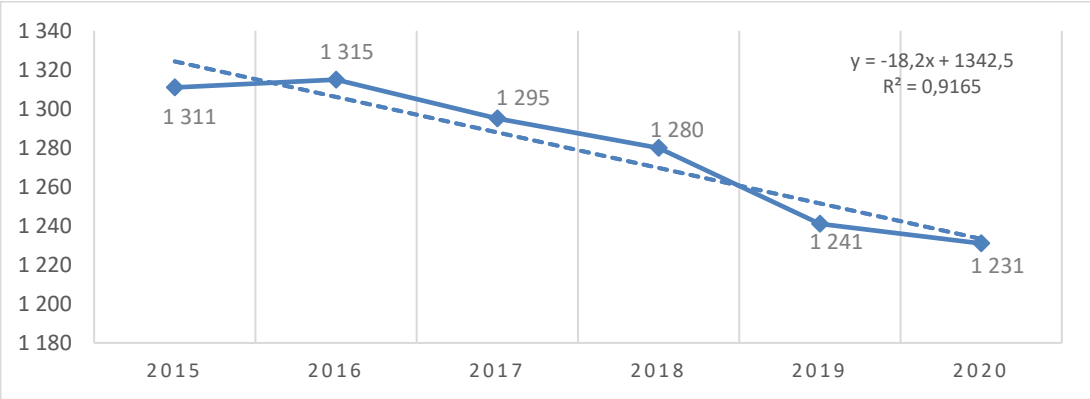

Figure 3. **Cows, buffaloes and heifers (thousand heads)**
Source: NIS

❖ In paralel, domestic cow's milk production had a generally downward trend since 2015, reaching in 2020 a quantity of 40,234 thousand hl (-5.7%). Only in the year 2020, there is a slight increase of 1.2% compared to 2019 (*Figure 4*).

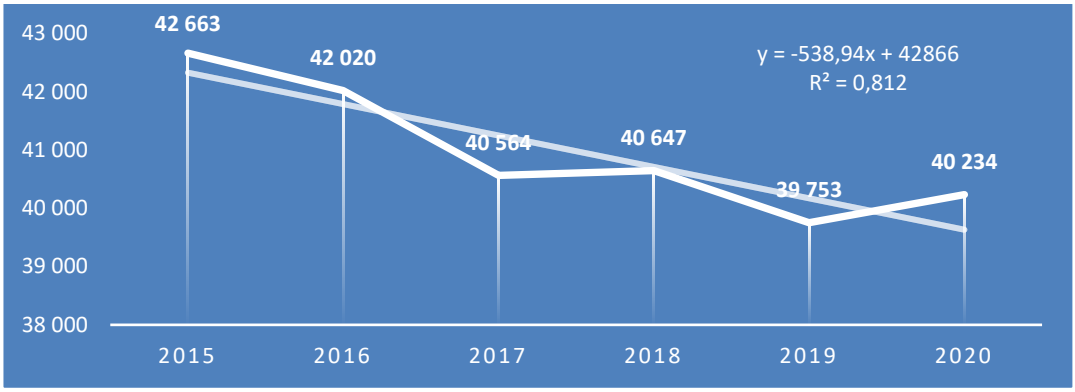

Figure 4. **Milk production (thousand hectoliters)**
Source: NIS

❖ 80% of farms are in fact households, which have 1-2 heads, meaning that most of the milk production is for self-consumption.
❖ In these households, the average milk production is low, a more modern technology cannot be applied, like in developed commercial farms; inadequate

maintenance and operation conditions and, mainly, poor nutrition, are some of the causes of low performance in dairy cows in Romania.

- ❖ During the years 2010-2019, Romania has maintained the last position in the EU-28 in terms of average milk production.
- ❖ In the trade in milk and dairy products, during 2010-2020, Romania constantly had a negative trade balance.
- ❖ As labor force is often made up of day laborers, they are largely an unskilled labor force.
- ❖ Low level of traceability of products, which does not ensure the correct information of the final consumer.
- ❖ Reluctance of small producers to associate.

Opportunities

- ❖ The association of small producers remains one of the most effective solutions to support the dairy sector, in order to negotiate, plan and adapt production to market demand, optimize production costs, provide inputs and services at affordable prices, negotiate the sale price and contract clauses with processors, etc.
- ❖ Breeding programs and facilities for small farmers to access high-performance genetic material with higher production potential.
- ❖ Accessing European funds, through which young farmers can focus on livestock breeding that includes investments in farms and even investments in marketing products without intermediaries.
- ❖ Accessing European funds for upgrading farms.

Threats

- ❖ The abandonment of farmers in this field of production, due to low performance, problems of profitability.
- ❖ Imports of milk to the detriment of milk from domestic production are encouraged.
- ❖ Massive imports at much lower prices than domestic ones can contribute to discouraging Romanian producers.

SWOT analysis of the beef market

Strengths

- ❖ Increasing the tendency of producers to orientate towards beef cow.
- ❖ It has been and continues to be a traditional local activity in many regions of Romania.

Weaknesses

- ❖ Comparing the year 2020 with 2015, young cattle for fattening numbers are lower by 11.5% (*Figure 5*).

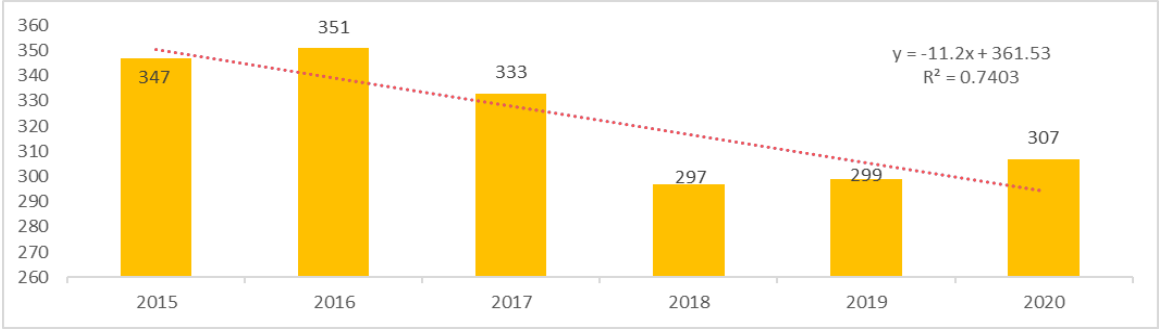

Figure 5. **Young bovine for fattening (thousand heads)**
Source: MARD, operative data

- ❖ Farms with fattening young cattle farms decreased in 2020 compared to 2015 by 34%, meaning a decrease in 2020 by 50,642 heads.
- ❖ The average carcass weight is lower in Romania than in other European countries.
- ❖ There is a lower performance (in daily weight gain, slaughter yield) of the predominant breeds in Romania compared to specialized breeds.
- ❖ Due to insufficient slaughter / processing capacities, Romania mainly exports live animals and fewer carcasses and processed meat products.
- ❖ The prices of cattle carcasses in Romania are lower than in the other countries of the European Union.

Opportunities

- ❖ Like in milk market, the association of producers can be an effective solutions to support the beef sector, in order to improve the power of negotiating, planning and adapting production to market demand, reduce production costs, ensure inputs and services at affordable prices, negotiating price and contracts with processors.
- ❖ Modernization of production technologies, which should lead to the improvement of technical indicators, increase of labor productivity, which can be reflected in the decrease of production costs.
- ❖ Supporting breed improvement programs and providing facilities to small farmers for access to high-performance genetic material with superior production potential and specialized in the direction of beef production.

Threats

- ❖ Imports at lower prices may discourage domestic beef farmers.
- ❖ The risk of a continuous decline in numbers due to problems in the sector, rising input prices, as well as the new context of opinions that would negatively contribute to climate change through GHG emissions.

SWOT analysis of the sheep market

Strengths

- ❖ Sheep breeding is a long-standing tradition in Romania.
- ❖ According to World Bank studies, Romania ranks first in the EU-28 in the export of live sheep.
- ❖ The trade balance of live sheep has been consistently positive in recent years, the exports being superior to imports. In *Figure 6,* it is illustrated in thousand tons cut meat.

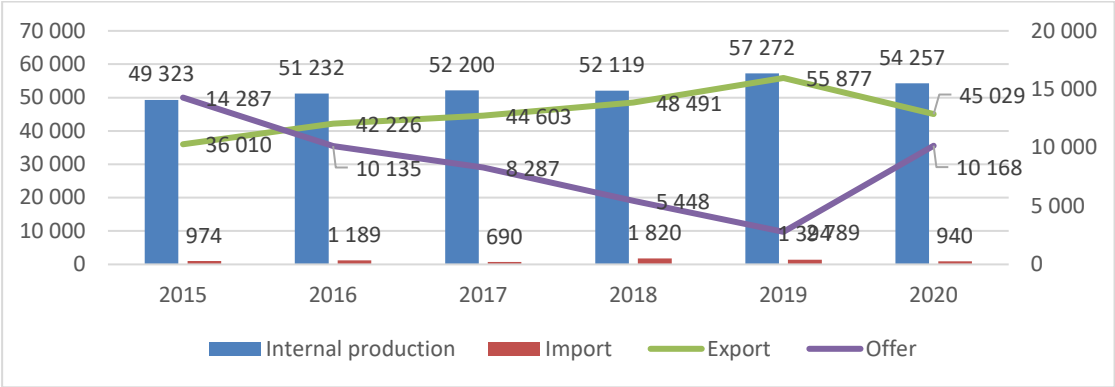

Figure 6. **Trade balance of sheep (thousand tons)**

Source: MARD - operative data, NIS, own calculations

Weaknesses

- ❖ Lack of investment, especially in basic infrastructure.
- ❖ Small productions, poor sales of the productions obtained, due to the lack of small capacity slaughterhouses, in order to increase domestic consumption of sheep meat.
- ❖ Low consumption of mutton in Romania.
- ❖ Farm gate prices for live sheep and carcass prices in Romania are non-competitive with those in other European countries.
- ❖ The average weight at slaughter of sheep in Romania is lower compared to other EU member states.
- ❖ Profitability faces a certain level of difficulty, mostly for small and medium-sized farms.

Opportunities

- ❖ The special interest of the countries from North Africa and the Middle East for young sheep from Romanian farms.
- ❖ Like in other sectors, the association of small producers would be one of the most effective solutions to support the sheepmeat sector.

Threats

- ❖ Given the fact that Arab sheep market is the main destination for Romanian sheep, failure to meet the quality criteria for carcases may constitute a risk of selling production to these important customers.

SWOT analysis of the pork market

Strengths

- ❖ Strong tradition for pork consumption.
- ❖ Most pig herds are fattened on market-oriented farms with more than 500 heads.

Weaknesses

- ❖ Lack of breeding farms, for producing local genetic material for fattening.
- ❖ Swine fever has affected and still affects farms and especially the small producers.
- ❖ The almost continuous increase of imports discouraged domestic producers (*Figure 7*).
- ❖ Exports decreased drastically after 2017, due to the swine fever.

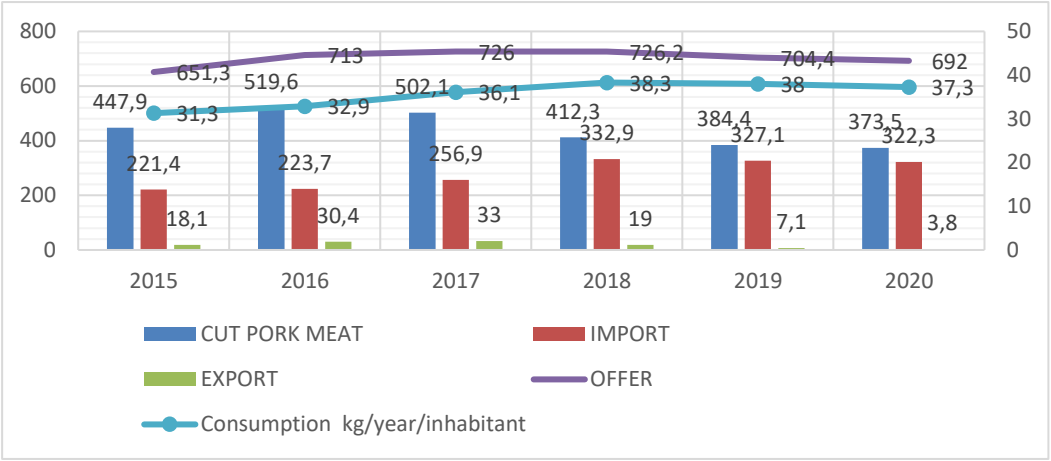

Figure 7. **Trade balance of pork (thousand tons)**
Source: MARD - operative data, NIS, own calculations

Opportunities

- ❖ Increasing consumer interest in meat from native breeds (Mangalita), with dietary qualities.
- ❖ Providing financial support to breeders who want to turn to the exploitation of these breeds.
- ❖ Accessing European funds, through which young people can orient themselves towards such a business in which they can include investments in the sector.

Threats

- ❖ The increased risk of swine fever may still seriously affect the entire pig farming sector.
- ❖ The volume of imports at low prices may discourage domestic pig farmers.

- The risk of drastic reduction of production activities in the sector.

SWOT analysis of the poultry market

Strengths

- Significant, modern, EU-class manufacturing capabilities.
- High-performance slaughterhouses, representing strong brands on the Romanian market, but also on other markets in the European Union.
- Tradition for eating poultry meat (*Figure 8*).
- The low selling price of poultry meat compared to pork or beef.

Weaknesses

- Unfair competition from large producers in the European Union.
- The pressure exerted by Romanian retailers, who import cheap, low-quality meat, seriously affecting Romanian good quality production.
- Negative media campaigns, related to the use of hormones and prohibited proteins in poultry breeding.

Opportunities

- Increasing consumer interest in organic products can be an opportunity for increased orientation of poultry farms towards this field.

Threats

- Imported poultry meat is sold in the big stores at much lower prices than domestic one, which contributes to the discouragement of Romanian producers, who are no longer able to cover production costs due to unfair competition.
- Imports from third countries or other European countries do not bear controls and may at some point be a point of risk.

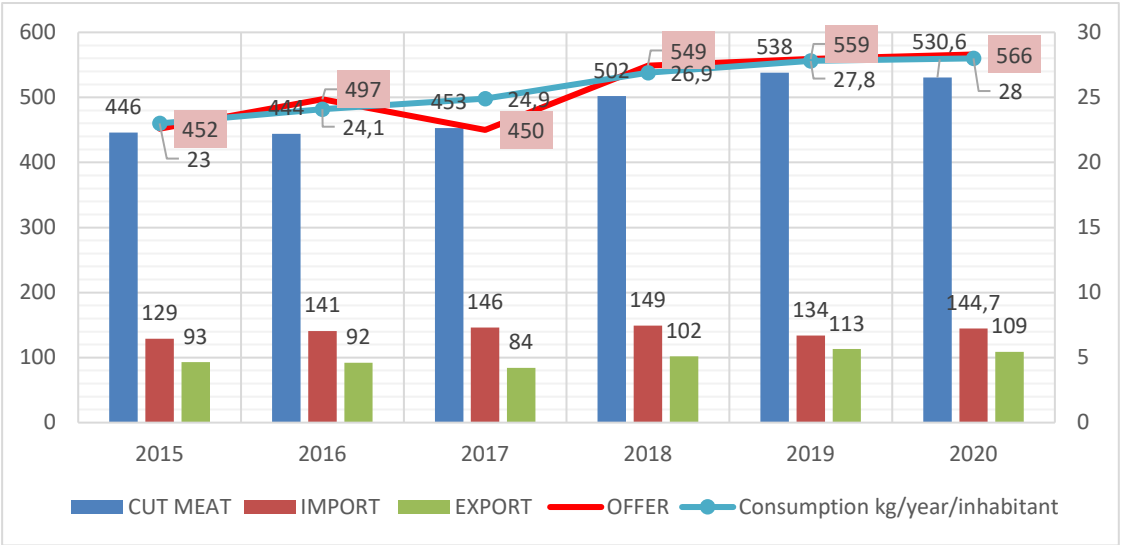

Figure 8. **Trade balance of poultry (thousand tons)**

Source: MARD - operative data, NIS, own calculations

DISCUSSION AND CONCLUSIONS

Domestic animal products market, although with a long tradition and great potential, is in an unfavorable context and therefore faces major risks of loss, as a result of internal and external factors:

- (unfair) competition of some large producers from the European Union;
- poor absorption of European funds in Romania compared to other member states;
- pressure exerted by Romanian retailers, who import cheap products, seriously affecting Romanian production;
- fragmentation of support programs from one administration to another;
- weak association initiative shown at national level, due to general lack of trust between the actors on the value chain;
- not prioritizing the interests regarding promotion of products and markets with local products, compared to the big international brands;
- continued decrease in the purchasing power of consumers, affected by a long series of economic, health, political, etc. crises.

Romanian agri-food market is still far from the performances of the other member states, which makes the productivity gaps even more pronounced. However, the place occupied by our country in many of the products of animal origin reinforces the conclusion of the existence of a significant production potential of Romanian agri-food sector. By now, Romanian agri-food sector has been characterized by a low integration of participants in the agri-food chains. In the absence of market information, farmers, especially medium and small operators, act in ignorance when making decisions, resulting in losses at all levels and substantially diminishing competitiveness.

In addition, animal products market in Romania is dominated by imported products, often of questionable quality, heavily subsidized in the country of origin, at lower selling prices, which means that products of Romanian farmers cannot find their place anymore on the shelf, as higher domestic costs lead to higher prices, discouraging domestic producer. There is a need to regain trust between producers, to create production, distribution and sales channels on the market, to create commercial centers that can also receive the quality products of Romanian farmer. There is a need for a management within the producers to act for their interests. Balancing the animal products market with domestic products is an achievable goal. Being participants in an open market, it is necessary to apply its rules, but we must earn our own position, which is not yet lost.

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DEZVOLTAREA AGRICULTURII ECOLOGICE: PERSPECTIVE PENTRU REPUBLICA MOLDOVA

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Summary

Ecologic agriculture makes a major contribution to protecting the environment, maintaining the natural balance and obtaining valuable agricultural products that do not affect the health of the population. In recent decades, ecologic agriculture has developed rapidly in most countries. This is due to the negative reaction of the population to the consequences of intensive agriculture to some components of the environment and the health of consumers. In the Republic of Moldova there are quite favorable natural climatic and soil conditions for practicing ecologic agriculture. During the last years, the share of ecologic agriculture in the intensive agricultural system is increasing. The purpose of this research is to analyze the level of development of ecologic agriculture in the Republic of Moldova, the trends and challenges that exist. The research is based on the analysis of data on the dynamics of the cultivated areas within the organic agriculture of Moldova, the number of operators in organic agriculture and their territorial distribution. In order, to assess the state support for ecologic agriculture, the number of beneficiaries for subsidizing the development of ecologic agriculture was examined. The study is based on statistical information provided by the Ministry of Agriculture and Food Industry (MAFI), the Agency for Interventions and Payments in Agriculture (AIPA). The current level of development of organic farming has been modest with slow growth in recent years. A push for the transition to organic farming is the increase in the prices of inputs used by traditional agriculture. An important role is to stimulate scientific research in determining new ways of preventing diseases and pests, an important issue for increasing the efficiency of ecologic agriculture.

Keywords: *agriculture, organic farming, farms, operators, subsidies.*
JEL: *Q57, Q18*
UDC: *631.95(478)*

Introducere. Agricultura ecologică are o contribuție majoră la protejarea mediului înconjurător, păstrarea echilibrului natural și obținerea unor produse agricole valoroase, care să nu afecteze sănătatea populației. În ultimele decenii agricultura ecologică s-a dezvoltat rapid în majoritatea țărilor. Aceasta se datorează reacției negative a populației la consecințele agriculturii intensive față de unele componente ale mediului înconjurător și a sănătății consumatorilor.

Agricultura ecologică presupune o tehnologie modernă utilizată la cultivarea plantelor și creșterea animalelor prin aplicarea procedeelor similare celor din natură

fără a fi utilizați fertilizanți şi pesticide de sinteză, stimulatori şi regulatori de creștere, hormoni, antibiotice şi sisteme intensive de creștere a animalelor.

Procesul şi procedurile de obținere a produselor ecologice sunt reglementate de reguli şi principii de producție stricte, care demarează de la calitatea pe care trebuie să o aibă pământul şi până la obținerea efectivă a produsului final. Rolul acestui sistem de agricultură este de a produce hrană mult mai curată, mai potrivită metabolismului organismului uman, dar în deplină corelație cu conservarea şi dezvoltarea mediului.

În Republica Moldova există condiții naturale de climă și sol destul de favorabile pentru agricultura ecologică. Pe parcursul ultimilor ani este în creștere ponderea agriculturii ecologice în sistemul agricol intensiv. Dacă în anul 2010 în circuitul ecologic erau incluse 19,7 mii ha de teren agricol, atunci în anul 2020 ponderea acestora constituie 1,5% din totalul terenului agricol al Republicii Moldova, ceea ce constituie 29,4 mii ha. Dezvoltarea agriculturii ecologice este susținută prin adoptarea cadrului normativ ce reglementează principiile generale, reguli de producere și etichetare a producției agroalimentare ecologice.

Gradul de abordare a temei în literatura științifică. Agricultura ecologică a fost cercetată și comparată cu fermele de tip tradițional pe scară largă folosind analiza productivității și eficienței. Cu toate acestea, până în prezent există mai multe neclarități despre eficiența și productivitatea agriculturii ecologice. Astfel, unele întrebări importante care abordează studiile de productivitate și eficiență ale agriculturii ecologice au primit unele răspunsuri. O privire de ansamblu și o sinteză pot oferi câteva dovezi empirice care tind să clarifice următoarele întrebări: în primul rând, în ce măsură agricultura ecologică este mai puțin productivă decât agricultura convențională [6, 7, 13, 15] și poate oferi agricultura ecologică soluții la problemele de dezvoltare agricolă internațională?

Analiza eficienței și a productivității poate contribui la această dezbatere prin investigarea diferențelor de productivitate la nivelul fermei și identificarea factorilor determinanți ai acestor diferențe. În al doilea rând, agricultura ecologică este susținută de o varietate de politici în Uniunea Europeană (U.E.) și în alte țări [9, 16, 14]. În mai multe țări din UE, factorii de decizie politică au ajuns până la stabilirea unor obiective cantitative pentru ponderea agriculturii ecologice în sectoarele agricole ale țărilor membre [12]. Literatura de specialitate în domeniul eficienței demonstrează că subsistemele influențează sistematic deciziile de producție, precum și eficiența și productivitatea exploatațiilor agricole [10, 11]. Pentru a concepe o politică eficientă, trebuie să înțelegem modul în care productivitatea exploatației agricole este afectată de diferitele tipuri de sprijin. În cele din urmă, agricultura ecologică se bazează pe principiul producției ecologice [16]. Efectele pozitive ale agriculturii ecologice asupra biodiversității au fost documentate în literatură [12].

Scopul cercetării. Scopul acestei lucrări este de a analiza nivelul de dezvoltare a agriculturii ecologice în Republica Moldova, tendințele și provocările care există.

Metodologia cercetării. Cercetarea se bazează pe analiza datelor privind dinamica suprafețelor cultivate în cadrul agriculturii ecologice din Moldova, numărul de operatori în agricultura ecologică și distribuția teritorială a acestora. Pentru evaluarea sprijinului de stat pentru agricultura ecologică a fost examinat numărul beneficiarilor de subvenții pentru dezvoltarea agriculturii ecologice. Studiul se bazează pe informațiile statistice furnizate de Ministerul Agriculturii și Industriei

Alimentare (MAFI), Agenția de Intervenții și Plăți în Agricultură (AIPA).

Rezultatele cercetării. Agricultura ecologică a apărut și s-a dezvoltat în țările Uniunii Europene (UE.) în trei etape principale. Prima etapă este reprezentată de apariția agriculturii ecologice în 1924 cunoscută ca „agricultură biodinamică" cu contribuția lui Steiner. La următoarea fază, deja în Marea Britanie în 1940, cu aportul Sir Albert Haward şi Lady Eve Balfour apare termenul „agricultura organică". La ultima etapă, în Elveția este dezvoltat termenul agricultură „organo-biologică" de către cercetătorii Hans Peter Rush şi H. Müller [16].

Agricultura ecologică în țările europene, deși se practică din cele mai vechi timpuri, abia în ultimii ani a constituit un domeniu de interes. Datele statistice cu privire la anumiți indicatori specifici agriculturii ecologice, cu referire la suprafețele cultivate în sistem ecologic, numărul producătorilor ecologici înregistrați, valoarea de piață a produselor ecologice, precum şi consumul pe cap de locuitor în ţările europene sunt incomplete, atât ca serii de timp, cât şi ca date disponibile la nivelul diferitelor ţări [9].

În ceea ce privește suprafața cultivată cu respectarea normelor şi principiilor agriculturii ecologice, în UE se observă faptul că aceasta a crescut treptat, în timp, ajungând în anul 2020 la 14,7 milioane hectare (Figura 1), ceea ce reprezintă aproximativ 7,4% din suprafața totală.

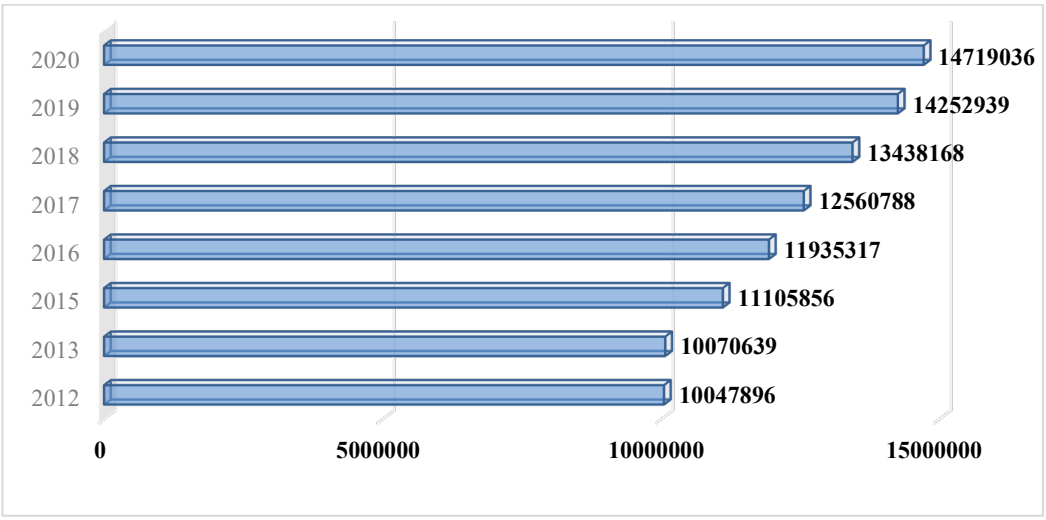

Figura 1. **Evoluția suprafețelor agricole ale țărilor membre ale Uniunii Europene în perioada anilor 2012-2020, ha**

Sursa: EUROSTAT, 2022

Suprafața terenului agricol pe care se aplică tehnologia agriculturii ecologice este în creștere continuă. Dacă în anul 2012 în UE. suprafața terenului agricol ecologic constituia 10,05 milioane ha, în anul 2020 aceasta a sporit cu 46,2% sau 4,6 milioane ha atingând un plafon de 14,7 milioane ha.

Dintre țările UE la nivelul anului 2020, se remarcă Franța cu 2,5 milioane ha, urmată de Spania (2,44 milioane ha) Italia (2,1 milion ha) și Germania (1,6 milioane ha). Ponderea suprafețelor de teren ecologic ale marilor producători de produse ecologice constituie cca 17% din totalul suprafețelor deținute de țările membre ale

UE. în comparație cu România care cultiva produse ecologice pe 468,9 mii ha sau 3% aceasta are un potențial major în dezvoltare.

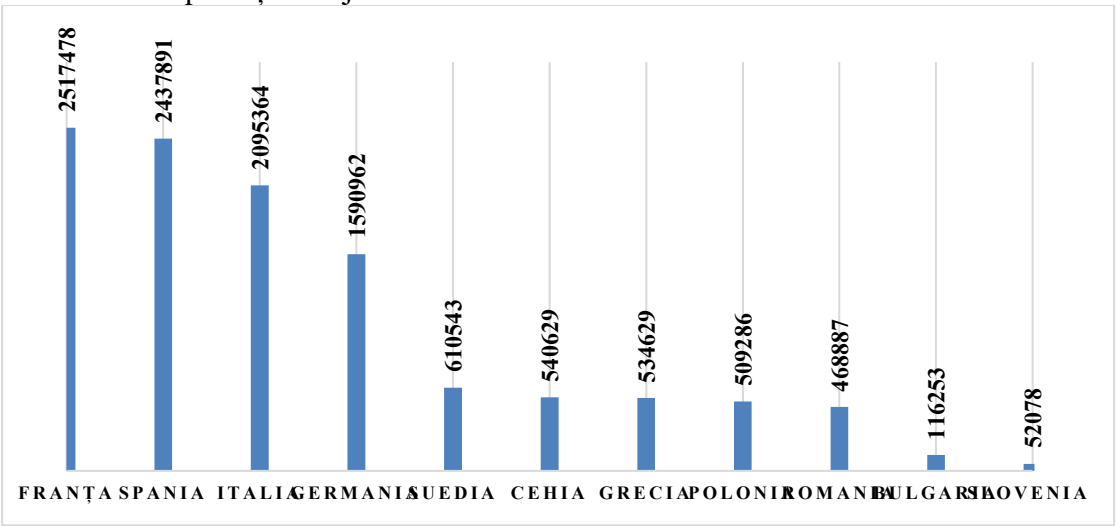

Figura 2. **Suprafața terenului agricol ecologic în anul 2020 în profil teritorial**
Sursa: EUROSTAT, 2022

Un factor decisiv, care a contribuit la majorarea suprafeței cultivate în cadrul agriculturii ecologice/organice, se datorează politicii aplicate la nivelul statelor Uniunii Europene (art. 19 al Regulamentul Comisiei Europene nr. 1235/2008 din 8 decembrie 2008 de stabilire a normelor de aplicare a Regulamentului (CE) nr. 834/2007 al Consiliului în ceea ce privește regimul de import al produselor ecologice din ţări terțe). În conformitate cu aceste prevederi, se permitea exportul produselor cu mențiune de „ecologic” pe piață UE, în baza unor autorizații de import acordate de autoritățile statelor membre, organismelor de inspecție şi certificare naționale.

Terenurile cultivate după procese ecologice sunt caracterizate de un grad de biodiversitate cu aproximativ 30% mai ridicat decât terenurile lucrate în agricultura convențională.

Conform prevederilor Politicii Agricole Comune a UE se planifică extinderea terenului ecologic către 25% în anul 2030. Acest obiectiv va fi atins prin stimularea agricultorilor de a practica agricultura ecologică, de a majora oferta cu alimente organice/ecologice pentru consumatori , creșterea cererii de produse ecologice până la 25 % până în 2030.

Analiza datelor statistice disponibile cu privire la evoluția numărului de producători agricoli ce cultivă produse ecologice demonstrează faptul că numărul acestora este în creștere odată cu extinderea suprafețelor de teren agricol ecologic.

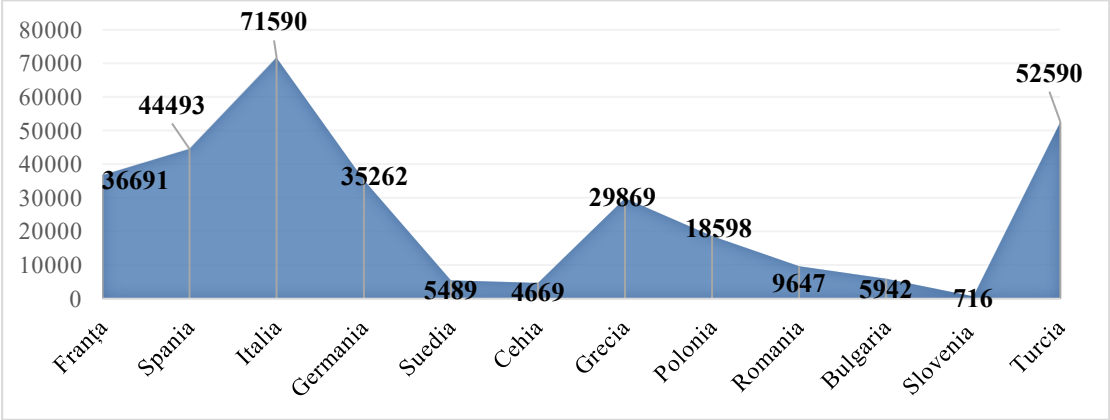

Figura 3. **Numărul producătorilor agricoli ecologici înregistrați în anul 2020**
Sursa: EUROSTAT, 2022

Astfel, la nivelul anului 2013, numărul producătorilor, în țările membre ale Uniunii Europene însumau cifra de 257 123, ajungând în anul 2016 ca numărul acestora să fie de 295 577. Ulterior date despre evoluția acestora nu pot fi identificate nici în baza de date Eurostat. Totodată, în profil teritorial, pe continentul european, evoluția acestora se regăsește astfel că întâietate deține Italia, cu un număr de 71 590 producători agricoli înregistrați, fiind urmată de Turcia, care are 52 590 producători agricoli înregistrați și Spania cu 44 493 producători agricoli.

Agricultura ecologică oferă mult mai multe avantaje atât producătorilor agricoli, consumatorilor de produse, dar și mediului ambiant. În Moldova, ddezvoltarea agriculturii ecologice este susținută prin Legea nr.115/2005 cu privire la producția agroalimentară ecologică [1], precum și Hotărârea de Guvern nr.1078/2008 cu privire la aprobarea Reglementării tehnice „Producția agroalimentară ecologică şi etichetarea produselor agroalimentare ecologice" [3]; Hotărârea de Guvern nr.884/2014 pentru aprobarea Regulamentului privind utilizarea mărcii naționale „Agricultura Ecologică – Republica Moldova"[2,4].

Prin Legea nr. 115 din 2005 a fost instituitcontrolul în agricultura ecologică Aceasta presupune implementarea sistemului de certificare, armonizarea legislației la standardele Uniunii Europene, ceea ce ar permite ca producția agroalimentară ecologică din Republica Moldova să fie certificată și recunoscută de un organism de inspecţie şi certificare acreditat şi autorizat de Ministerul Agriculturii și Industriei Alimentare.

Prin „reglementare ecologică" se subînțeleg un șir de reguli cu privire la:

— principiile și metodele de producție agroalimentară ecologică;

— sistemul de inspecție și certificare;

— importul și exportul de produse agroalimentare ecologice (raport ecologic de țară 2020).

Politica actuală a statului în vederea dezvoltării producției agroalimentare ecologice, urmărește sprijinirea veniturilor agricultorilor, încurajându-i, totodată, să producă mărfuri de înaltă calitate şi în cantități suficiente. Astfel, susținerea promovării şi dezvoltării agriculturii ecologice este un element fundamental nou al politicii de dezvoltare rurală, destinată să încurajeze numeroase inițiative rurale,

ajutând agricultorii să-şi restructureze fermele, să diversifice gama de produse, precum şi să penetreze diferite pieţe pentru comercializarea produselor [8].

Analizând dinamica dezvoltării agriculturii ecologice se observă o creștere ușoară a suprafețelor (Figura 4), numărului de producători (Figura 5) cu toate acestea sunt înregistrate și fluctuații mari în dinamica dezvoltării.

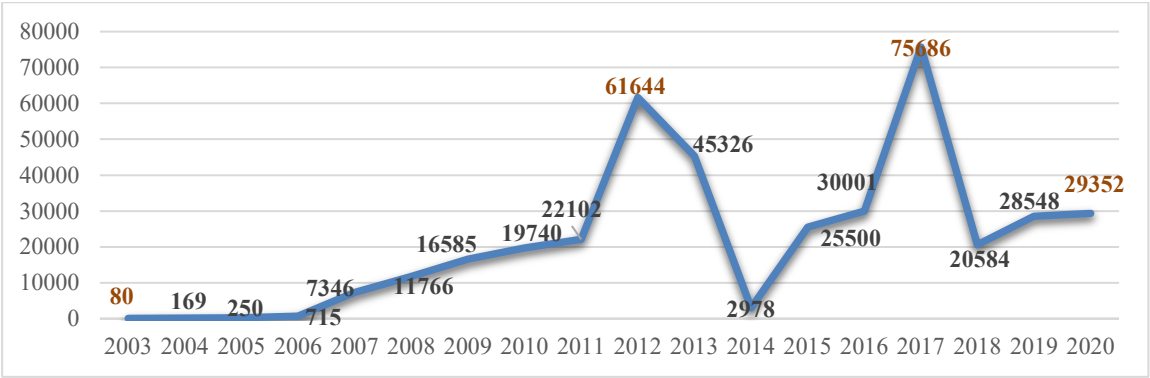

Figura 4. **Dinamica suprafețelor înregistrate în agricultura ecologică**
Sursa: baza de date a Ministerului Agriculturii și Industriei Alimentare

Analizând dinamica suprafețelor înregistrate în agricultura ecologica (Figura 4), observăm că majoritatea sunt înregistrate în anul 2017 (75,67 mii ha). În anul 2020 avem o reducere substanțială, sau de 2,6 ori mai puțin față de nivelul anului 2017, ceea ce este cauzat de costurile imput-urilor ecologice ce sunt importate de către producătorii agricoli.

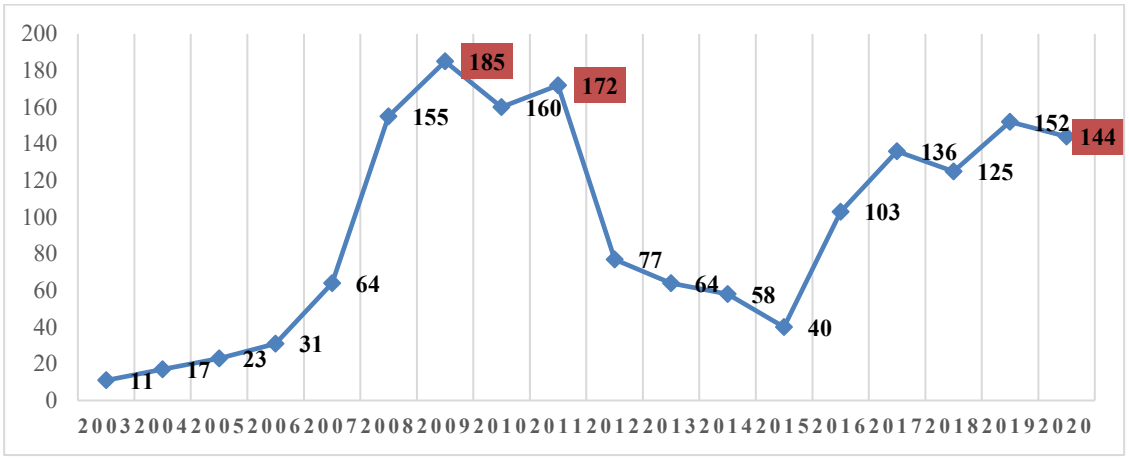

Figura 5. **Producători agricoli înregistrați în agricultura ecologică**
Sursa: baza de date a Ministerului Agriculturii și Industriei Alimentare

În perioada anilor 2007-2011 a fost înregistrată o creștere a numărului producătorilor agricoli ecologici de la 64 către 185 și a suprafețelor de la 7346 ha la 61644 ha (Figura 5). Numărul operatorilor înregistrați în agricultura ecologică s-a diminuat în perioada anilor 2012-2016, apoi a avut loc o majorare bruscă în 2017, urmată imediat de o descreștere în 2018 a suprafețelor înregistrate de la 75686 ha până la 20584 ha. O posibilă explicație a majorărilor înregistrate în 2003 – 2011 ar fi

promovarea politicilor guvernamentale favorabile dezvoltării agriculturii ecologice. În anul 2007 s-a inițiat alocarea de subvenții destinate rambursării cheltuielilor în perioada de conversiune a terenurilor. Din anul 2012 subvențiile se alocă pentru înființarea plantațiilor multianuale, ceea ce a condus spre un regres în dezvoltarea agriculturii ecologice. Din anul 2017, creșterea lentă a numărului de operatori ecologici și suprafețelor de teren ecologic este asociată cu adoptarea Hotărârii de Guvern nr. 455/2017 [3] pentru susținerea promovării și dezvoltării agriculturii ecologice.

În anul 2020, în Republica Moldova erau înregistrați 144 operatori ecologici (preponderent producători agricoli ce se ocupă cu creșterea culturilor agricole, apicultori și procesatori certificați Eco). Suprafața totală a terenului certificat ecologic sau în perioadă de conversie a fost de 29 352,1 de hectare, fiind recunoscute ca și culturi ECO – 87, varietăți și produse ECO – 65 varietăți.

În prezent, lanțul valoric al agriculturii ecologice este constituit din 144 de operatori (Figura 6), unde ponderea cea mai mare le revine întreprinderilor cu 78% teren certificat ecologic. Lanțul valoric al agriculturii ecologice este unul de perspectivă în contextul dezvoltării piețelor cu produse ecologice și interesul consumatorilor, la fel și pentru oportunitatea pentru dezvoltarea comunităților rurale.

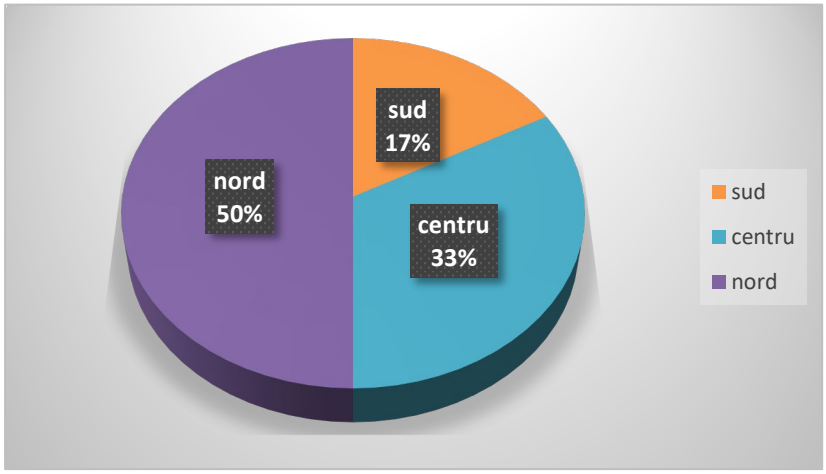

Figura 6. **Ponderea producătorilor pe zone geografice, în anul 2020**
Sursa: în baza datelor din „Atlasul Agriculturii Ecologice” [5]

Astfel, dacă analizăm datele din „Atlasul Agriculturii Ecologice” cu privire la producătorii din Republica Moldova per zonă de amplasare (Figura 6), atunci majoritatea exploatațiilor agricole ecologice sunt amplasate în zona de Nord (50%). O pondere mai mică îi revine zonei de centru (33%) și sud(17%).

Susținerea continuă din partea statului în dezvoltarea agriculturii ecologice are un rol semnificativ. În Moldova, instituția responsabilă de aceasta este Agenția de Intervenții și Plăți în Agricultură (AIPA). Susținerea dezvoltării agriculturii ecologice este prevăzută conform Hotărârii Guvernului nr. 455/2017 [3] prin oferirea subvențiilor în cadrul submăsurii 2.5 „Promovarea și dezvoltarea agriculturii ecologice”. Aceasta prevede oferirea de subvenții tuturor producătorilor înregistrați în sistemul de agricultură ecologică ca plată compensatorie pentru pierderile de venit și costurile

suplimentare suportate de beneficiarii care încheie angajamente voluntare și se angajează să rămână în acest sistem de agricultură pe o durată de 5 ani. Subvențiile sunt alocate în anul curent pentru conversie la agricultura ecologică și pentru menținerea agriculturii ecologice în domeniul producției vegetale și apiculturii ecologice.

Tabel 1. **Evoluția dosarelor de solicitare a sprijinului financiar din sursele bugetului de stat**

2017	31	30	97%	1 880,1	1 590,2	85%
2018	72	69	96%	7 740,9	7 251,5	94%
2019	76	67	88%	8 603,7	7 845,1	91%
2020	65	63	97%	6 901,0	6220,3	90%
2021	59	53	97%	7482,2	6 808,8	91%

Sursa: în baza datelor AIPA

În anul 2018 vedem o creștere semnificativă față de anul 2017 de 2,3 ori față de dosarele recepționate de AIPA în anul 2017 (Tabelul 1). Au fost depuse 72 dosare în valoare de 7740,9 mil. lei, din ele 69 au fost acceptate și 94% din bugetul solicitat a fost achitat producătorilor agricoli. Analizând situația din 2019, înțelegem că aplicarea la subvenții ale Submăsurii 2.5 este în continuă creștere, în rezultat au fost depuse 76 dosare cu valoarea de 8 603,7 mii lei și aprobate 67 dosare – 7 845,1 mii lei. Din anul 2020 se simte o descreștere a producătorilor agricoli care aplică pentru a obține subvenții care au dus la operarea modificărilor la HG nr. 455/2017 pentru a spori valoarea subvenției pentru terenurile agricole aflate în conversie.

Concluzii. Agricultura ecologică are o mare contribuție la o dezvoltare economică de durată şi joacă un rol important în îmbunătățirea condiției mediului, prezervarea solului, îmbunătățirea calității apelor, biodiversificarea şi protejarea naturii.

Politica actuală a statului în vederea dezvoltării producției agroalimentare ecologice, urmărește sprijinirea veniturilor agricultorilor, încurajându-i, totodată, să producă mărfuri de înaltă calitate şi în cantități suficiente. Astfel, susținerea promovării şi dezvoltării agriculturii ecologice este un element fundamental nou al politicii de dezvoltare rurală, destinată să încurajeze numeroase inițiative rurale, ajutând agricultorii să-şi restructureze fermele, să diversifice gama de produse, precum şi să penetreze diferite pieţe pentru comercializarea produselor. O țintă importantă pentru dezvoltarea agriculturii ecologice este atingerea unei ponderi de 25 procente până în anul 2030 conform strategiei „De la fermă la consumator”.

Producția ecologică este într-o continuă extindere, datorită cererii consumatorilor pentru produse agricole ecologice. La finele anului 2020 doar 4 produse agroalimentare ecologice utilizează marca națională de agricultură ecologică „Agricultura ecologică – Republica Moldova”, ceea ce diminuează importanța aplicării acesteia pe produse.

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AGRICULTURE AND ENVIRONMENTALLY BENEFICIAL PRACTICES APPLICABLE TO ARABLE LAND INTRODUCED THROUGH THE ECO-SCHEME

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Summary

The practice of sustainable agriculture requires the adoption of legislative, economic, technical and technological measures to mitigate the effects of climate warming, with particular emphasis on the protection of the environment and biodiversity, but also on encouraging farmers to apply them, taking into account the profitability of agricultural businesses. The Common Agricultural Policy, oriented towards a number of pressing aspects, such as climate change, food security, sustainable management of natural resources and supporting rural areas, aims to maintain the vitality of their economy and preserve the environment. For this purpose, the National Strategic Plan of Romania for the period 2023-2027 includes, in the direct payments section, the eco-scheme "Beneficial practices for the environment applicable in arable land", a subsidy that can be accessed by farmers who own agricultural holdings with a minimum of 5 ha arable land, and which, for access, are conditioned by the allocation of 4% of the area held for non-productive elements, and on 5% of its area existing annual protein vegetable or leguminous crops, fixing nitrogen, which can be harvested. Also, from the specific conditions, to apply a beneficial practice for the environment, on choice: either the diversification of crops, or to practice a conservative type technology (no tillage/minimum tillage/strip tillage), or to practice fertilirigation or phase fertilization, or to apply measures to correct soil acidity (liming measures). These aspects represent a challenge for farmers, who must take into account new approaches.

***Keywords**: eco-schema, subvention, arabil land, sustainability, agricultural exploitation.*

***JEL:** Q1, Q13, Q24.*

***UDC:** 631.95*

Introduction: The economies of the states of the world, are currently faced with unprecedented problems in the history of mankind and, in this context, the main socio-economic actors must identify the best solutions in order to solve these problems. One of the issues is related to global warming [19] and its effects [10]. In this sense, at the EU level, the appearance of the climate law [20] was imposed, which comes to regulate [4, 5, 6, 7, 20] a series of aspects related to this problem. Thus, it

was decided to apply innovative measures to mitigate and combat the negative effects of climate change [10]. These climate changes affect a large part of producers, especially those who work in agriculture [18,19]. To counteract the effects generated by global warming, alongside the climate law, there was a need to develop agriculture strategies in the member states at the EU level, so that they contribute to ensuring sustainable agriculture and preserving biodiversity. The most well-known regulation at the EU level is the one known as the Green Deal [1,9], under the umbrella of which the Farm to Fork [5,6,7] and Biodiversity strategies come to detail the measures that need to be taken in the short, medium and long term. Plant farms in Romania must adapt as best as possible to the requirements from the EU in the previously mentioned context, by finding innovative technical solutions [2, 8]. In this sense, immediate measures are required that are included in the NS Plan 2023-2027, such as: agro-environmental measures [17] that directly contribute to increasing soil fertility, reducing water and soil pollution as a result of the use of different fertilizers [13] and plant protection products [14] that are included in classes with different toxicity, so as to lead to the preservation of ecosystems, landscape and biodiversity. The carried-out studies have highlighted the need to expand these measures, within the plant agricultural holdings in Romania. A realistic solution introduced in the PNS 2023-2027 by the Romanian Ministry of Agriculture and Rural Development, in the category of direct payments, is the one represented by the eco-scheme for arable land "Beneficial practices for the environment applicable in arable land", which could constitute an innovative measure within the plant agricultural holdings in Romania. Starting from this measure, establishing the optimal culture plan on the holding, is an objective that farmers must develop in accordance with the eco-scheme "Beneficial practices for the environment applicable in arable land" preserving profitability and rentability and in accordance with ecosystems conservation and maintaining biodiversity [3]. In short term it is of particular importance, the awareness of Romanian producers needs to adopt this measure [16], responding in this way, on the one hand to the requirements coming from international legislative forums, and on the other hand, to the practice of agriculture that contributes to ensure food security and safety [12]. Simultaneously with the application of the legislation in this field, the implementation of the eco-scheme is, first of all, an alternative with applicability in agricultural activity [15], in order to reduce the negative effects caused by global warming, but there is a question from the farmers, namely: the total productions [12] and the realized incomes, will they decrease or can they be compensated by the subsidy included through the application of the eco-scheme?

Results and discussion

The concept of "cross-compliance", meaning the designation of standards or conditions that farmers must follow or achieve in order to be eligible for subsidies, has been developed and discussed since the 70s at the EU level, but the introduction into European legislation was made following the mid-term review of the Community Agricultural Policy (CAP), carried out in 2003, through the publication of Council Regulation (EC) no. 1782/2003. Thus, since 2005, all direct subsidies to farmers (such as subsidies for arable land, for cattle, sheep, cow's milk, etc.) have been replaced with a Single Subsidy Scheme, requiring farmers to comply with a set of Requirements management regarding agriculture and the environment, animal welfare, animal health and public health (Directive 79/409/EEC on the protection of wild birds, Directive 80/68/EEC on the protection of ground water against pollution caused by certain dangerous substances, Directive 86/278/ EEC on the protection of the environment, and in particular of the soil, when urban sludge is used in agriculture, Directive 91/676/EEC on the protection of waters against pollution caused by nitrates from agricultural sources, and Directive 92/43/EEC on the conservation of natural habitats, of wild flora and fauna) as well as a set of minimum standards **- *Good Agriculture and Environmental Conditions* (GAEC – Good Agriculture and Environment Conditions)**.

Table no. 1 **Framework for the development of standards for Good Agricultural and Environmental Conditions (GAEC)**

Nr. crt.	Standard theme	Content
1.	**Soil erosion**	Protecting the soil against loss through erosion through appropriate measures.
		Minimum ground cover. Minimal land management to reflect specific local conditions.
		Preservation of terraces.
2.	**Soil organic matter**	Maintaining the content of organic matter in the soil through appropriate practices.
		Standards for crop rotations where applicable
		Stubble management on arable land.
3.	**Soil structure**	Maintenance of soil structure through appropriate measures.
		Use of appropriate agricultural machinery.
4.	**Minumum maintenance level**	Ensuring a minimum level of maintenance and avoiding damage to habitats.
		Minimum livestock values and/or corresponding growth regimes
		Protection of permanent pastures.
		Retention of landscape features
		Avoiding the appearance of unwanted vegetation on agricultural land.

Source: Annex IV of Regulation 1782/2003

The exact standards for GAEC must be defined by each Member State at national level. The following GAECs are included in the National Strategic Plan of Romania 2023-2027:

Table no. 2 **Standards set by GAEC**

No. GAEC	Content	Primary objective
GAEC 1	**Maintenance of permanent grassland based on a proportional ratio of permanent grassland to agricultural area at the national level compared to the reference year 2018.**	General safeguard clause against conversion to other agricultural uses to preserve carbon stocks.
GAEC 2	**Protection of wetlands and peatlands.**	Protecting carbon-rich soils.
GAEC 3	**Prohibition of burning stubble, dry vegetation and plant debris on agricultural land**	Maintaining the level of organic matter in the soil.
GAEC 4	**Creation of buffer strips (protection strips) along watercourses.**	Protection of watercourses against pollution and sedimentation.
GAEC 5	**Management of soil works, reducing the risk of soil degradation and erosion, including consideration of slope.**	Minimal land management to reflect specific site conditions to limit erosion.
GAEC 6	**Minimum soil coverage to avoid bare soil during the most sensitive periods.**	Protecting soils in the most sensitive periods and areas.
GAEC 7	**Crop rotation on arable land, except for crops growing under water.**	Maintaining the productive potential of the soil. The rotation consists of alternating crops at least once a year at the level of the agricultural plot, including secondary crops, with the exception of perennial crops, grasses and other herbaceous fodder, fallow land and crops in protected areas.
GAEC 8	**The minimum percentage of the agricultural area dedicated to non-productive areas or elements.**	At least 4% of farm-level arable land, including fallow land. If a farmer undertakes to allocate at least 7% of the arable land to unproductive areas or elements, the share according to GAEC 8 is reduced to 3%.
GAEC 9	**Prohibition of conversion or plowing of permanent grassland designated as ecologically sensitive permanent grassland within the perimeter of Natura 2000 sites.**	Protecting habitats and species.

Source: Romania's National Strategic Plan 2023-2027.

In this context, eco-schemes are a new tool designed to reward farmers who choose to take a step towards environmental protection and the transition to a

sustainable food system. Eco-schemes will contribute significantly to this transition and to the objectives set out in the Green Deal. To be supported by eco-schemes, agricultural practices should cover activities related to climate, environment, animal welfare and antimicrobial resistance and these should be defined based on needs and priorities identified at national or regional level in strategic plans (PNS). The list of potential agricultural practices includes practices related to organic farming, agro-ecology, such as crop rotation with leguminous crops. In addition, they also include carbon farming, for example, conservation agriculture or the extensive use of permanent pastures. Other farming practices that could be supported by green schemes include precision farming, which could reduce inputs or use of feed additives to reduce emissions from enteric fermentation, and breeding practices in favor of animal welfare and/or reduction of need for antimicrobial substances. (https://agriculture.ec.europa.eu/news/commission-publishes-list-potential-eco-schemes-2021-01-14_en)

Thus, in the 2023-2027 National Strategic Plan of Romania, the established budget is 15.88 billion euros. From this, the budget allocated to FEGA direct payments is 9.98 billion euros, the budget for FEGA sectoral interventions is 0.21 billion euros and the budget for rural development has two components: the public allocation, 5.68 billion euros, of which 4, 84 billion euros EAFRD contribution. The annual allocations of direct payments set aside in each calendar year for eco-schemes are in the PNS 2023-2027 at 29% of the annual amounts' direct payments. Complementary redistributive income support for sustainability has an allocation of 10% of the indicative financial allocations for interventions in the form of coupled income support and are limited to a maximum of 13% of the annual amounts of direct payments. The percentage may be increased by a maximum of 2%, provided that the amount exceeding the percentage of 13% is allocated to support for protein crops.

Table no. 3. **Financial allocations in Romania's PNS - FEGA Pillar I**

Current number	FEGA Pillar I financial allocations	Value -euro-	Percent %
1.	**Allocated direct payments distribution**, in wich:	**9.982.627.625**	**100%**
1.1.	Basic Pay (SAPS)	4.398.692.014	44.06%
1.2.	Eco schemes	2.837.903.151	28.43%
1.3.	Redistributive payments	978.314.880	22.24%
	Coupled payments	1.467.472.319	14.70%
1.4.	Young farmers payments	100.766.433	1.01%
1.5.	Towards Pillar 2 - for financing the young farmers installation	199.478.828	2.00%
2.	**Sectoral interventions**, in which:	**213.784.150**	**100%**
2.1.	The wine sector	183.376.000	85.78%
2.2.	The beekeeping sector	30.408.150	16.58%

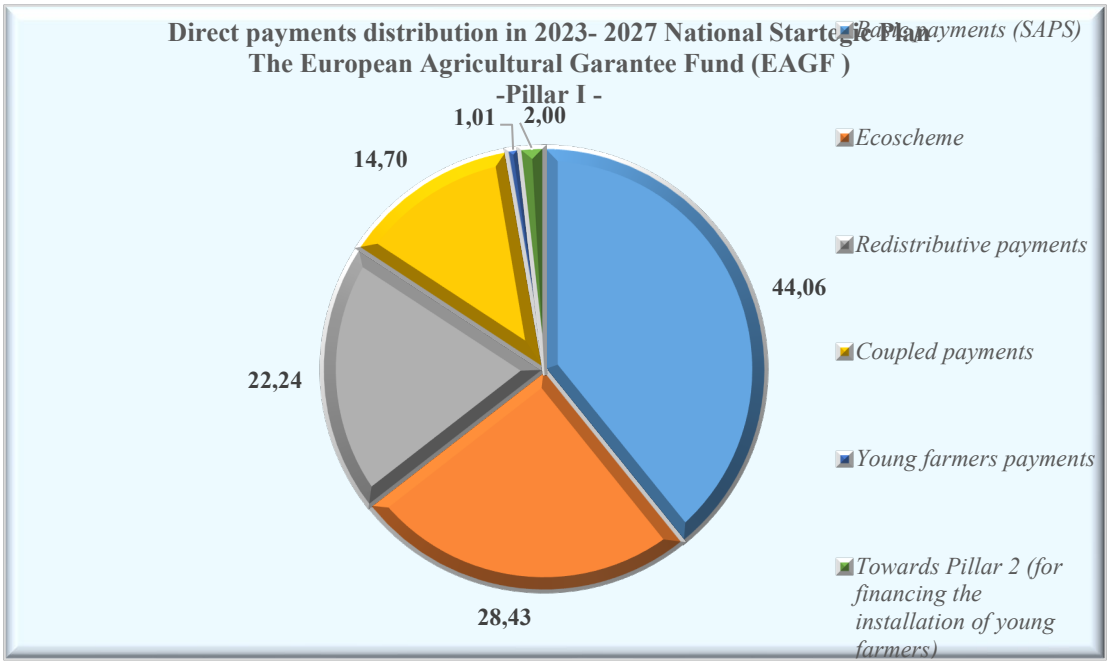

Figure no. 1 **Distribution of direct payments in Romania's PNS, 2023-2027**

For *Beneficial practices for the environment applicable in arable land* eco-scheme, the payment scenarios, according to the Ministry of Agriculture and Rural Development, are: 60 euros/ha for an average area of 6,250,000 hectares, 74 euros/ha, if in the first years, due to the increased need to accommodate the new measure, it will be possible to register a low number of beneficiaries (5,013,190 ha) or 53 euros/ha in the event that an increased number of beneficiaries will be registered, respectively hectares of arable land (7,000,000 ha).

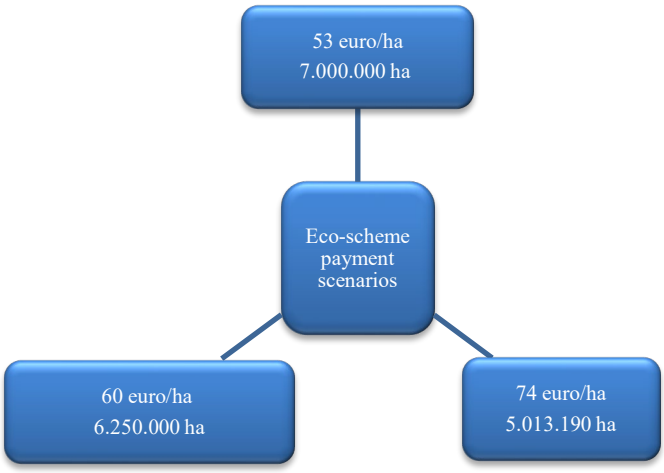

Figure no. 2 **Payment scenarios for the eco-scheme according to the Ministry of Agriculture and Rural Development**

Beneficial practices for the environment applicable in arable land eco-scheme, can be accessed for the entire surface of the farm, if the conditions are met for the entire agricultural land declared in exploitation. Initially, for the granting of this subsidy, the following eligibility conditions were established for farmers, as follows:

Table no. 4 **Conditions for granting the subsidy for the eco-scheme Beneficial practices for the environment applicable in arable land**

Current No.	**Eco-scheme conditions** *Beneficial practices for the environment applicable in arable land*	**Specification**
1.	**General conditions**	The area of arable land of the agricultural holding must be greater than 5 ha;
		To allocate more than 4% of the arable land for non-productive elements;
		On a minimum of 5% of the total arable land declaring to cultivate leguminous crops, rich in vegetable protein, fixing nitrogen, which can be harvested, such as: soybeans, peas for consumption or fodder, peas, pea, clover, phacelia, beans, broad beans, cowpeas, chickpeas, lupins, lentils, beans, alfalfa, peanuts, mixed legumes and perennial grasses.
2.	**Specific conditions** - the application of a beneficial practice for the environment - at your choice:	Practicing crop diversification by establishing several crops on arable land, depending on the area (May-September)
		To practice a conservative farming technology - "No tillage/minimum tillage/strip tillage" on at least 50% of the surface;
		To apply the practice of rational fertilization or fractional phase fertilization.
		Apply measures to correct soil acidity (liming measures) in order to improve the conditions for the growth and development of agricultural crops on acidic land.

Source: PNS 2023-2027 - advisory version

Following the consultation with the farmers, the producers' associations submitted a series of suggestions to modify the eco-scheme financed from Pillar I for environmental and climate interventions. The new conditions that farmers must comply with in order to benefit from the payment of the subsidy for the ecoscheme are presented in table no. 4.

Table no. 5 **The new conditions for granting the subsidy for the eco-scheme Beneficial practices for the environment applicable in arable land**

Current No.	**New eco-scheme conditions *Beneficial practices for the environment applicable in arable land***	**Specification**
1.	***General conditions***	1. The area of arable land of the agricultural holding must be greater than 5 ha;
		2. To allocate more than 5% of the arable land for non-productive elements (including land left fallow). In the case of farms with more than 75% of the arable land used for the production of grass or other herbaceous forage plants, crops under water for a large part of the crop cycle, or subject to a combination, the share of non-productive elements (including land left fallow) must exceed 3%.
		3. On a minimum of 5% of the total arable land declaring to cultivate leguminous crops, rich in vegetable protein, fixing nitrogen, which can be harvested, such as: soybeans, peas for consumption or fodder, chickpeas, asparagus, clover, phacelia, beans, beans, cowpeas, chickpeas, lupine, lentils, beans, alfalfa, peanuts, mixed legumes and perennial grasses.
2.	***Specific conditions - the application of a beneficial practice for the environment - at your choice:***	1. To practice crop diversification on arable land, depending on the area, as follows: - Agricultural holdings with surfaces between 10.01 ha and 30 ha, it is necessary to cultivate at least two different crops, and the main crop to cover a maximum of 75% of the arable land; - Farms with areas of more than 30 ha, it is necessary to cultivate at least three different crops. The predominant crop must cover a maximum of 70% of the arable land, respectively two predominant crops must together cover a maximum of 85% of the arable land, respecting the percentage of 5% of the land for non-productive elements; - In the situation where the surface of arable land is cultivated in a proportion of more than 80% with grass / herbaceous plants / legumes or covered with crops under water, a large part of the production cycle, regardless of the size of the holding for which it requests support through eco -scheme, it is considered

		to be diversification practice, respecting a minimum percentage of 3% non-productive land.
		2. To practice a conservative farming technology for the soil (no /minimum /strip-tillage) on at least 50% of the farm's cultivated area. *Such management of soil works directly contributes to their protection in the most sensitive periods and areas, as well as reducing the risk of degradation and erosion. This practice contributes to reducing soil compaction by reducing repeated passes with machines, increasing the soil's water retention capacity, increasing the soil's carbon sequestration capacity, reducing greenhouse gas emissions and, implicitly, reducing the carbon footprint by reducing consumption of fuel per hectare, increasing soil biodiversity, while ensuring a favorable habitat for the development of fauna. It will also improve the texture and structure of the soil, increasing the humus in the soil.
		3. The annual planting of at least 2 trees per ha, for each agricultural holding applying for the subsidy through the eco-scheme: fruit trees and trees of the apple, peach, plum, cork oak, cherry, apricot, cherry, sour cherry, quince, walnut, oak, elm, linden, hazel, acacia, hemlock, paltin, maple, sycamore, pine, sage, chestnut, and other species. *This practice helps to stop and reverse the loss of biodiversity, improve ecosystem services and preserve habitats and landscapes, which can be a refuge for birds and animals. In the medium term, the measure can be a support for reducing soil erosion, reducing soil temperature in the areas near the plantation, increasing the capacity to retain water in the soil and carbon sequestration in the plantation and its borders.

Source: PNS 2023-2027 – version following Romanian producer associations consultation

Conclusions:

• The objectives set by the European Parliament for eco-schemes aim the following aspects: combating climate change, reducing carbon emissions, protecting water quality, reducing soil erosion, protecting biodiversity, protecting pollinators, promoting the sustainable use of pesticides, improving animal welfare, reducing inputs and sustainable management of natural resources through precision agriculture.

• Through the introduction of the ***Beneficial practices for the environment applicable in arable land*** eco-scheme, farmers who want to fully collect the subsidies per hectare will have to comply with the new environmental conditions introduced.

• Will Romanian farmers be able to adapt to the mentioned requirements for the application of the ***Beneficial practices for the environment applicable in arable land*** eco-scheme? We will have the answer to this question at the end of 2023, after the application of the measure.

Acknowledgments. *The publication of this article was possible thanks to the project no. 1062/15.07.2022, The technical-economic impact of the eco-scheme for arable land on vegetable farms of different sizes (ExEcoSchem) contracted by the USAMV Bucharest, the Romanian Maize Producers Association and the Pro Agro Federation.*

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INVESTIGAREA ÎNSUȘIRILOR FIZICO-CHIMICE ȘI AGROCHIMICE ALE SOLULUI DIN ZONA RURALĂ – NIHORENI

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Summary

The study of ecological functions of soils is a fundamental problem of soil science, although it is essentially interdisciplinary. The ecological functions of soils are usually divided into two large groups: ecosystem (biogeocenotic) and global (biosphere). To determine the agroecological quality of arable land, it is necessary to analyze a whole set of agroecological functions, and this set will be different for the conditions of each region, field and even a small plot. For this, an analysis of the diagnostic indicators of these agroecological functions is carried out, including the integral and partial indicators of the biotic, chemical or physical parameters of the studied lands: humus content, biogenic elements, soil composition and their structural condition in general, the condition phytosanitary of crops etc.. The relevance of the research provides for the approach and evaluation of the land fund, regarding the condition of the lands in the village of Nihoreni, which implies a sustainable development of all objects of the natural environment. The optimization of the natural environment boils down to finding a balanced relationship between the exploitation of ecosystems (rational use of natural resources), their protection and improvement. Since the human agricultural activity in the locality is carried out within the limits of the natural formations – landscape, transformed in the process of use as an agricultural landscape, the latter become an object of protection. The purpose of the study consists in the agroecological substantiation of a set of measures for the protection of agricultural lands in the village of Nihoreni. For the development and adaptation of agricultural systems of an adaptive landscape, an adequate system of agroecological land evaluation is necessary. It differs significantly from the traditional land evaluation system practiced in land management. The productivity of agricultural crops is determined by the degree to which the climatic conditions correspond to the biological characteristics of the crops and the agrotechnics of their cultivation. The highest yield is obtained with the maximum use of climatic resources by the plant. The agroecological assessment of crop yield conditions remain an important challenge facing agriculture.

Keywords: *agroecology, climatic conditions, physico-chemical and agrochemical properties, agricultural landscape.*

JEL: *C23, F63, F64, I15, O13, Q15, Q24, Q54, R11, R14*

UDC: *631.431+631.95] (478-22)*

„Pământ străbun, al țării mele, TU porți în sânul tău - comori!
Indiferent, de-s vremuri grele, rămâi lăcaș fidel și pentru noi.”

Introducere. Fosta bază de evaluare a terenurilor din anii 60 nu avea certitudine ecologică, deoarece sistemele agricole zonale în sine erau lipsite de o anumită abordare ecologică. Evaluarea terenurilor a fost fără alternativă agroecologică, la fel ca sistemele agricole, de obicei lipsite de ambiguitate. Numeroase materiale de evaluare a terenurilor de toate nivelurile (sol, agroclimat, reabilitare, eroziune și alte hărți tematice de toate scările, date din sondaje și experimente) au fost foarte limitate în practică din cauza politicii agrare extensive și a nivelului tehnologic scăzut al agriculturii. Acolo unde cerințele de evaluare a terenurilor au crescut, în special la reabilitarea terenurilor supuse degradării, s-a înregistrat o slabă integrare a deciziilor de evaluare din cauza dezbinării specialiștilor de diverse profiluri [7]. Diferite aspecte ale evaluării terenurilor „privatizate” s-au manifestat într-un mod deosebit, în special, prin înlocuirea grupării terenurilor cu gruparea solului, ceea ce a frânat posibilitatea elaborării unei clasificări a terenurilor și a solului pe teritoriul Republicii Moldova [7].

Până de curând, cercetările agricole și de gestionare a terenurilor pe întreg teritoriul, se derulau pe baza grupelor de sol agroindustriale, care erau elaborate pe baza hărților de sol la scară largă. Neajunsurile lor semnificative au fost: în majoritatea cazurilor, o reflectare extrem de slabă a structurii învelișului solului, o reflectare insuficientă a reliefului, precum și condițiile litologice și hidrogeologice din zonele rurale și urbane. Relațiile sol-peisaj practic nu au fost luate în considerare. Spre deosebire de grupul agro-productiv al terenurilor neînrudite, grupul agroecologic de terenuri este o comunitate agroecologică, caracterizată spațial printr-un geosistem, a cărui funcționare are loc într-un singur lanț de migrație a materiei și energiei [4]. Cu cât este mai mare nivelul de intensificare a agriculturii și asigurarea tehnologiilor agricole de mare eficiență intensivă în știință, cu atât sunt mai mari cerințele pentru completitudinea și acuratețea bazei valorii terenurilor agricole. Astfel, sarcinile evaluării agroecologice a terenurilor includ identificarea parametrilor semnificativi din punct de vedere ecologic și agronomic ai diferitelor parcele de teren (în conformitate cu cerințele agroecologice ale culturilor agricole și agro-tehnologiilor), să determine relațiile peisagistice dintre aceștia, caracteristicile transferului de energie și de masă și fluxurile peisagistice și geochimice, în cadrul căruia sunt transformări antropice [8].

Sistemul de evaluare agroecologică a terenurilor cuprinde următoarele poziții: analiza peisagistică și ecologică a teritoriului, evaluarea agroecologică a solurilor, tipizarea și clasificarea agroecologică a terenurilor, sistemele agro-geoinformaționale pentru evaluarea agroecologică a terenurilor [10]. Evaluarea agroecologică a terenurilor într-un anumit fel se corelează cu evaluarea economică (prețul terenului, profitul etc.), socio-ecologic (condițiile de viață ale oamenilor) și de mediu, și economic (evaluarea daunelor cauzate de degradarea terenurilor etc.) [10]. În esență, evaluarea agroecologică a terenurilor este o evaluare a fertilității acestora, în care se stabilește cât de profitabilă este cultivarea unei anumite culturi într-o anumită zonă. Fără o evaluare agroecologică, un producător agricol poate planta o cultură într-un câmp în care aceasta va crește foarte slab și va produce randamente scăzute.

Experiența practică a evaluării terenurilor agroecologice din Republica Moldova arată că, puteți să aflați cu detalii și fiabilitate cât de potrivit este un anumit câmp pentru cultivarea unei anumite culturi. Totodată, evaluarea cadastrală a terenurilor larg utilizată (după nota de bonitare) nu oferă pentru agricultori informațiile utile pe care le oferă evaluarea agroecologică a terenului. Evaluarea terenului fie din zona urbană, fie din zona rurală este în concordanță cu sistemul de evaluare agroecologică a culturilor agricole, ale cărui cerințe sunt comparate cu parametrii agroecologici ai terenului în procesul de formare a tipurilor de teren agroecologic [9].

Evaluarea agroecologică a terenurilor se realizează în conformitate cu cerințele biologice ale culturilor agricole pentru condițiile de creștere, influența lor asupra mediului și tehnologiile agricole. Aceste condiții sunt comparate cu parametrii agroecologici ai parcelelor de teren primare (zone elementare ale agropeisajului - ZEA), pe baza cărora se face o concluzie cu privire la gradul de adecvare a acestora pentru utilizare la o anumită cultură. ZEA care sunt similare în ceea ce privește cultivarea unor plante agricole specifice sunt combinate în tipuri de teren agroecologic, în cadrul cărora se formează loturi de producție. Cu cât nivelul de intensificare a producției este mai mare, cu atât estimările corespunzătoare ar trebui să fie mai precise [1].

Actualmente, știința care se ocupă de studierea agroecosistemelor este Agroecologia, iar definiția contemporană după Черников В.А. și Чекерес А.И. [15] cuprinde clar și succint domeniul de studiu al acestei științe care este definită ca disciplină științifică complexă, ce studiază relaţiile omului cu mediul înconjurător în procesul agricol, influența agriculturii asupra componentelor şi complexelor naturale; relaţia dintre componentele agroecosistemelor şi specificul circuitului substanţelor şi energiei în cadrul agroecosistemului, caracterul funcţional al agroecosistemelor în condiţii tehnogene intensificate. Agroecosistemul – este un tip aparte de ecosistem, în cadrul căruia producţia netă este mai mare decât într-un ecosistem natural. Producţia serveşte drept hrană pentru om, pentru consumatorii secundari pe care omul îi foloseşte în alimentaţie. Stabilitatea în agroecosistem se datorează investiţiilor de energie. În agroecosisteme odată cu recolta se pierde o bună parte de substanţe nutritive, pe când într-un ecosistem natural acestea revin în circuit. Procesele de oxidare şi mineralizare se intensifică de pe urma micşorării densităţii covorului vegetal şi creşterii temperaturii solului, iar agrotehnica nediversificată duce la scăderea eficienţei folosirii apei şi măreşte pericolul pierderii substanţelor nutritive pe profil [15]. Astfel, capacitatea de producție a solului este diferită în agroecosisteme și biocenozele naturale [5], iar agroecosistemele contemporane includ procese de relaţionare: materiale, energetice, economice şi ecologice [15].

Teritoriul Republicii Moldova este vulnerabil la o serie de riscuri naturale pentru prevenirea cărora sunt necesare măsuri privind gestionarea, conservarea şi utilizarea durabilă a resurselor de apă, de teren şi cele biologice, în vederea menţinerii şi redresării sănătăţii, funcţionalităţii şi rezistenţei la schimbările climatice care afectează ecosistemele și agroecosistemele [1; 8]. În condițiile actuale moderne, ca urmare a impactului factorilor naturali și antropici, s-a observat o deteriorare constantă a stării agroecosistemelor, ceea ce duce la degradarea acestora. Peisajele (landșafele) degradate nu sunt capabile să îndeplinească funcții de formare a resurselor și a mediului.

Metode de cercetare. Obiectivul principal al cercetărilor a constat în caracteristica învelişului de sol pe baza materialelor pedologice elaborate pentru satul Nihoreni, raionul Rîşcani. În atingerea obiectivelor propuse în acest sens, s-au efectuat: (1) observări pe teren şi a analizelor din laborator a probelor pedologice de câmp colectate; (2) aprecierea compoziției granulometrice a principalelor roci formatoare de sol, conform clasificării Kacinski N.A.; (3) aprecierea datelor analitice ale condițiilor climatice, gradului de împădurire, gradului de arătură, echilibrul ecologic și coeficientul de stabilitate ecologică a terenurilor; (4) analiza fondului funciar conform datelor cadastrale de la 1 ianuarie 2021.

În contextul determinărilor studiului de explicare şi analiză a peisajului rural, privind subiectele (3) și (4) avem următoarele date comparative [6]:

Gradul de arătură – pentru raionul Rîșcani (Ga_1) și satul Nihoreni (Ga_2) s-a calculat după formula:

$$Ga = \frac{Sarab}{St} \cdot 100(\%) \qquad (1)$$

unde: *Ga* - gradul de arătură; $S_{arab.}$ – suprafaţa arabilă; *St* - suprafaţa totală pentru care se calculează.

Conform calculelor obținute – $G_{a1} = 76(\%)$ și $G_{a2} = 55{,}31(\%)$

Gradul de împădurire – pentru raionul Rîșcani ($G_{\hat{i}mp1}$) și s. Nihoreni ($G_{\hat{i}mp2}$) s-a calculat după formula:

$$G_{\hat{i}mp} = \frac{S\hat{i}mp}{St} \cdot 100(\%) \qquad (2)$$

unde: $G_{\hat{i}mp.}$ – gradul de împădurire; $S_{\hat{i}mp.}$ – suprafaţa împădurită (ha); *St* - suprafaţa totală pentru care se calculează.

Conform calculelor obținute - $G_{\hat{i}mp1} = 6{,}5(\%)$ și $G_{\hat{i}mp2} = 1{,}3(\%)$

S-a stabilit conform claselor de valori, că în raionul Rîșcani gradul de arătură este foarte mare (76%) și pentru s. Nihoreni – mare (55,31%); iar gradul de împădurire este mic (6,5%) și respectiv, pentru s. Nihoreni foarte mic (1,3%). Conform cercetărilor efectuate este necesar de aplicat măsuri de organizare ecologică a teritoriului în localitățile raionului.

Indicele echilibrului ecologic s-a determinat după formula:

$$I_e = \frac{S_{ec.an.} + S_{ec.nat.}}{S_{tot}} \cdot 100\% \qquad (3)$$

unde: $S_{ec.\ ant.}$ - suprafaţa ecosistemelor antropizate (păşuni, fânețe, fâșii forestiere), ha; $S_{ec.\ nat.}$ - suprafaţa ecosistemelor naturale (păduri, mlaştini, ape), ha; S_{tot} - suprafaţa totală de teren a comunei, ha.

Deci, echilibrul ecologic în mediu, pe zona cercetată conform datelor obținute se apreciază ca: *mic*, alcătuind - 12,33% pentru satul Nihoreni.

Coeficientul de stabilitate ecologică a terenurilor pe raion şi pe localitatea cercetată conform datelor după autorii Nedealcov M., et al. (2019, p. 86) se apreciază cu valori de 0,05-0,26 (*foarte instabil*).

Din cele spuse putem constata că gradul de arătură mare şi gradul de împădurire mic duce la destabilizarea echilibrului ecologic şi declanşarea proceselor de eroziune (Fig. 1).

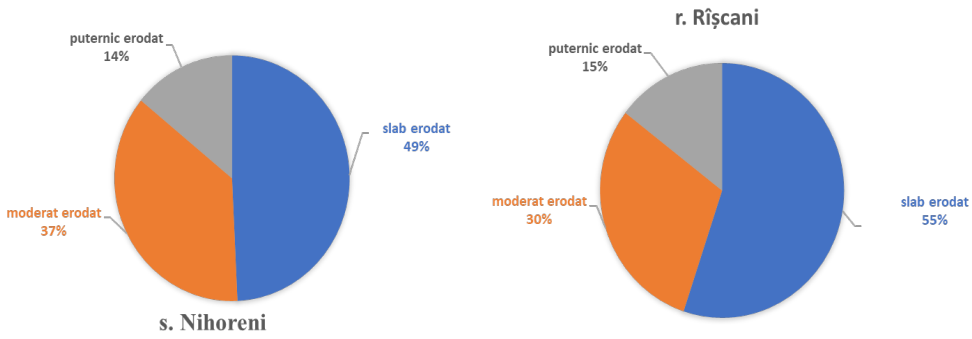

Figura 1. **Suprafața terenurilor expusă degradării prin procesul de eroziune, % din suprafața totală**

Sursa: Construită de autori fiind utilizate datele caracteristicii calitative a terenurilor agricole [3]

Prin urmare, obiectul cercetat este reprezentat prin următorul fond funciar [2]: total terenuri – 4310 ha; din care terenuri arabile – 2127,56 ha; terenuri agricole – 2384,24 ha; plantații multianuale – 225,24 ha, din care livezi – 203,85 ha; vii – 6,67 ha; plantații de nuci – 14,19 ha; arbuști fructiferi – 0,53 ha; pășuni – 1,56 ha; terenuri silvice – 579,42 ha, din care acoperite cu păduri – 486,44 ha; vegetație forestieră – 42,98 ha; plantații de tufari – 4,5 ha; fâșii forestiere de protecție – 38,48 ha; terenuri aflate sub iazuri – 0,34 ha.

Majoritatea localităților cu peisaje instabile se întâlnesc în regiunile cu podiș fragmentat și cu o pondere înaltă a terenurilor arabile.

Rezultate. Profilul şi specializarea economică în raionul Râșcani este orientată spre domeniul agroindustrial şi de prelucrare a produselor agricole, industriei extractive şi industriei de producere şi redistribuire a energiei electrice. Ponderea ramurii agricole constituie 70%, iar cea a industriei – 11%.

Clima raionului este temperat-continentală, influențată de masele de aer atlantice din vest, mediteraneene sud-vest şi continental-excesive din nord-est. Temperatura medie anuală a aerului constituie circa 8,6° – 10,3 °C. Cantitatea anuală de precipitații constituie circa 618 mm/m^2 (Fig. 2).

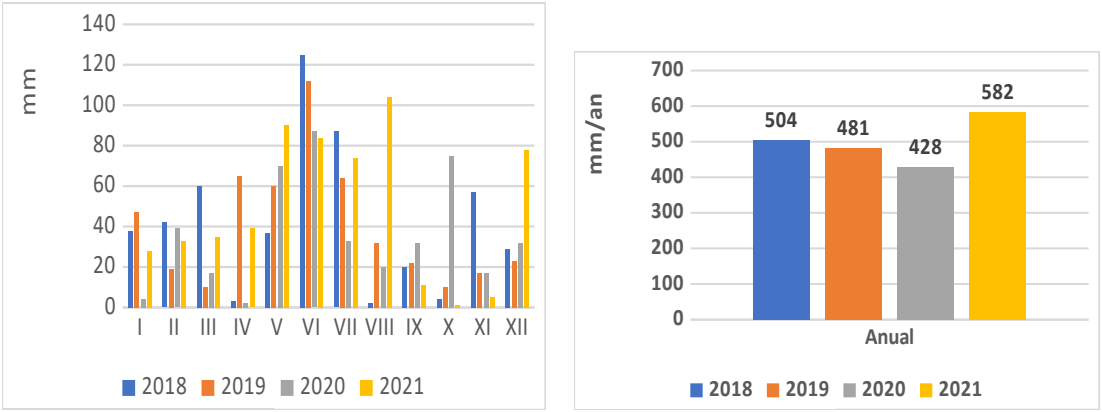

Figura 2. **Cantitatea lunară și anuală de precipitații (mm) pe anii 2018-2021**

Sursa: Construită de autori fiind utilizate datele din Statistica Republicii Moldova [18]

Principala bogăţie naturală este solul, reprezentat prin diferite tipuri de humus. Bonitatea medie a solurilor este de circa 70 puncte (din 100), care permit obţinerea recoltelor înalte la culturile tehnice agricole. Aceste caracteristici ale solului permit obţinerea performanţelor în agricultură. Spectrul zonal al învelişului de sol include solurile: cenuşii albice, tipice, molice – cernoziomuri argiloiluviale, levigate, tipice moderat humifere, obișnuite, carbonatice. Din punct de vedere agroclimateric şi a calităţii solurilor, în raionul Rîșcani există condiţii favorabile pentru cultivarea cerealelor (Fig. 3) şi culturilor tehnice (sfecla de zahăr, floarea soarelui, tutunul, etc.). Totodată, aici există cea mai scurtă perioadă de vegetaţie activă şi cea mai scurtă perioadă a duratei fără îngheţuri din regiune. Însă degradarea şi contaminarea excesivă a solului, stimulate de predominarea practicilor agricole neprietenoase mediului, eroziune, carst şi alunecări de teren, precum şi de stocarea neadecvată a chimicalelor agricole cu termen expirat, provoacă o situaţie critică în domeniul mediului în raion. La aceste probleme se mai adăugă şi problema gestionarii nesustenabile a deşeurilor solide şi lichide, cota foarte redusă a deşeurilor reciclate şi a emisiilor de gaze colectate [21].

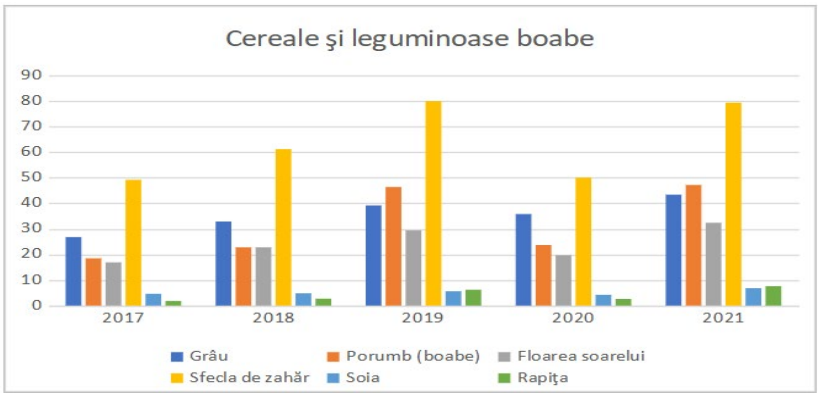

Figura 3. **Ponderea volumului producţiei agricole a raionului Rîşcani, mii tone**
Sursa: Construită de autori fiind utilizate datele din Statistica Republicii Moldova [18]

Satul Nihoreni (luat în studiu) este o localitate în raionul Rîşcani și face parte din Zona pedogeografică a silvostepei deluroase a Câmpiei de Nord, din Districtul cernoziomurilor tipice şi levigate al Stepei Câmpiei de Nord (Stepa Bălţilor) este prezentat de un singur raion pedogeografic (3) cu trei subraioane (3a, 3b şi 3c).

Relieful. Conform zonării geomorfologice teritoriul cercetat se află situat în Stepa Bălților. Relieful teritoriului este cu o suprafață înclinată pronunțată la sud, dezmembrată de văi, vâlcele, râpi și hârtoape, de regulă cu pante simetrice. După gradul de disecție și densitatea rețelei date, teritoriul studiat este foarte eterogen. Partea centrală a terenurilor agricole utilizate din localitatea Nihoreni se caracterizează printr-un relief relativ calm (Fig. 4). Această parte este disecată de o râpă mare tăiată adânc și o rețea de grinzi mici. Spațiile de bazin de apă dintre grinzi nu sunt largi (nu depășește 200 m) se transformă lin în pante colinare de diferite expuneri.

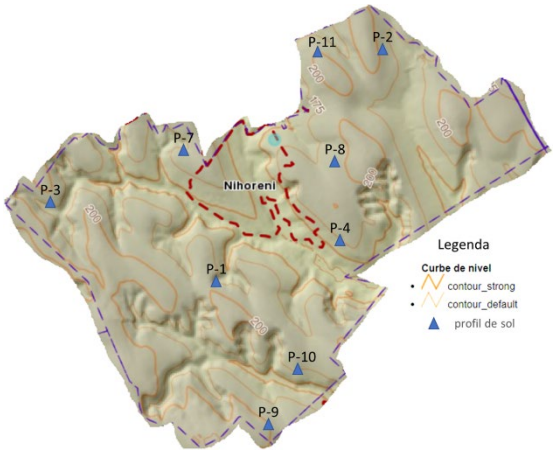

Figura 4. **Relieful satului Nihoreni**
Sursa: Construită de autori fiind utilizate datele din Fondul naţional de date geospaţiale [19]

Pantele terenurilor de aici sunt predominant abrupte, de lungime mică, ceea ce a contribuit la manifestarea eroziunii în grad mediu și puternic, precum și, în combinație cu caracteristicile rocilor formatoare de sol, provocând procesele de eroziune. Influența reliefului din zona studiată a contribuit, în general, la formarea solurilor erodate și neerodate de profil întreg.

Roci care formează solul și apa subterană. Structura geologică a teritoriului descris este reprezentată de roci neogene (terțiare) și cuaternare și depozite aluviale și deluviale moderne din lunca inundabilă și văi. Rocile subiacente din bazinele de recepție de apă (Fig. 5), și mai ales de pe versanții străvechi cu alunecări de teren, sunt argile sarmate medii, care se remarcă printr-o compoziție foarte densă sau erodată. Uneori, pe versanți, rocile ies la suprafață sau se află la o adâncime mică și servesc drept roci care formează solul pentru zone umede și cernoziomurile gleice (de luncă).

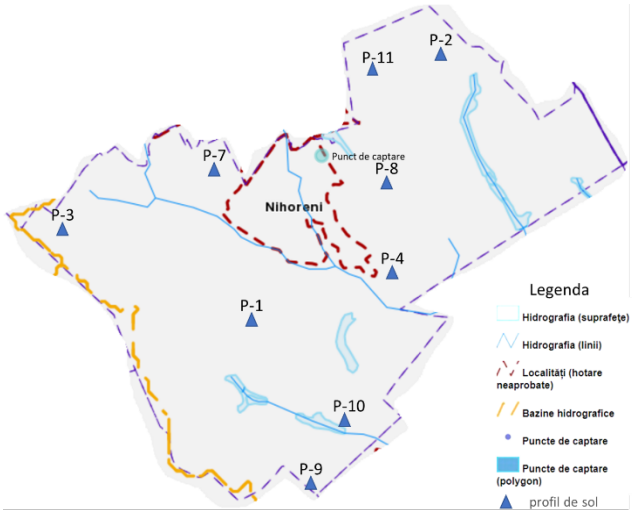

Figura 5. **Rocile subiacente din bazinele de recepție de apă din satul Nihoreni**
Sursa: Construită de autori fiind utilizate datele din Fondul naţional de date geospaţiale [19]

În perioada cuaternară, rocile neogene au fost acoperite de o manta de formațiuni de origine eluvio-deluvială, care pe teritoriul localității Nihoreni sunt reprezentate în principal de argilă ușoară, argile grele și depozite de luturi. Depozitele de argile ușoare, argile grele și lutoase se caracterizează prin culoare galbenă sau galbenă deschisă, porozitatea este fină, lipsa stratificării, conținut ridicat de carbonați. Rezultatele compoziției granulometrice a rocilor formatoare de sol arată că pe teritoriul localității Nihoreni predomină argilele ușoare și luturile grele, mai rar argilele și argilele grele neogene sarmațiene. Conținutul de argilă fizică în rocile argiloase ușoare, lutoase grele și lutoase ușoare este de 72,94-61,07%, 58,8-51,38%, respectiv 29,53-25,63%.

Clima. După tipul de aprovizionare cu umiditate, condițiile fizice și geomorfologice, teritoriul acestei localități se încadrează în prima regiune agroclimatică a Republicii Moldova, care se caracterizează printr-un climat continental temperat, cu temperaturi ridicate de vară, ierni scurte și calde, distribuția neuniformă a precipitațiilor pe luni și ani, și un sezon lung de vegetație. Indicatorul condiționat al umidității în localitatea Nihoreni (I_u este 1,2 -1,0). Temperatura medie a aerului este de + 8,5 ^{0}C cu fluctuații mari de temperatură pe tot parcursul anului. Temperatura maximă absolută atinge + 39 ^{0}C, minimă – 16,4 ^{0}C (graficele sunt reprezentate mai jos). Cea mai rece lună este ianuarie, cu o temperatură medie zilnică de -14,5 ^{0}C, iar cea mai fierbinte este iulie (+27 ^{0}C). Cantitatea de precipitații pentru vară este mai mare decât pentru alte perioade (Fig. 6).

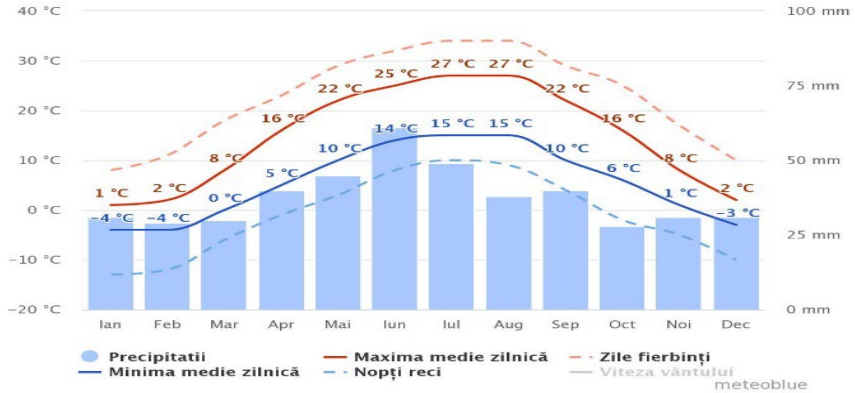

Figura 6. **Graficul valorilor precipitațiilor și a temperaturii pe teritoriul satului Nihoreni, 2021**

Sursa: Prognoza meteo profesionistă [20]

Solul. Pentru a caracteriza terenul se folosește zonarea natural-agricolă, care este un sistem de împărțire a teritoriului în zone separate, care caracterizează condiții naturale similare. Pe baza acestui fapt, utilizarea terenurilor din localitatea Nihoreni aparține provinciei ucrainene de silvostepă a Subprovinciei Centrale (5-IB), iar în zonarea agropedologică a Moldovei este inclusă în 3 regiuni regionale, şi cu cernoziomuri obișnuite din Câmpia Stepei Bălților. Procesul de formare a solului în trecut s-a desfășurat sub acoperirea vegetației de luncă-stepă, formând tipurile și subtipurile de sol (Fig. 7). Solurile grele și mijlocii s-au format pe platourile bazinelor

hidrografice și pe pante plane, iar solurile supuse procesului cu diferit grad de eroziune sunt limitate pe pante ușor înclinate și abrupte. Zone mici sunt ocupate de alunecări de teren active și pasive. Alunecările de teren se limitează în principal la pantele puternic înclinate și abrupte, iar eroziunea pe diferite elemente de relief.

Cernoziomuri levigate (Profilul 2, 7, 8): acestea s-au format sub păduri ușoare de carpen-stejar, cu plante bogate de luncă în condiții de regim hidric. O trăsătură caracteristică a cernoziomurilor levigate este prezența profundă a carbonaților în adâncimea profilului și apariția unui orizont iluviul slab exprimat or. B. Efervescența cu acid clorhidric 10% apare în orizonturile BC și C. Formațiuni vii carbonatate apar direct sub linia de efervescență.

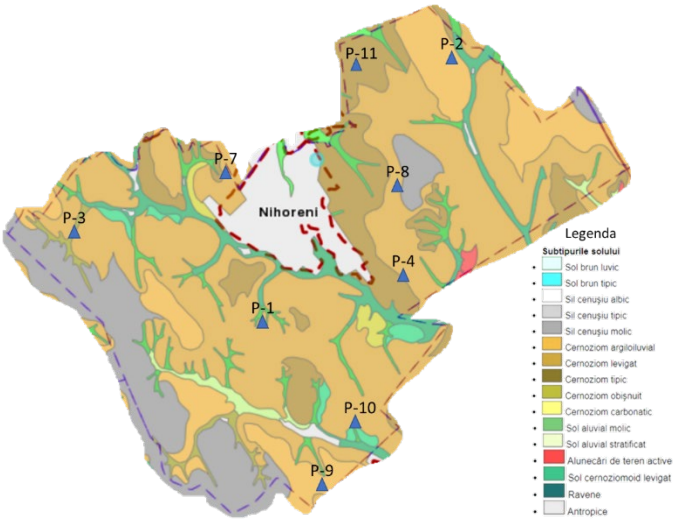

Figura 7. **Subtipurile solurilor din satul Nihoreni**

Sursa: Construită de autori fiind utilizate datele din Fondul național de date geospațiale (Ortofoto 2017) [19]

Cernoziomurile levigate cu profil întreg sunt limitate la podișurile și versanții cu diferite expuneri. Profilul de sol are următoarea structură morfologică: orizontul A este de culoare neagră sau cenușiu închis, are o structură grăunțoasă-granulară și este compactat. Orizontul B1 este gri cu o nuanță maronie, granulație grosieră, dens. Orizontul B2 este gri-maro, grosier, dens. Orizontul BC galben-maroniu, eterogen, dens, nestructurat. Orizontul C este galben, eterogen, dens, nestructurat cu dungi de humus, vene și cuiburi de neoplasme carbonatice. Din punct de vedere al grosimii, sunt profunde și de grosime medie (peste 80 cm și până la 80 cm din profilul de humus - orizonturi A + B).

În funcție de conținutul de humus din stratul de humus A + B, până la 4% sunt medii humifere. În conformitate cu rezultatele cercetărilor în teren și al analizelor de laborator, solurile au compoziție granulometrică argilo-lutoase, luto-argilos și luto-nisipoase, iar roca formatoare a solului este luto-argilos, argilo-lutoase și luto-nisipoase (Fig. 8).

Conform rezultatelor analizelor de laborator, profilul humifer al cernoziomurilor profunde conțin 64,10-61,49% argila fizica (argilo-lutoase), 58,25-58,72% (luto-argiloase) și 36,41-30,80% (lutoase). Conținutul de humus total în orizontul superior

or. A (stratul 0-45 cm) variază de la 3,86 și 3,52 la 3,57-3,61%, scade treptat cu adâncimea și la adâncimea de 105-115 cm este de 0,90-0,86%.

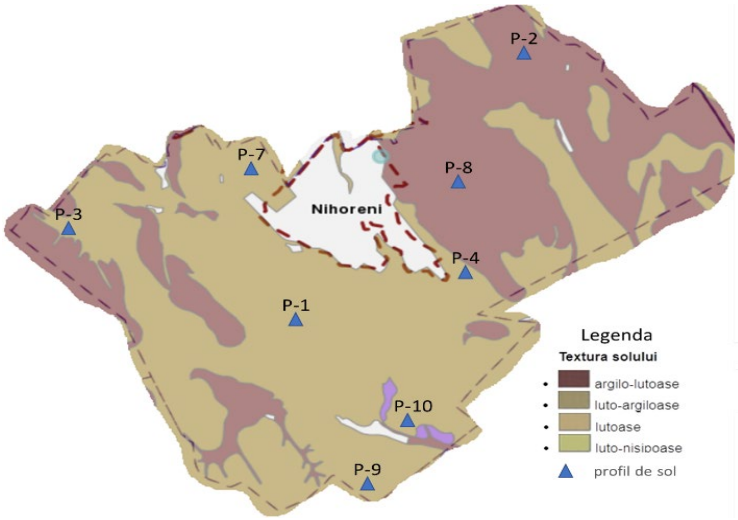

Figura 8. **Reprezentarea texturii solurilor din satul Nihoreni**
Sursa: Construită de autori fiind utilizate datele din Fondul naţional de date geospaţiale (Ortofoto 2017) [19]

Conținutul total de carbonați în orizonturile inferioare (BC și C) variază de la 3,0 la 21,4%, maximul fiind limitat la roca-mamă (orizontul C). Reacția solului este neutră în or. A și or. B și alcalină în rocă. Cantitatea de baze absorbtive variază între 27,72 - 28,56 me la 100 g de sol.

În complexul coloidal de absorbție a solului, cationul de calciu predomină asupra cationului de magneziu. Raportul Ca = 4.

Față de omologii săi automorfi, solul nr. 10 este gleic; conține în orizonturile inferioare ale profilului solului pelicule și benzi de K_2O_3, K(OH), dungi de humus, forme de carbonați sub formă de pete mari albe murdare și vinișoare mari de carbonați, au compoziție granulometrică lutoasă.

Cernoziomurile levigate erodate (Profilul nr. 1) s-au format ca urmare a distrugerii prin eroziune (apa și vânt) a orizontului de la suprafață a profilului solului. cernoziomurile levigate slab erodate (până la 1/2) a avut loc prin spălarea orizontului superior al humusului (Fig. 9). Grosimea orizontului de humus A rămas este de 30-36 cm. Grosimea întregului profil de humus (A + B) este de 66-74 cm. Ele au efervescența la acid clorhidric 10%, în roca-mamă la o adâncime de 70-85 cm.

Compoziția granulometrică a solurilor și rocilor, conform datelor obținute din teren, este luto-argiloasă și luto-nisipoasă. Este slab erodat și gleic, adică are semne de praf, conține forme feroase și oxidice de fier în orizonturile inferioare ale profilului, forme de var și vinișoare de carbonați albe, în unele locuri dungi de humus sub formă de „limbi” și „buzunare”.

Cernoziomurile levigate, moderat erodate (Profilul 9, 3) se caracterizează printr-o spălare aproape completă a orizontului superior al humusului A. Cernoziomurile levigate arabile moderat erodate (Fig. 9) se remarcă printr-o nuanță maronie, structură bulgăroasă cu blocuri la suprafață. Reducerea stratului de humus subarabil este de 25-40 cm, a rezervelor de humus și a nutrienților este diferită în comparație cu solul

neerodat. În procesul de efectuare a lucrărilor agricole, orizontul de tranziție superior B este arat în interior. Orizonturile subterane sunt de culoare gri-maro, spre deschis cu adâncimea, dens construit și cu structură bulgăroasă. Roca formatoare de sol are o culoare galbenă sau galben pal, densă, lipsită de structură, conține o mulțime de carbonați sub formă de mucegai, vene și ochi alb (bieloglască). Cernoziomurile levigate moderat erodate au o grosime de 47-58 cm, ele au efervescență la o adâncime de 47-58 cm. Solurile au compoziție granulometrică lutoasă și luto-argiloasă.

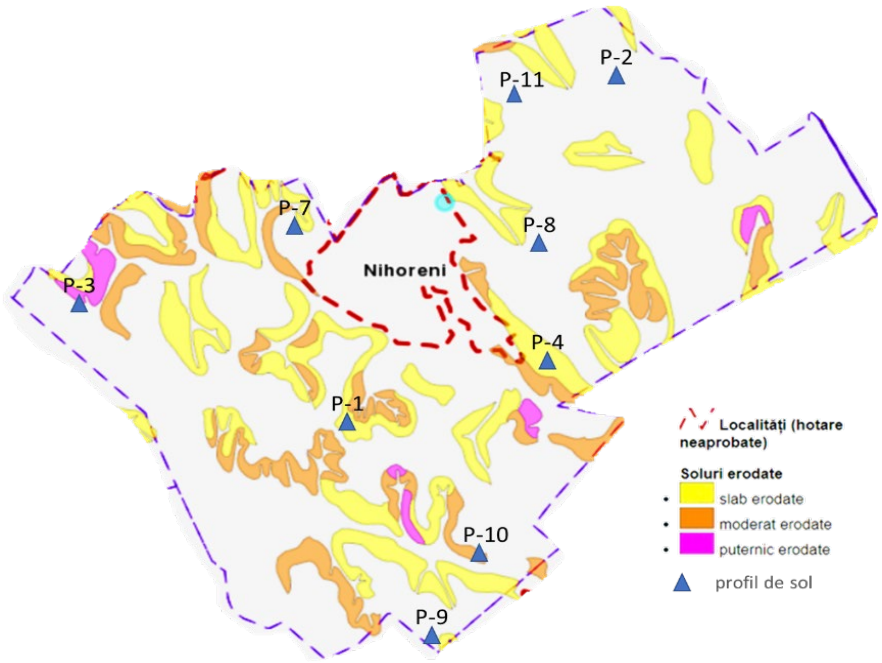

Figura 9. **Terenuri supuse procesului de eroziune din satul Nihoreni**
Sursa: Construită de autori fiind utilizate datele din Fondul naţional de date geospaţiale (Ortofoto 2017) [19]

Însușirile fizico-chimice și agrochimice ale solului. Poligonul cheie de monitoring agroecologic a fost amplasat pe teritoriul satului Nihoreni, raionul Rîșcani pe suprafața cvaziorizontală a unei culmi largi, în cadrul solei cu o suprafață totală de 185 ha. Terenul este utilizat la arabil în asolament de câmp cu o rotație mică de culturi: grâu-grâu-rapiță-grâu-sfeclă de zahăr-porumb-floarea soarelui. La momentul cercetărilor în anul 2021 pe câmp a fost cultivat porumb pentru siloz. Învelișul de sol este alcătuit de cernoziomurile tipice și levigate evoluate pe depozite loessoide argilo-lutoase.

Destinația poligonului - supravegherea dinamicii şi direcției modificării proprietăților agrochimice, agrofizice şi fizico-chimice ale cernoziomurilor tipice și levigate sub influența utilizării intensive în circuitul agricol şi elaborarea sistemelor de măsuri complexe de conservare a fertilității solului şi obținere a recoltelor scontate. Factorii naturali de degradare a solurilor se manifestă slab. Factorii antropici de degradare a solurilor sunt: dehumificarea, destructurarea şi compactarea stratului arabil şi subarabil ca rezultat al exploatării intensive a terenului şi a lipsei în

asolament a ierburilor perene concomitent cu neutilizarea producției secundare şi a îngrășămintelor organice pentru încorporarea în sol.

Descrierea profilului principal (Profilul nr. 11): cernoziomul tipic de pe poligonul de monitorizare agroecologică se caracterizează cu profil de tipul: Ahp1-Ahp2-Bhk1-Bhk2-BCk1-Bck2-Ck. Grosimea profilului humifer cu conținut de humus mai mare de 1,00% este egală cu 98 cm. Efervescența – de la 50 cm. Neoformații de carbonați sub formă de eflorescențe – în intervalul de adâncimi 50-100 cm, sub formă de vinișoare – mai adânc de 100cm. În orizontul C se întâlnesc rar pete mici gleizate. Acest orizont este alcătuit din depozite aluviale pliocene slab stratificate cu textură argiloasă- lutoasă.

Ahp1 (0-10 cm) - partea superioară afânată a stratului recent arabil, suriu închis, umed, argilo-lutos, granular–prăfos, poros, foarte multe rădăcini şi resturi organice, trecerea în orizontul următor treptată; *Ahp1 (10-25 cm)* - partea inferioară a stratului recent arabil, se deosebește prin compacitate mai mare, suriu închis, umed, argilo-lutos, glomerular – bulgăros, poros, fisuri mici rare, rădăcini foarte frecvente, trecerea treptată; *Ahp2 (25-37 cm)* - stratul postarabil, se deosebește de cel arabil numai prin compacitate foarte ridicată şi structură bulgăroasă practic masivă, umed, trecerea clară; *Ah (37-50 cm)* - partea inferioară a orizontului humifer nemodificată prin arătură, cenușiu închis cu nuanță slabă brună, umed, argilo-lutos, glomerular – grăunțos, poros, pori mici şi mijlocii, găuri de insecte, rădăcini moderat frecvente, trecerea treptată; *Bhk1 (50-70 cm)* - castaniu închis, jilav argilo-lutos, se fărâmă comparativ ușor în agregate glomerulare, poros, pori fini şi mici, rădăcini rare, eflorescențe de $CaCO_3$, trecere treptată; *Bhk2 (70-98 cm)* - brun îmbibat cu pseudomicelii albe de $CaCO_3$, reavăn, argilo-lutos, se fărâmă în bulgări şi agregate glomerulare, poros, pori mici şi fini, multe găuri de insecte, pseudomicelii, rădăcini rare, trecere treptată; *BCk1 (98-120 cm)* - brun gălbui cu multe crotovine de culoare brună, reavăn, argilo-lutos, nestructurat, poros, pori fini şi mici, găuri de rădăcini putrede a vegetației lemnoase; *BCk2 (120-150 cm)* - galben cu nuanță slabă brună, reavăn, argilo-lutos, nestructurat, pori fini şi mici, pseudomicelii, vinișoare de carbonați; *Ck (150-200 cm)* - galben, reavăn, depozite aluviale pliocene luto-argiloase cu vinișoare de $CaCO_3$, rar pete surii gleizare, nestructurat, slab stratificat.

Textura şi însușirile fizice. Textura cernoziomului tipic studiat (Tab. 1) este comparativ omogenă pe profilul până la adâncimea 120 cm. Această parte a profilului s-a format pe depozite loessoide cuaternare argilo-lutoase cu conținut de argilă fizică în limitele 61-62% şi de argilă în limitele 35,7-62,4%.

Mai adânc de 120 cm profilul solului este format din depozite aluviale pliocene slab stratificate cu conținut de argilă fizică 65-66% şi de argilă – 34-37%. În condiții de destructurare a stratului arabil ca rezultat al lucrării intensive neadecvate a acestuia, calitate negativă a texturii solului cercetat este conținutul înalt de argilă, care, fiind parțial peptizantă, contribuie la formarea structurii masive şi compactarea stratului arabil şi subiacent postarabil.

Higroscopicitatea în profilul cernoziomului tipic variază de la 5,0-5,1% în stratul arabil până la 3,4% în orizontul Ck (Tab. 1-2).

Valorile statistice medii ale coeficientului de higroscopicitate sunt mijlocii şi se schimbă pe profilul humifer în limitele de la 6,9% în or. Ahp1 până la 5,9 în or. Ah (Tab. 2).

Densitatea aparentă a cernoziomului tipic cercetat pentru stratul arabil periodic afânat prin cultivare, conform datelor statistice medii, se caracterizează cu valori optimale (1,18-1,31 g/cm^3). În stratul postarabil densitatea aparentă atinge valori mai mari de 1,40 g/cm^3 ce indică la compactarea acestuia.

Valorile comparativ mari a densității aparente pentru stratul postarabil indică că acest strat necesită afânare periodică pentru îmbunătățirea stării lui de calitate fizică. În orizonturile Bhk, BCk şi Ck valorile densității aparente ating mărimi de până la 1,45-1,49 g/cm^3 (Tab. 1).

Tabelul 1. **Textura şi unele însuşiri fizice ale cernoziomului tipic pentru profilul cercetat**

Orizonturile genetice şi adâncimea, cm	Higroscopicitatea, %	Coeficientul de higroscopicitate, %	Densitatea aparentă, g/cm^3	Dimensiunea fracţiunelor, mm; conţinutul în %					
				0,1-0,05	0,05-0,01	0,01-0,005	0,005-0,001	<0,001	<0,01
Ahp1 0-10	5,2	7,2	1,24	9,5	28,6	9,0	16,5	36,4	61,9
Ahp2 10-25	5,0	7,0	1,26	8,4	29,4	9,9	16,3	36,0	62,2
Ahp3 25-37	5,1	7,0	1,42	9,8	28,3	9,3	16,9	35,7	61,9
Ah 37-50	4,9	6,8	1,41	9,9	29,1	9,6	15,4	36,0	61,0
Bhk1 50-70	4,8	6,6	-	9,2	22,9	9,1	15,6	36,2	60,9
Bhk2 70-98	4,0	6,2	1,48	9,0	30,2	9,1	14,5	36,2	60,8
BCk1 98-120	3,9	6,1	-	7,2	30,5	8,9	16,2	37,2	62,3
BCk2 120-140	3,5	5,3	1,49	7,8	26,3	11,4	17,8	36,7	65,9
BCk3 140-160	3,4	5,4	-	7,4	26,1	11,6	16,5	35,4	66,5
CK 180-200	3,4	5,0	1,45	6,8	27,4	11,8	20,1	33,9	65,8

Tabelul 2. **Parametrii statistici medii (M±s) ai însuşirilor fizice ale cernoziomului tipic cercetat**

Orizonturile genetice şi adâncimea, cm	Grosimea orizonturilor genetice, cm	Higroscopicitatea, %	Coeficientul de higroscopicitate, %	Densitatea aparentă, g/cm^3
Ahp1 0-11	11±1	5,1±0,1	6,9±0,3	1,18±0,07
Ahp2 10-25	14±1	5,0±0,1	6,6±0,4	1,31±0,09
Ahp3 25-37	12±2	4,8±0,3	6,4±0,5	1,42±0,06
Ah 37-50	13±1	4,4±0,5	5,9±0,6	1,41±0,01

Însuşirile chimice şi fizico-chimice. Datele privind principale însuşiri chimice şi fizico-chimice ale solurilor cercetate sunt prezentate în Tab. 3. Reacţia solurilor cercetate este slab acidă în or. Ah şi slab alcalină în orizonturile care conţin carbonaţi. Valorile pH-lui se schimbă pe profil de la 6,4-6,5 în or. recent arabil (Ahp1) până la 8,0-8,2 în or. BCk şi Ck. Carbonaţii pe profilul solului sunt levigaţi până la adâncimea de 50 cm.

Conţinutul carbonaţilor variază în limitele 5-9% în or. Bhk1-Bhk2 şi 13-21% în or. BCk şi Ck. Suma cationilor schimbabili în straturile superioare constituie 31-34 me/100 g sol, iar în cele inferioare scade până la 22-25 me/100 g sol. Valorile raportului Ca^{++} : Mg^{++} sunt în limitele 6-7, micşorându-se treptat în orizonturile cu carbonaţi (BCk şi Ck).

Tabelul 3. **Însuşirile chimice şi fizico-chimice ale cernoziomului tipic cercetat**

Orizonturile genetice şi adâncimea, cm	pH	$CaCO_3$, %	Humus, %	Cationii schimbabili, me/100 g sol		
				Ca^{++}	Mg^{++}	Suma
Ahp1 0-10	6,4	-	3,50	29,5	4,4	33,9
Ahp2 10-25	6,5	-	3,41	29,5	4,2	33,7
Ahp3 25-37	6,7	-	3,27	29,6	4,0	33,6
Ah 37-50	6,8	-	2,99	29,2	3,9	33,1
Bhk1 50-70	7,6	5,0	1,87	28,0	3,5	31,5
Bhk2 70-98	7,8	9,2	1,59	25,7	3,3	29,0
BCk1 98-120	8,0	13,0	0,95	21,6	3,0	24,6
BCk2 120-140	8,0	13,4	0,71	21,6	3,0	24,6
BCk3 140-160	8,1	19,0	0,63	18,7	3,0	21,7
CK 180-200	8,2	21,2	0,59	18,6	3,0	21,6

Conform datelor pentru cernoziomul tipic cercetat conţinutul de humus în orizonturile humifiere (Ah) constituie 3,50-2,99, în orizontul Bhk1 – 1,87 % şi în Bhk2 – 1,59 % (Tab. 4). În orizonturile BCk conţinutul de humus variază în limitele 0,95-0,63%, iar în orizontul Ck este egal cu 0,59%. Astfel de valori ale conţinutului de humus pentru subtipul de cernoziom tipic pot fi apreciate ca mici şi confirmă că sistemul de exploataţie agricolă a terenurilor nu corespunde cerinţilor de păstrare pe termen lung a fertilităţii acestor soluri.

Conţinutul azotului total în orizonturile humifere constituie 0,16-0,14%, iar în orizonturile inferioare scade proporţional cu conţinutul de humus (Tab. 4).

Conţinutul de fosfor total în straturile arate constituie 0,10-0,11%, iar în cele postarabile – 0,09-0,07%. Aceasta confirmă că roca parentală pe care s-a format solul cercetat este săracă în fosfor şi rezervele acestuia se pot uşor epuiza.

După conţinutul de fosfor mobil în stratul arabil (1,8 -2,6 mg/100 g) solul cercetat poate fi apreciat ca moderat asigurat si necesită introducerea regulată a îngrăşămintelor respective în doze mijlocii.

Rezervele de potasiu mobil în stratul arabil al solului cercetat sunt mari (33-49 mg/100 g sol), introducerea îngrăşămintelor respective nu este obligatorie.

Tabelul 4. **Caracteristica proprietăților agrochimice ale cernoziomului tipic cercetat**

Orizontul genetic	Adâncimea, cm	%				mg/100 g sol formele mobile		
		humus	azot total	C:N	fosfor total	P_2O_5	K_2O	NO_3
Ahp1	0-10	3,50	0,16	11,6	0,11	2,6	49	0,28
Ahp2	10-25	3,41	0,14	12,6	0,10	1,8	33	0,87
Ahp3	25-37	3,27	0,10		0,09	1,4	27	1,08
Ah	37-50	2,99	0,09		0,07	0,8	19	0,28
Bhk1	50-70	1,87	-	-	-	-	-	0,21
Bhk2	70-98	1,59	-	-	-	-	-	0,19
BCk1	98-120	0,95	-	-	-	-	-	0,19
BCk2	120-140	0,71	-	-	-	-	-	0,19
BCK3	140-160	0,63	-	-	-	-	-	0,19
CK	180-200	0,59	-	-	-	-	-	0,19

Concluzii.

1. Localitatea Nihoreni face parte din Zona pedogeografică a silvostepei deluroase a Câmpiei de Nord, din Districtul cernoziomurilor tipice şi levigate al Stepei Câmpiei de Nord (Stepa Bălţilor) este prezentat de un singur raion pedogeografic (3) cu trei subraioane (3a, 3b şi 3c).

2. Pantele terenurilor de aici sunt predominant abrupte, de lungime mică, ceea ce a contribuit la manifestarea eroziunii în grad mediu și puternic, precum și, în combinație cu caracteristicile rocilor formatoare de sol, provocând procesele de eroziune. Condițiile geomorfologice ale zonei cercetate sunt în general favorabile dezvoltării diferitelor ramuri agricole de cultivare a plantelor.

3. Din cele expuse în lucrare putem constata că gradul de arătură mare şi gradul de împădurire mic duce la destabilizarea echilibrului ecologic şi declanșarea proceselor de eroziune. Total terenuri supuse procesului de eroziune din satul Nihoreni – 1350 ha, din care: slab erodate – 665 ha; moderat erodate – 495 ha; puternic erodate – 190 ha. Nota de bonitate – 70 puncte.

4. Cernoziomul tipic și cernoziomul levigat cercetat în satul Nihoreni la moment, se caracterizează cu însușiri fizice, chimice şi fizico-chimice satisfăcătoare pentru creșterea şi dezvoltarea plantelor de cultură. Sistemul existent de gospodărie în agricultură a condus şi continuă să conducă la înrăutățirea stării de calitate a cernoziomurilor tipice: a scăzut şi continuă să scadă conținutul de humus, s-a intensificat procesul de destructurare si compactare a straturilor arabil şi postarabil al solurilor, se epuizează rezervele de fosfor. Putem afirma că aceeași situație de degradare s-a constatat și la cernoziomurile levigate.

5. Așadar, conform datelor pentru profilul principal, cernoziomul tipic cercetat după conținutul de humus şi fosfor mobil în stratul arabil este moderat asigurat, iar după conținutul de potasiu schimbabil gradul de asigurare a solului cu acest element este optimal.

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CRITERII ȘI STANDARDE ECONOMICE ÎN TURISMUL MEDICAL ACTUAL

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Summary

Medical tourism, defined as "travel outside the country of residence, with the aim of obtaining medical care" is a contemporary reality, arising as a result of the phenomenon of globalization of tourism, on the one hand, and health care systems, on the other hand. In the past, the term referred only to the travel of patients from less developed countries to developed ones for medical treatments not available in the country of origin.

Currently, three trends are emerging in medical tourism: the first refers to attracting patients for balneology procedures, the second refers to the provision of medical rehabilitation care, and the last trend is the one that offers specialized treatments of aesthetic surgery, dentistry, cardiac and orthopedic surgery. For the individuals interested in health services, the cost and quality of health infrastructure and medical personnel are the key factors involved in the decision to receive medical care abroad. In addition, they are associated with very high fees that patients cannot cover from health insurance, such as dental implants.

Inevitably, the COVID 19 pandemic had bad consequences for medical tourism as well, through travel bans, the fear of contacting the disease and the deterioration of the quality of life of many patients.

In conclusion, although a long period of time is needed for medical tourism to return to pre-pandemic standards; it represents an economically attractive alternative, both for the patient and for the countries providing these medical documents.

***Keywords**: medical tourism, economic status, health services*
***JEL:** I 15- Health and Economic Development*
***UDC:** 338.48*

Turismul medical reprezintă un sector strategic pentru dezvoltarea economică a țărilor în curs de dezvoltare, deoarece aduce beneficii substanțiale la produsul intern brut în anumite sectoare medicale, ca: stomatologia și estetica dentară, ortopedia, chirurgia plastică, wellnes [Menvielle, 2013]. În anii dinainte de pandemia de COVID 19, turismul medical a reprezentat o importantă sursă financiară pentru țările respective, și anume:

- America de Sud: Argentina, Mexic, Brazilia;
- Asia de Sud-Est: Thailanda, India, Indonezia;
- Africa: Africa de Sud, Tunisia, Maroc, Egipt;
- Europa: Polonia, Spania, Turcia, Ungaria, România.

Dintre toate aceste țări, sursele oficiale citează pe primul loc Thailanda, care deține 400 de spitale și a tratat 400.000 de pacienți din străinătate [https://www.chirurgiepro.net/le-tourisme-medical-dans-le-monde].

Alte surse citează faptul că în 2010, aproape 1,5 milioane de americani au călătorit pentru a obține servicii medicale, de 2 ori mai mult decât în urmă cu 3 ani [Menvielle, 2012]. Alte exemple semnificative se referă la India, în care, la mijlocul anilor 2000, turismul medical a oferit o creștere substanțială a produsului intern brut de 5% și 4 milioane de angajați [Reisman, 2010 ; Abd Manaf, 2015]. În 2019, mai mult de 20 milioane de pacienți au călătorit în străinătate pentru tratamente medicale.

Acest succes al turismului medical se poate explica prin următoarele fenomene distincte:

- Diferențele existente între situația financiară a țărilor dezvoltate și a celor în curs de dezvoltare, ceea ce oferă pacienților posibilitatea acoperirii financiare a tratamentelor medicale la un cost mult mai redus; în Statele Unite ale Americii, de exemplu, un cetățean poate economisi până la 85% din taxele medicale prin turism medical.
- Diferențele existente între infrastructura sanitară care determină, de exemplu, ca un cetățean britanic să caute îngrijiri medicale în Franța, având o acoperire de 100% a taxelor medicale;
- Diferențe de legislație/reglementări care pot limita anumite manopere medicale/chirurgicale în țările de origine, cum este cazul manoperelor pentru tratamentul infertilității ;
- Deschiderea frontierelor, recunoașterea și echivalarea diplomelor medicale care permite centrelor medicale să găsească potențiali clienți din străinătate;
- Lipsa rambursării financiare a anumitor manopere terapeutice, cum sunt cele de implantologie sau estetică facială din anumite țări, asociate cu devize foarte mari față de oferta altor țări [Smith, 2011].

Riscurile din turismul medical

Nu trebuie uitat că turismul medical prezintă și **riscuri**: unele țări, cum ar fi Africa de Sud sau Thailanda au o epidemiologie legată de boli infecțioase foarte diferite față de Europa și America de Nord. Expunerea la boli, fără să fi construită imunitatea naturală poate fi un pericol pentru persoanele slăbite, care ar expune pacientul la boli endemice (malarie, febră tifoidă, tuberculoză) [Xu, 2020].

Un alt risc identificat se referă la standardele chirurgicale mai puțin stricte, unde pot apare riscuri de complicații post-operatorii, pacientul fiind nevoit să-și prelungească sejurul sau să necesite ulterior, îngrijiri suplimentare la domiciliu.

Asociația Medicală Mondială atrage atenția asupra următoarelor considerente etice care pot apare în cazul turismului medical:

- în cazul în care nu există reglementări legale clare și a unei asistențe medicale forțate pentru a atrage cât mai mulți pacienți, pot apare efecte negative asupra creșterii fenomenului de rezistență microbiană și deci, a infecțiilor nosocomiale;
- în anumite țări, tratamentele medicale pot fi acordate și de personal care nu are competențele necesare, datorită faptului că nu există reglementări specifice în acest sens [Association médicale mondiale, 2020].

Turismul medical în condițiile pandemiei COVID

Inevitabil, pandemia de COVID 19 a avut consecințe nefaste și asupra turismului medical. Interdicțiile de călătorie au avut repercusiuni asupra turismului, în general, și asupra celui medical, în particular. Dacă în 2019, mai mult de 20 de milioane de pacienți au apelat la servicii medicale internaționale, în pandemie, acest lucru nu a mai putut fi posibil, datorită restricțiilor impuse de guverne, frica de a contracta boala si deprecierea calității vieții multor pacienți. În altă ordine de idei, au apărut și oportuniști care au profitat de lipsa cunoștințelor și de disperarea persoanelor infectate cu virusul Sarscov2 și au promovat pachete de servicii medicale care nu se realizau în țara de origine. Este cazul pacienților care au călătorit în țări ca Germania, Cipru, Elveția pentru *afereză*, o procedură care s-a dovedit inutilă și doar experimentală, fără suport științific [Tatum, 2020]. Alte surse menționează includerea în pachetele de turism medical a procedurilor pentru recuperare postCovid care tratează complicații ca: mialgia, astenia, dispneea, paresteziile, vertijul [Ferdos, 2021].

Specialiștii atrag atenția asupra faptului că este necesară o perioadă suficient de lungă de timp pentru ca turismul medical să revină la situația dinainte de 2019 prin asigurarea unor condiții suplimentare de siguranță a actului medical.

În paralel cu aceste măsuri suplimentare, **telemedicina** a cunoscut o creștere considerabilă, multe centre medicale și-au lărgit sfera de diagnosticare, atât înainte, cât și post călătorie [Dalen, 2019]. Deși turismul medical a fost considerabil afectat de pandemia de COVID 19, există indicii că unele țări, cum este Dubai-ul, au găsit soluțiile de depășire a obstacolelor și de a restabili încrederea pacienților în serviciile oferite.

Turismul stomatologic reprezintă o parte importantă a turismului medical, motivația pacienților fiind corelată cu prețurile mari ale manoperelor terapeutice la nivel autohton, precum și cu întârzierile în acordarea îngrijirilor de specialitate [Abubakar, 2016].

Cei mai mulți candidați la turismul dentar se deplasează în Europa de Est, respectiv, în Ungaria, România, Polonia, unde prețurile sunt mult mai scăzute decât în alte țări europene, iar oferta medicală este diversificată și certificată legal. Din această

categorie, fac parte pacienți care provin din Marea Britanie, Germania, Austria și Irlanda, în special pe perioadele de vacanță.

Indiscutabil, turismul stomatologic a înregistrat cele mai mari rate de succes datorită tratamentelor de implantologie. De exemplu, în România implantele dentare sunt la jumătate din valoarea celor din alte țări europene, sau chiar mai mici: în Elveția, un implant dentar costă 2500 euro, iar în România, 500 euro [Oltean, 2020; Enache, 2013].

Pe piața competitivă, ofertele prețurilor tratamentelor de implantologie încep de la 480 USD în Polonia, 500 USD în România, Ungaria și Turcia, iar pe continentul american, în Costa Rica, 650 USD [Gheorghe, 2017]. În figura 1 sunt prezentate costurile tratamentelor de implantologie în diferite țări.

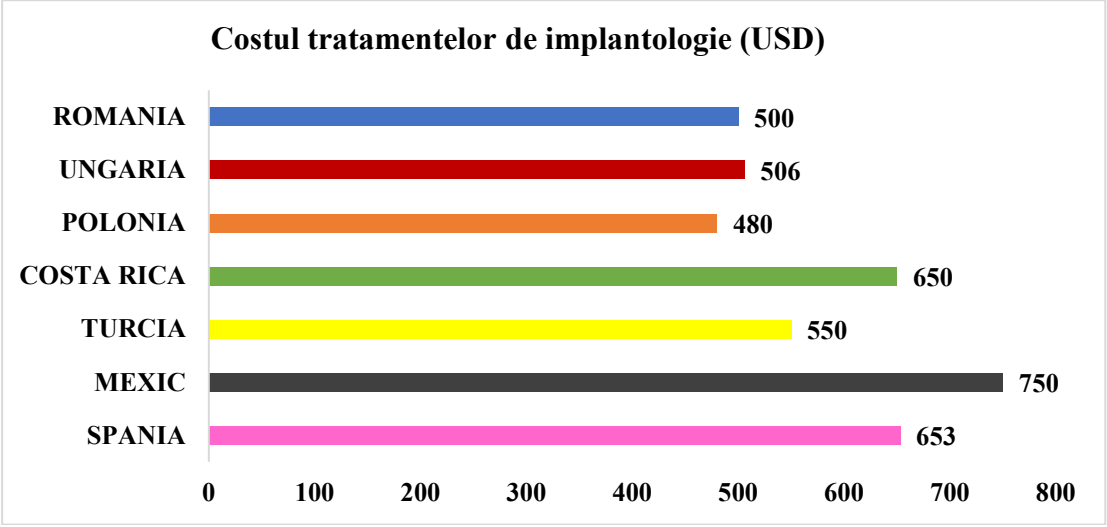

Figura 1: **Costul în USD al tratamentelor stomatologice de implantologie**

Nu trebuie uitat faptul că turismul dentar ridică câteva probleme etice [Santé Magazine,2016] :

- În primul rând, este vorba de devizul manoperelor terapeutice care trebuie realizat după un examen clinic complet al pacientului, și nu numai după un bilanț radiologic.
- În al doilea rând, rapiditatea executării îngrijirilor medicale ridică un semn de întrebare asupra respectării tuturor indicațiilor obligatorii și ghidurilor terapeutice. Exemplul clasic este cel al tratamentelor protetice realizate la scurt timp după efectuarea extracțiilor dentare, când cicatrizarea muco-osoasă nu este încă finalizată .

În concluzie, în prezent, turismul medical este într-o perioadă de revenire după pandemia de COVID 19, iar Romania, la rândul ei, ar putea profita, având oportunități de dezvoltare prin: prețurile de cost mai mici decât cele din alte țări occidentale, pregătirea de calitate a personalului medical, precum și prin oferirea unei palete largi de atracții turistice.

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UKRAINIAN FOOD SECURITY: WAR RISKS AND POST-WAR OPPORTUNITIES

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Summary

Throughout the period of independence, the agricultural sector of Ukraine provided a sufficiently high level of food security. Military actions on the territory of Ukraine have critically affected the state of food security in Ukraine and rest of the world. It has posed a number of challenges to Ukrainian agricultural sector. In this context, it is necessary to identify the main risks and assess the provision of the main types of agri-food products in the conditions of hostilities and to establish directions and prospects for further sustainable development of the agricultural sector.

The aim of the article is to assess the impact of the war on food security in Ukraine and the post-war prospects of the agricultural sector in compliance with the principles of sustainable development.

Research methods: *general scientific and special, qualitative and quantitative, theoretical and empirical, balance method.*

The results. *The prioritized goals set during the war and the post-war period (in short run) are to ensure food security, employment in the agri-food sector and income of a significant share of population dependent on this sector. The population should be provided with food in sufficient quantities and nomenclature, while the food surplus should be exported, taking into account the current logistics capabilities. However, the post-war development of Ukrainian agricultural sector in the long run should take place in accordance with the concept of sustainable resource-conserving agriculture, which meets the goals of conservation and reproduction of natural resources.*

Keywords*: agricultural sector, food security, world, agri-food products.*
JEL: *O13, O20, Q18, Q20*
UDC: *338.439.02(477)*

Introduction. The domestic agricultural sector and its efficiency should be evaluated from the standpoint of its role in the national economy and its impact on the life of the entire society. The main purpose of agriculture is to meet the needs of the population in food as material production and the spiritual life of people are impossible without it. Well-being in the food sector determines the success of all economy. Without solving the issues of sustainable food supply, it is impossible to build a strong economy, as well to maintain elementary economic independence. The lack of food can cause severe social upheavals, while full security serves as the basis for the stability and balanced development of the state.

During the independence, the agricultural sector of Ukraine ensured a sufficiently high level of food security. The production of most of the main agricultural products made it possible to guarantee the country's food independence. In particular, the production of grain in 2021 more than quadrupled the country's domestic needs. Because of this, farmers obtained significant income from the export of products and ensured global food security. In 2021, Ukraine depended only on the import of fruits and berries (by 20%) and dairy products (by 5%).

Military actions on the territory of Ukraine critically affected the state of food security in Ukraine and the world and posed a number of challenges to the country's agricultural sector. The ongoing war in Ukraine has already significantly changed the disruption in domestic and foreign food markets due to the destruction caused by it in the sphere of production and sale of agro-food products.

In the period of hostilities, the importance of the problem of ensuring national food security increases many times over, although the country still has sufficient reserves of food products. The war in Ukraine significantly reduced the scale of agricultural production and changed its structure, which in the near future may affect the dynamics of agricultural production and the state of national food security. In addition, the war has a negative impact on the incomes of the population, so the share of food costs in total costs is expected to increase, which is one of the key indicators of food security. So, the purpose of this study is investigating the impact of the war on food security in Ukraine and the post-war prospects of the agricultural sector in compliance with the principles of sustainable development.

Literature review. The issue of food security is given a special place in the concepts of national security at the expense of the developed countries of the world. Throughout the history of mankind, food supply has remained one of the most urgent problems of national security of all countries of the world.

In Ukraine, such leading scientists and practitioners as O. Varchenko, O. Hoychuk, T. Zinchuk, P. Laiko, B. Paskhaver, Ya. Pushak, P. Rusnak, P. Sabluk and others. However, despite a significant number of publications, numerous problems of forming the system and priorities of national food security remain unresolved or are under discussion.

Leading domestic scientists identified its economic component as an important component of the national security strategy, which includes food security as an independent object of the state's internal and external policy (Chechel, 2005). The modern interpretation of food security has certain differences, but the fundamental feature of the essence of this concept as a stable supply of food to the population remains the same in all definitions. Three approaches to defining food security are most common. Representatives of the first approach - mostly economists from countries with a developed market economy - use the definition of food security, which includes only consumption, namely the provision of guaranteed population access to food in the amount necessary for an active, healthy life. So, to achieve food security, there are different alternatives - import or self-sufficiency, and there is no significant difference between them when using such a definition. Among some domestic economists, the consumption criterion is also recognized as the only one (Schekovych, 2009).

Proponents of the second point of view highlight the country's ability to provide itself with the necessary volume and assortment of food products as another key position in understanding the essence of food security. According to this approach, the achievement of food security involves the implementation of the following main areas of solving the problem: maintaining food supply at a level sufficient for healthy nutrition; ensuring the appropriate level of solvent demand of the population; eliminating dependence on imports and protecting the interests of domestic producers (Zelenska, 2012). The third approach is based on two criteria: availability on the country's food market of the amount of food that is sufficient to maintain a healthy lifestyle of the population; the availability of these products for absolutely all segments of the population (Shebanina, 2007). The above-mentioned higher approaches place an emphasis primarily on the individual and his interests in the sphere of ensuring his primary needs in food products, that is, the possibility of ensuring the physical and economic availability of food. In Ukraine most scientists are of the opinion that the problem of food security is not a shortage of food, but a low level of consumption due to insufficient purchasing power of the population, low wages and high prices.

Research methodology. In carrying out this research author applied such research methods as general scientific and special, qualitative and quantitative, theoretical and empirical, balance method. Calculations are based on the data from the State Statistics Service of Ukraine.

Author also used balance method for development of model for assess the possible volumes of export of agricultural products with strict adherence to the principles of sustainability in the further development. During the development of this model relevant international experience in food balances preparation was taken into account, specifically materials and recommendations developed by FAO, USDA and Eurostat (FAO, 2001; FAO, 2017; USDA, 2016; European Commission, 2018).

As a result, the following general scheme of forecast balances preparation, coherent with international FAO recommendations, was adopted:

DEMAND = SUPPLY

SUPPLY = STOCK at the beginning of the period + PRODUCTION + IMPORT

DEMAND = DOMESTIC CONSUMPTION (human consumption + seeds +livestock and poultry feed + industrial use + losses + other consumption) + EXPORT + STOCK at the end of the period

A significant challenge for the analysis and forecasting of Ukrainian food security is the difficulty of assessing the current situation, as complete statistical information is practically absent. In the context of limited official statistics, administrative data and survey results conducted by various organizations have also become available as alternative sources of information used in these difficult circumstances.

Main results. Providing the population with high-quality food products necessary for active social and economic reproduction is the main task of the agrarian policy of any state. Food security efforts guide the food system to the ideal possible state. For example, such a state can be characterized by independence for certain groups of food products and the formation of significant export potential,

independence in making strategic decisions, reliability of supply and stability of reproduction of food resources, provision of physical and economic availability of food for various categories of the population.

Food security includes aspects such as availability, accessibility, consumption and stability. As defined by the Food and Agricultural Organization, food security exists when all people physically, socially, and economically have the opportunity to obtain safe and healthy food in sufficient quantities that meet their nutritional needs and preferences and allow them to lead an active and healthy lifestyle (World Food Summit, 1996).

To achieve the goals of food security, all four aspects must be fulfilled simultaneously:

- availability of food products: availability of a sufficient amount of food products of appropriate quality, supplied at the expense of domestic production, imports and food aid;
- availability of food products: human access to appropriate resources for purchasing appropriate products with the necessary nutritional properties;
- consumption of food products: an appropriate diet, clean water, sanitary conditions, health care are necessary to ensure the food well-being of the population. This aspect explains the importance of the non-food contribution to ensuring food security;
- food security: a population, household or individual must have constant access to adequate food without the risk of losing such access that may arise as a result of sudden unforeseen events, such as an economic or climate crisis.

Food safety is a complex problem that includes both technological factors and environmental factors. Technological factors - from improved crop varieties and farm management systems to improved decision support tools for strategic long-term planning purposes - increase agricultural productivity. However, despite these advances, agricultural systems are failing to prevent the problem of food insecurity, and programs aimed at improving agricultural practices should continue to be improved.

The pre-war state of food security. Ensuring food security at the national and global levels on the basis of sustainability is one of the priorities of Ukraine's agrarian policy. In the pre-war period, Ukrainian agriculture steadily increased the volume of produced products. Only since 2010 by 2021, they increased one and a half times, although it should be noted that the growth processes occurred unevenly, namely due to an increase in the production of plant products. During the above-mentioned period, crop production increased by 69.7%, and livestock production - by 0.1%, that is, livestock production in Ukraine as a whole is characterized by stagnant processes. In 2021, the production of agricultural products increased by 16.4%, and the turnover of retail food trade increased by 5.7%, which testified to the intensification of consumer attitudes of the population, which was caused by the growth of the real disposable income of the population (in 2021, it amounted to 104, 3% to the corresponding period of the previous year).

In recent years, the country has taken one of the leading positions in the world market of grain and technical crops and for several years in a row has been among the top three grain exporters. As a result of this, the products of the agro-food sector,

namely crop production, form the basis of the commodity structure of Ukrainian exports. In 2010 the share of agri-food exports in the country's total exports was 19%, and in 2021 - increased to 40.7%, accounting for almost half of the country's foreign exchange earnings. In 2021, grain crops accounted for 18.1%, ready-made food products - 5.6%, fats and oils of animal or vegetable origin - 10.3%, seeds and fruits of oleaginous plants - 3.6% in the structure of total exports.

The export orientation of Ukrainian agricultural sector has had a significant impact on the dynamics of incomes of national producers of agricultural products and food. The increase in income allowed them to expand the introduction of new technologies, and international competition contributed to the improvement of production and the improvement of product quality.

All this had a positive effect on Ukraine's food security. The assessment of domestic indicators of the consumption of the main types of food by comparing the actual level of food consumption with its normative indicators approved by legislative documents shows that in the pre-war period, the average indicators of food consumption in the country managed to overcome the barrier of minimum standards, although the average actual level of nutrition was still significantly less than the rational norm.

The dynamics of the indicator of food availability in Ukraine coincides with the historical trend of food sufficiency. In 1990, the average family spent 32% of its income on food, in 2000 – 64%, in 2020 – 48.1%. For comparison: in the USA this figure is 10%.

The assessment of the state of food security is provided by a comparison of the actual level of food consumption with its normative indicators approved by legislative documents. Currently, the average indicators of food consumption in the country have managed to overcome the barrier of minimum norms, surpassing them in terms of calorie content. At the same time, the average actual level of nutrition is significantly less than the rational norm.

Due to low purchasing power, the average consumer prefers cheap energy sources, for which the actual consumption reaches or is slightly lower than the norm of rational nutrition (potatoes, oil, vegetables, eggs). On the contrary, for a set of more expensive energy sources, the actual food consumption is less than rational norms (meat, dairy products, fish, fruits and berries). This indicates the still unsatisfactory state of food security in Ukraine, as the average indicators of food consumption do not meet the norms of healthy nutrition either in terms of volume or structure (Table 1).

Table 1. **Normative and actual food consumption in Ukraine, per person per year, *kg***

Products	Food consumption norms			Deviation of actual consumption from minimum standards
	minimal [1)]	rational[2)]	fact in 2021	
Bread products	95	101	92,7	-2,3
Potatoes	96	124	132,4	36,4
Sugar	32	38	28,5	-3,5
Oil	8	13	13,6	5,6
Eggs, pcs	230	290	272	42
Meat and meat products	52	80	53,0	1,0
Milk and milk products	340	380	201,5	-138,5
Fish and fish products	12	20	13,2	1,2
Vegetables, water-melons, melons and gourds	105	161	165,9	60,9
Fruits, berries and grapes	68	90	59,0	-9,0
Calories, kcal per capita	2730	3373	2677	-53

Source: according to the State Statistics Service of Ukraine.

[1)] Approved by the Resolution of the Cabinet of Ministers of Ukraine dated April 14, 2000.

[2)] Recommended by the Ministry of Health of Ukraine.

In the pre-war period, there was a tendency to gradually improve the nutrition structure. In particular, the consumption of meat, fish products, vegetables, fruits and berries gradually increased. The decrease in the caloric content of the diet is a consequence of such a positive trend, since previously high caloric values of the diet were achieved due to the predominance of high-calorie cheap carbohydrates, namely: bread and bread products, potatoes, sugar, oil. In addition, the ratio of proteins of plant and animal origin in the diet, as well as the presence of the appropriate amount of vitamins, minerals, and microelements necessary for the human body, is still not optimal.

The analysis of such ratios shows the irrationality of the consumption structure of the population of Ukraine. For several years in a row, the rational consumption norms of potatoes and vegetables have been exceeded, although the exceeding of the rational consumption norms of vegetables should be noted as a positive trend. At the same time, the consumption of such products as meat, milk, fish, that is, the main suppliers of proteins for the human body, is much lower than the rational norms. In 2021, in Ukraine, meat and meat products were consumed on average per person by 34% less than the norm, milk and milk products by 47%, and fish by 34%.

For several years in a row, the analytical unit of the British media corporation The Economist Group has been assessing global food security, namely the Global Food Security Index (GFSI) is calculated for 113 countries. International assessments showed that in 2021 Ukraine was in 58th place in the world or 25th in the European region (Global Food Security Index, 2021). Ukraine had the best indicators according to the criterion of food quality and safety (55th position) and natural resources and sustainability (56th place). A detailed study of the GFSI index made it possible to establish the main risks of food security in Ukraine in the pre-war period. The most risky criteria of the index for Ukraine during the evaluation period (that is, those that

deviated most negatively from the world average) included: financing of food security programs, low amount of public spending on scientific research in the field of agriculture, risk of political instability, corruption risks, agricultural, road and irrigation infrastructure, low level of commitment of the country's government to improve the country's nutrition standards, water and land resource problems, etc.

The leading positions in this rating are achieved primarily due to the high level of GDP per capita, as well as the low share of food costs in the structure of total consumer spending of households, the introduction and development of high-tech production in the food industry, the formation of a mechanism for ensuring the country's food security, which so far are the key problems of the economic development of Ukraine.

One of the main factors restraining the improvement of food consumption of the population is the low level of growth of real incomes, which is indicated by the preservation of a high share of food expenses in the aggregate expenses of households. For many years now, the share has been half of all total costs, with a tendency to decrease. Thus, in 2021 it was 45.9%, the growth of real disposable income in the III quarter of 2021 (the closest available data) was 106.8% compared to the previous period, while in 2020 the growth of real disposable income was only 102.6%, and the share of food expenses in total household expenses is 48.1%.

In the pre-war period, the domestic agricultural sector almost completely ensured a high level of food security in the country and had a significant impact on global food security. However, the ongoing war in Ukraine has already significantly changed the situation on the domestic and foreign food markets due to the destruction caused by it in the field of production and sale of agro-food products.

The impact of hostilities on food security. Military actions on the territory of Ukraine have had a critical impact on the state of food security in Ukraine and the world. This year presented a number of challenges to the agricultural sector of the country, in particular, there was the risk of disruption of the sowing campaign against the background of high global prices for gas and, accordingly, fertilizers, problems with fuel during sowing, etc. Active hostilities are currently taking place in those regions where a significant part of wheat is traditionally grown - Kharkiv, Mykolaiv, Zaporizhzhia oblasts, significant territories of Kyiv, Chernihiv, Zhytomyr, and Sumy oblasts are mined. As a result, this led to a decrease in yields, areas under crops and harvests of almost all agricultural crops.

The hostilities caused significant migration processes in Ukraine. In particular, according to the latest data of the International Organization for Migration, the estimated number of IDPs in Ukraine is 6,975,000 people. This may cause pressure on regional consumption funds, which will change significantly due to population migration from the eastern and southern regions to the western and central regions. The consumption fund in Ukraine will also change significantly, because according to the Migration Data Portal individual refugees from Ukraine recorded across Europe since 24 February 2022 as of 22 September 2022 are 7,405,590 (Migration Data Portal, 2022). This is 18% of the population of Ukraine as of the beginning of 2022. This will significantly affect the consumption fund, since to ensure the consumption of products at the pre-war level, an 18% smaller consumption fund will be needed.

According to the Ministry of Agrarian Policy and Food of Ukraine (Ministry of Agrarian Policy and Food of Ukraine, 2022), about 67 million tons of grains, legumes and oilseeds will be harvested this year in the conditions of war, which is one of the 5 best results during the years of independence. In particular, it is expected to collect 50-52 million tons of cereals and legumes, 15-17 million tons of oil crops. In the current year, the harvest of wheat amounted to 19.2 million tons, which is less by 41.5 percent, respectively, and barley - 5.5 million tons, which is less by 45.3 percent, respectively. At the same time, the domestic consumption of fodder and food wheat is about 7.5-8 million tons per year. The annual consumption of barley is 2.5-3 million tons. Thus, against the background of livestock reduction, animal husbandry will be provided with fodder. About 140,000 to 150,000 tons of buckwheat are expected to be harvested, while domestic consumption is 100,000 to 110,000 tons. Currently, the collection for all crop groups exceeds the internal needs of Ukrainians by 1.5–3 times. An assessment of the capabilities of the agricultural sector to ensure food security in the conditions of hostilities and reduction of production was carried out, taking into account the migration processes that are currently taking place. The assessments proved that Ukraine's food security is fully guaranteed and there is an opportunity to export agricultural products to ensure global food security (Table 2).

Table 2. **Production and consumption dynamics of agricultural crops in Ukraine, *million tons***

Products	Actual data for 2021			Expected data for 2022		
	production	domestic consumption	incl. consumption fund	production	domestic consumption	incl. consumption fund
Grain and legume crops	86,0	19,9	5,1	50,0	17,7	4,5
incl. wheat	32,2	7,4	4,1	19,2	6,2	3,5
barley	9,4	3,3	0,2	5,5	3,36	0,16
buckwheat	0,106	0,126	0,114	0,14	0,102	0,09
Sugar	1,4	0,13	1,18	1,2	1,15	1,0

Source: data of the State Statistics Service and author's calculations.

Among the most critical risks, we should single out problems with providing the population with vegetables due to the expected reduction in vegetable production as a result of hostilities in the south of the country and the temporary occupation of the Kherson region, military operations in the Zaporizhzhya and Mykolaiv regions.

Another challenge is the disruption of agricultural and food supply chains (from the producer of agricultural products to the sale of products to the consumer). Among the challenges of the war period, one should single out the probable shortage of labor resources, in particular, in the production of such labor-intensive types of products as vegetables and fruits.

A decrease in the number of animals will also affect the need for domestic consumption, that is, the cost of feed will decrease. In particular, according to the estimates of the Association "Swinemakers of Ukraine" (ASU), the industrial herd of

pigs in Ukraine has decreased by 10%, which takes into account both enterprises that were destroyed as a result of hostilities, as well as those that are under occupation and, accordingly, they cannot sell live stock on the domestic market. As of July, 50,000 cows were already lost (Agravery.com, 2022). This will negatively affect the current situation of providing the population with livestock products.

This is one of the critical problems of food security in the period of hostilities, which is the decrease in the purchasing power of the population. If in the structure of aggregate household expenses in the IV quarter. In 2021, food costs amounted to 45.7%. Taking into account the expected reduction of both nominal and real incomes of the population, as well as the growth of the consumer price index, the share of household expenditures on food will grow. According to NBU estimates, by the end of 2022, consumer prices may increase by more than 20%, and according to some pessimistic estimates, by up to 75%. As we expect the cost of agricultural products to increase by at least 50%, food will remain the main driver of price growth. At the same time, if the nominal incomes of the population decrease by 10% relative to the pre-war level, and food prices increase by 25-30%, the share of food costs in total costs may reach 60% (Shubravska & Prokopenko, 2022).

In general, Ukraine has a stock of basic products that guarantees food security for the population in the near future. If there are opportunities for a successful harvest, the country will be able to provide itself with basic food products, but there will be high risks in providing the population with livestock products, vegetables and fruits. In addition, significant challenges will be faced by the world community in maintaining food security at the global level.

Post-war development and the state of food security. Factors affecting food security include population growth, trade restrictions, insufficient capital investment in agriculture, and the global financial crisis. Climate change may exacerbate the problem of food insecurity. Agricultural systems are vulnerable to such climatic conditions as extreme events (heat waves, hurricanes, floods, droughts), extreme temperatures and precipitation, temperature rise, and their consequences (increase in runoff, decrease in soil moisture, melting glaciers as sources of meltwater for rural farms, heating of water in ponds and watercourses, soil erosion, etc.

It is also important to note that the global increase in productivity due to intensification and scalability (on the basis of large-scale production), inherent in the domestic agricultural sector, amplifies socio-economic contradictions in rural areas (reduction of jobs and the number of the population), food sector (standardization of rations based on cheap energy-rich components, unbalanced nutrition, significant food losses, etc.), the load on ecological systems is increasing.

In the long-term planning of directions for the post-war development of the agricultural sector, it is necessary to take into account the long-term prospects that will protect against the above-mentioned risks. In addition, Ukraine ratified the European Landscape Convention (Law of Ukraine No. 2831-IV dated September 7, 2005), which imposed obligations on the protection and sustainable development of agricultural landscapes. In particular, in order to ensure such development, the "Concept of the National Target Program for the Use and Protection of Land" (approved by the Decree of the CMU dated January 19, 2022 No. 70-r) declared by 2032: to optimize the structure of land plots; reduce agricultural development (by 5

percent) and plowed territory (by 10 percent); to optimize the structure of the agricultural landscape; to increase the productivity of agricultural land (by 40-50 percent) through the rational use of organic, organo-mineral and mineral fertilizers and chemical meliorants on acidic and saline soils; increase the area of land with natural landscapes to a level sufficient to preserve landscape and biological diversity (up to 10.5 percent of the total area of the country's territory).

Therefore, the post-war development of the agricultural sector of Ukraine in the long term should take place in accordance with the concept of ecological resource-saving agriculture, which meets the goals of preserving and reproducing natural resources.

In addition, the restructuring of agriculture must take into account the requirements of the European Green Deal (EGD), which has already been implemented by the EU - the action program of the European Commission for the transition to a climate-neutral Europe by 2050. Especially since in the pre-war period, the government of Ukraine announced the intention of our state to join the EGD.

Thus, when assessing the prospects for the post-war development of the agricultural sector of Ukraine, the above key, nationally oriented, goals of such development were taken into account, as well as the requirements of international documents, the implementation of which Ukraine intends to join in the near future.

Assessments of the optimal structure of agricultural land and calculations of the production potential of the main types of agricultural products were carried out, which were based on the following provisions: optimization of agricultural landscapes will be carried out and norms will be implemented to reduce agricultural development by 5% and plowed territory by 10% in accordance with the Decree of the Cabinet of Ministers of Ukraine dated 19 January 2022, No. 70 "On approval of the Concept of the National Targeted Program for Land Use and Protection"; the structure of sown areas will be optimized in accordance with zonal recommendations; the structure of crop production will fundamentally change in accordance with ecological requirements, and the number of livestock of agricultural animals will correspond to the area of available fodder lands (Shubravska & Prokopenko, 2022).

On the basis of the balance method, the volume of the country's internal consumption was estimated during the implementation of structural changes in production (Table 3). In particular, such articles of the balance of demand and supply for certain types of products were evaluated, such as the consumption fund that can be formed in the post-war period, the costs of products for processing and intra-farm use (sowing, planting, fodder), as well as losses. Since the goal of the structural restructuring of the agricultural sector is to achieve food security, that is, food sufficiency, when calculating the consumption fund, it was assumed to achieve rational consumption standards per 1 person. To estimate the consumption fund, it is currently difficult to predict the population size in the post-war period, as migration processes are still ongoing, the scale of which will depend on the activity and duration of hostilities in the country. However, it is already obvious that the population in the post-war period will decrease compared to the pre-war level, although, according to surveys, 84% of refugees plan to return home. According to some estimates, depending on the duration of the war, the loss of population will be from 600,000 to 5 million people, so for the calculations, losses at the level of 10% were determined.

Table 3. **Expected production of the main agricultural products, taking into account environmental requirements, *thousand tons***

Products	Production in 2021	Expected production	Changes in the volume of production	Domestic consumption in 2021	Expected domestic consumption
Cereals and legumes	86011	73120	-12891	19856	25000
including: wheat	32151	29725	-2426	7426	7300
barley	9437	9350	-87	3308	4400
corn	42110	27170	14940	7613	10800
buckwheat	105,8	830		126	200
Sunflower	16392	9140	-7252	12348	9050
Sugar beet	10854	19300	8446	–*)	–
Potato	21356	23920	2564	21047	23900
Meat	3394	5090	1696	2197	3300
Milk	8729	13100	5119	9152	14090
Eggs, million pcs.	14071	21100	7029	12519	13165

Source: data of the State Statistics Service and author's calculations.

*) Sugar beet is used for processing, however, a 1.8-fold increase in production means a corresponding increase in sugar production, provided the sugar level of the raw material is maintained.

Estimates indicate that the production of the main types of food, with the restructuring of the agricultural sector on the basis of sustainability, will ensure food sufficiency for the country's population. At the same time, the production of a number of crops may decrease. In particular, enterprises of the agricultural sector may lose significantly in the production of corn (by 40%), wheat (about 10%) and sunflower (more than half of the volumes, which will accordingly affect the production of sunflower oil). However, these changes are necessary, since the share of cultivated areas under technical crops (primarily sunflower) is currently in the range of 35–50% depending on the region, which is an unacceptable violation of environmental requirements and in the long term leads to land degradation and a decrease in yields.

The above estimates also provide for the development of processing capacities, which is consistent with the need to speed up the transition from the raw agricultural sector to the processing of the obtained products. In particular, the probable growth of potato production in enterprises, so it will be suitable for industrial processing and export. At the same time, potatoes, taking into account the requirements of sustainable and ecological food production, create fewer greenhouse gas emissions compared to other main crops and at the same time ensure the receipt of cash by small producers.

Increasing the area of fodder land in accordance with ecological standards will allow to increase livestock and increase the production of livestock products, which will ensure the domestic consumption of meat and eggs in accordance with rational norms and expand the opportunities for exporting these products.

Discussion and conclusions. Ukraine, as a subject of the world agricultural market, has a number of competitive advantages, among which should be noted such as a high level of self-sufficiency in the main types of food and agricultural raw materials, stable growth of agricultural production in the long term, attracting investments in the agricultural sector, which allowed to increase innovativeness development of production, the presence of a tendency to increase the share of products with added value.

Along with this, there are potential threats to food security, which must be taken into account when forming an agrarian foreign trade policy. Thus, military actions and the destruction caused by them in the sphere of production, storage and sale of agricultural products, supplies of critical resources of agricultural production can significantly worsen the food security of the country's population and negatively affect its export potential. Additional risks are a noticeable narrowing of the domestic market due to a decrease in the purchasing power of the population and a reduction in its number against the background of blocking export supplies, as well as a sharp increase in the cost of production resources and, as a result, an increase in the cost price of domestic agricultural products and retail food prices.

The result of the post-war reconstruction of agricultural production should be the formation of its ecologically justified specialization, which will meet both nationally oriented goals and international requirements. This will make it possible to achieve a high level of food self-sufficiency of the population, to diversify exports by reducing the share of raw products and increasing the share of processed products, and to enter foreign markets with new types of products, as well as to implement the concept of ecological resource-saving agriculture and preserve national natural resources in the long term.

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ОЦЕНКА ДЕЛОВОЙ АКТИВНОСТИ ПРЕДПРИЯТИЯ

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Summary

It is emphasized that it is necessary to evaluate the dynamics of the main indicators of the company's activity by comparing the rates of their change. The optimal ratio is one in which the rate of change in balance sheet profit is ahead of the rate of change in sales volume, the latter is higher than the rate of change in the balance sheet currency. It is noted that this principle in world practice is called the "golden rule of the enterprise economy", the observance of which means that the economic potential of the enterprise increases compared to the previous period. Compliance with this rule in practice is shown on the example of the agricultural sector. The study was conducted on the example of performance indicators of a particular enterprise in the Chadyr-Lungsky district for 2012-2021. Calculations are presented to determine the chain values of the growth rate of profit before tax, sales volumes and balance sheet currency for the study period, as well as for the last 5 years (2017-2021), which made it possible to state that at this enterprise both on average for 10 years and and over the past 5 years, the "golden rule of business economics" has been respected. The obtained values of the calculations are clearly presented in the graphs. The purpose of the study is to show the availability and simplicity of the methodology for assessing the business activity of an enterprise, as well as the need for the widespread use of charts in economic research. The article used the economic-statistical method, as well as the methods of comparative analysis and the graphical method. They made it possible to fully achieve the goal of the study. The article used the economic-statistical method, as well as the methods of comparative analysis and the graphical method. They made it possible to fully achieve the goal of the study. It is noted that agricultural enterprises located even in areas of unstable agriculture, competently using the main means of production - land can provide high business activity, which is confirmed by the observance of the "golden rule of the enterprise economy".

Keywords: *business activate, growth rate, profit before tax, sales income, balance sheet, agriculture*

JEL: A10; B41; C58.

UDC*:* 339.138:658

О деловой активности предприятия свидетельствуют динамичность его развития и достижение им поставленных целей. Основным критерием

эффективности работы предприятия является результативность, прибыльность. Оценивать динамику основных показателей деятельности фирмы необходимо, сопоставляя темпы их изменения. Оптимальным является следующее соотношение:

$$Тбп > Топ > Та > 100\ \%,$$

где Тбп – темп изменения балансовой прибыли;
Топ – темп изменения объёма продаж;
Та – темп изменения валюты баланса.

Данное соотношение означает, что:

- прибыль возрастает более высокими темпами, чем объём продаж, что может свидетельствовать о сокращении себестоимости;
- объём продаж увеличивается быстрее, чем активы предприятия, что доказывает эффективное использование ресурсов предприятия;
- экономический потенциал предприятия возрастает по сравнению с предшествующим периодом.

Такое соотношение в мировой практике получило название «золотое правило экономики предприятия» [1, с. 346]. Соблюдение «золотого правила» означает, что экономический потенциал предприятия возрастает по сравнению с предшествующим периодом.

Рассмотрим, как соблюдается такое правило на практике в отрасли сельского хозяйства. Для этого обратимся к показателям деятельности предприятий SRL «Daalar Duzu» Чадыр-Лунгского района за 2012 - 2021 годы. Финансово-экономические показатели деятельности предприятия за указанный период представлены в таблице 1. Следует заметить, что предприятие вело производство сельскохозяйственной продукции в 2019 и 2020 годах в сложных погодно-климатических условиях, в результате чего в отрасли наблюдался существенный недобор возделываемых культур. А в 2019 году доходы от реализации продукции возделываемых культур не покрыли затраты на их производство, в результате чего предприятие получило убытки на сумму почти на 1,4 млн. лей. Это обстоятельство подтверждает, что АТО Гагаузия расположена в эпицентре зоны рискованного (неустойчивого) земледелия [2, с.112].

Выполним расчеты по определению цепных значений темпов роста балансовой прибыли, объемов продаж и валюты баланса. Полученные результаты заносим в таблицу 2 и представим на рисунке 1.

Таблица 1. **Финансово-экономические показатели деятельности SRL «Daalar Duzu (тыс.лей)**

Год	Доход от реализац	Валовая прибыль	Прибыль до налого обложения	Чистая прибыль	Собствен капитал	Заемный капитал	Валюта баланса
2012	8880	2439	2166	2166	9302	8502	17804
2013	13168	3437	2818	2818	12075	9799	21874
2014	15364	3157	2206	2206	14162	9059	23221
2015	14741	4903	3378	3150	17261	8816	26077
2016	17818	5009	4969	4622	21342	8754	30096
2017	19183	3716	2968	2850	24134	8962	33096
2018	20875	4149	4699	4351	28367	7049	35416
2019	17888	-1389	-1847	-1847	26482	9586	36068
2020	15868	1334	1069	1069	27388	9738	37126
2021	23836	2757	2651	2439	29360	6943	36303

Источник: данные бух. учета предприятия

Данные таблицы 2 и рисунка 1 показывают, что среднегодовой темпы роста доходов от продаж превышает аналогичный показатель прибыли до налогообложения на 7,2 % (1,2189*100/1,1365 – 100). А темп рост прибыли за этот период превысил рост валюты баланса на 4,8 % (1,1365*100/1,0847 – 100). Таким образом, на данном предприятии в среднем за 10 лет «золотое правило экономики предприятия» соблюдалось.

Таблица 2. **Расчетные показатели цепных темпов роста прибыли до налогообложения, дохода от продаж и валюты баланса в SRL « Daalar Duzu» за 2012 -2021 годы**

Год	Цепной темп роста		
	прибыли до налогообложения	дохода от продаж	валюты баланса
2012	1	1	1
2013	1,3010	1,4829	1,2286
2014	0,7828	1,1668	1,0616
2015	1,5313	0,9595	1,1230
2016	1,4710	1,2087	1,1541
2017	0,5973	1,0766	1,0997
2018	0,9457	1,0882	1,0701
2019	0,2822	0,8569	1,0184
2020	1,5788	0,8871	1,0293
2021	2,4799	1,5021	0,9778
В среднем	1,2189	1,1365	1,0847

Источник: выполнено по данным таблицы 1

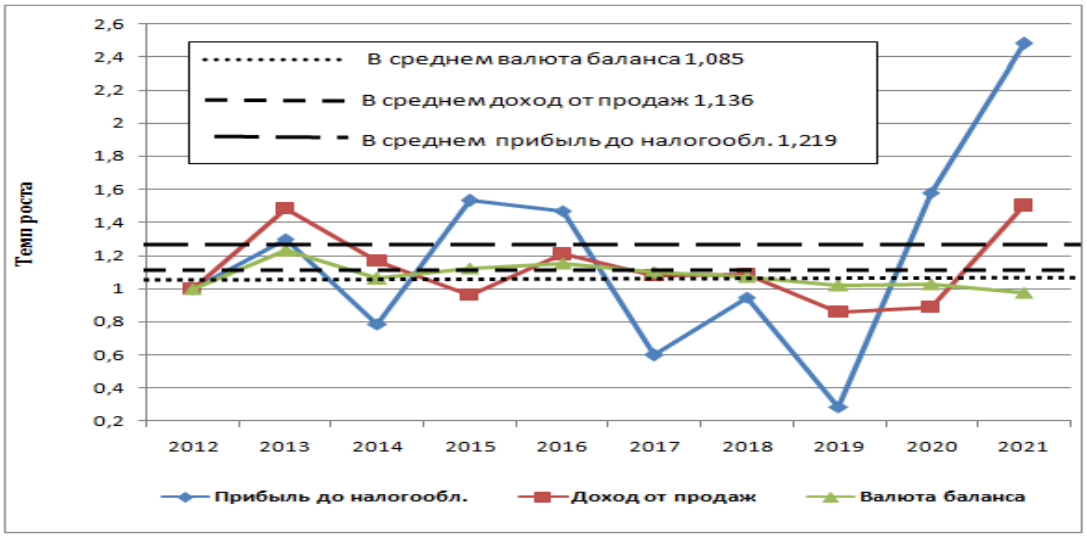

Рис.1. **Динамика цепных темпов роста прибыли до налогообложения, дохода от продаж и валюты баланса в SRL « Daalar Duzu» за 2012 -2021 годы**

Источник: выполнено по данным таблицы 2

Учитывая существенное снижение объемов производства продукции в 2019 и 2020 годах, важно проверить, как соблюдалось упомянутое правило на предприятии за последние 5 лет. Результаты расчетов покажем в таблице 3 и рисунке 2. Надо отметить, что производственные показатели 2021 года оказались рекордно высокими. Это обстоятельство позволило предприятию существенно перекрыть допущенное отставание в неурожайные годы. Так, среднегодовой темп роста прибыли до налогообложения оказался выше темпов роста доходов от продаж более чем в 1,2 раза (1,3216/1,0836 = 1,22). Темпы роста доходов от продаж были выше темпов роста валюты баланса на 5,8% (1,0836*100/1,0239 – 100). Следовательно, и за последние 5 лет на предприятии «золотое правило» соблюдалось.

Таблица 3. **Расчетные показатели цепных темпов роста прибыли до налогообложения, дохода от продаж и валюты баланса в SRL « Daalar Duzu» за 2017 -2021 годы**

Год	Цепной темп роста		
	прибыли до налогообложения	доходов от продаж	валюты баланса
2017	1	1	1
2018	0,9457	1,0882	1,0701
2019	0,2822	0,8569	1,0184
2020	1,5788	0,8871	1,0293
2021	2,4799	1,5021	0,9778
В среднем	1,3216	1,0836	1,0239

Источник: выполнено по данным таблицы 1

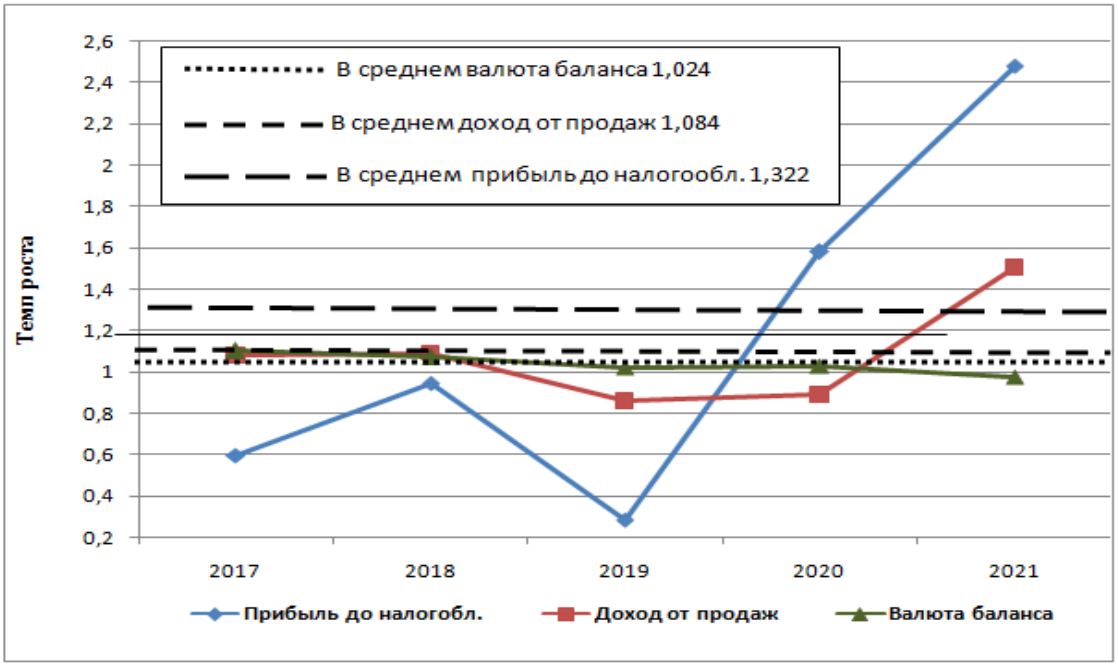

Рис.2. **Динамика цепных темпов роста прибыли до налогообложения, дохода от продаж и валюты баланса в SRL « Daalar Duzu» за 2017 -2021 годы**

Источник: выполнено по данным таблицы 3

Вышеизложенное подтверждает, что сельскохозяйственные предприятия расположенные даже в зонах неустойчивого земледелия, грамотно используя основное средство производства – землю можно обеспечить высокую деловую активность, что подтверждается соблюдением «золотого правила экономики предприятия.

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ASPECTELE TEORETICE ȘI METODOLOGICE ALE PRINCIPIILOR DEZVOLTĂRII SECTORULUI DE CAPRINE DIN REPUBLICA MOLDOVA ÎN FUNCȚIE DE INDICATORII DE COMPETITIVITATE

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Summary

In the last 10-12 years, goat breeding has become popular in the rural areas of the Republic of Moldova. The livestock increased by about 30 thousand heads from 2010 to the beginning of 2022. In the conditions of population reduction and its aging, more and more farmers prefer goats in relation to cows or sheep. The advantages of the goat sector compared to the other sectors of the husbandry branch are superior, especially the amount of milk in relation to that of the feed consumed, the degree of prolificacy of females in relation to sheep, resistance to climatic conditions. Along with the increase in the number of animals, the number of animal farms specialized in the production of goat milk also increased, the number of farms equipped with mechanized milking systems, milk pasteurization lines, pasteurized milk bottling, combined slaughterhouses, etc. increased.

The aim of the paper is to demonstrate sustainable development as one of the current requirements of the economic efficiency of livestock farms, by ensuring the complete value chain with complex and perfect inputs.

The methods of observation, monograph and comparison were used in the elaboration of this work. The data presented in the respective work were accumulated from the statistical researches of the husbandry entities in the country, the official data of the National Bureau of Statistics of Moldova and from the dedicated works on this topic.

Key words: *goat sector, profitability, commodity production, efficiency, breeds, fodder, processing.*

JEL: *Q18 Agricultural Policy, Food Policy, Animal Welfare Policy*

UDC: *338.439.5:636.39] (478)*

Revista literaturii. La elaborarea articolului s-au utilizat surse bibliografice ale savanților consacrați în sfera cercetărilor în domeniul dezvoltării agriculturii și

ramurii zootehnice, cum ar Bajura T., Stratan A., Zbancă A., Mașner O., Liuțcanov ș.a.

O altă latură a acestor cercetări vin din interesul autorilor, care de-a lungul mai multor ani își consacră cercetările eficienței economice a ramurii zootehnice autohtone. În ultimii ani cu această tematică au fost elaborate o monografie, circa 20 de articole științifice și de popularizare a științei. În decursul ultimilor doi ani au fost publicate materialele cercetate în revista națională pentru fermieri „Agroexpert". Contribuția vastă a autorilor cercetărilor la tema respectivă oferă o profunzime și cunoaștere a rezultatelor prezentate.

Scopul cercetării. Scopul lucrării este de a demonstra dezvoltarea durabilă drept una din cerințele actuale ale eficienței economice a activității fermelor zootehnice, prin asigurarea lanțului valoric complet cu inputuri complexe și desăvârșite. Dezvoltarea durabilă a entității agricole în cadrul lanțului valoric complet fiind una dintre cerințele în asigurarea pieței de desfacere stabile și prețuri competitive. În cadrul proiectului se abordează dezvoltarea afacerii prin prisma resurselor funciare și și tehnice proprii pentru asigurarea eficientă a procesului de producție. Disponibilitatea terenurilor agricole în asigurarea bazei furajere cu disponibilitatea tehnicii agricole reprezintă factorii de bază în sporirea eficienței economice a producției și a durabilității afacerii în general (Bajura, T. at al, 2021).

Metodologia de cercetare. Pentru efectuarea acestor cercetări au fost utilizate următoarele metode:

- Metoda observației, care permite înregistrarea fenomenelor studiate în sectoarele de producere a cărnii și de procesare a ei;
- Metoda de sondaj, permite obținerea opiniei adecvate, obiective și de moment a participantului la formarea lanțului valoric al producției de carne și de procesare a ei;
- Metoda monografică, care va permite de a descrie rezultatele obținute ca urmare a cercetărilor;
- Metoda comparației, se aplică pentru a contrapune fenomenele și proceselor observate cu cele cunoscute teoretic și metodologic;
- Metoda diviziunii, oferă posibilitate de a dezmembra un fenomen și proces studiat în părți constitutive;
- Metoda descompunerii factorilor, oferă posibilitatea determinării factorilor de influență asupra rezultatului cercetat și aferente gradului său de influență (factori de gradul I și factori de gradul II etc.);
- Metoda grupărilor, separarea datelor acumulate în grupuri omogene caracteristici determinate;
- Metoda analizei deterministe (factoriale), identificarea mărimilor de influență ale factorilor asupra indicatorului analiza (rezultatului cercetat).

Metodele de cercetare sunt metode științifice care prevăd aplicarea consecutivă și sistemică a unor elemente strict determinate. Doar în asemenea situații concluziile raportate la rezultatele obținute vor putea fi considerate obiective și justificate.

Rezultatele scontate. Asigurarea securității alimentare a țării cu produse de origine animală constituie prerogativele politicii agricole autohtone. Dezvoltarea sectoarelor de creștere a animalelor poate fi realizată doar prin investiții în fondarea fermelor de producție și în animale productive și sănătoase. Autorii propun o nouă

idee de abordare în vederea revitalizării ramurii zootehnice și a sectoarelor conexe – investiții complexe în ferma de creștere a animalelor prin utilaj modern, rase productive de animale și terenuri agricole proprii. Consolidarea acestor trei elemente va asigura gradul suficient de sinergie în domeniul respectiv. Prezenta lucrare oferă suport științific și metodologic în formarea principiilor de bază în funcționarea fermelor de producere a laptelui de capră prin procesarea lui primară în cadrul entității. Asigurarea proceselor constatate denotă realizarea bazei de activitate a unui element separat – a producerii laptelui prin diversificarea produselor lactate.

Prin lucrarea respectivă se scoate în evidență dezvoltarea ramurii prin metode argumentate din punct de vedere științific și în corelare cu factorii principali de producție. Necesitatea unei abordări raționale în acest sens permite realizarea măsurilor necesare de sporire a competitivității sectorului. Lucrarea respectivă reprezintă realizarea unui proiect investițional în domeniul fondării unei ferme de capre.

Abordarea acestei situații reiese din starea actuală a sectorului de creștere a caprinelor. Consumul de lapte de capră în Republica Moldova, conform datelor BNS este în creștere. Populația de la țară consumă laptele de capră pentru calitățile sale curative. De rând cu această caracteristică, în rația alimentară zilnică a populației sunt prezente produsele lactate. În condițiile reducerii șeptelului de vaci și oi din ferme, producția de lapte de capră rămâne cea accesibilă din punctul de vedere al locației. Conform calculelor noastre producția de lapte de capră în anul 2022 ar ajunge la cantitatea de 53 635 litri.

Tabelul 1. **Dinamica producției de lapte de capră în Republica Moldova, litri**

Producția de lapte, mii litri	Anul				
	2018	2019	2020	2021	2022
Toate categoriile	62 338	59 539	55 667	54 440	53 635
Întreprinderile agricole și gospodăriile țărănești	537	498	537	460	1 035
Gospodăriile populației	61 801	59 041	55 130	53 980	52 600

Sursa: elaborat de autor în baza datelor BNS

Din volumul total al laptelui circa 93% sunt din sursele obținute în gospodăriile casnice. Această demonstrează un grad înalt de concentrare a șeptelului în sectorul gospodăriilor casnice. O asemenea rată înaltă a producției din sursele respective presupune o intervenție insuficientă a statului la dezvoltarea sectorului. Aceasta are o serie de dezavantaje. Majoritatea fermelor de capre ale gospodăriilor casnice sunt situate în intravilanul primăriilor. Producția de lapte se folosește pentru consumul curent atât în stare proaspătă, cât și procesată sub formă de brânză. Gradul de investiții în aceste ferme este rudimentar și insuficient. Productivitatea animalelor este redusă din cauza materialului genetic redus. Toate aceste particularități dezavantajează dezvoltarea sectorului (Wilson, 2018).

În aceste condiții o parte din populația țării preferă consumul de lapte de capră. Consumatorii de lapte de capră preferă să consume în stare proaspătă, în special cei de la țară, sau sub formă de brânzeturi. Actualmente, pe rafturile magazinelor de tip super-market se comercializează brânzeturi, caşcavaluri și alte derivate din producția

de lapte. Producția de lapte de capre se comercializează și pe rețelele de socializare într-un mod destul de intens. Această tendință se observă din discuțiile cu consumatorii de lapte. Populația rurală apreciază laptele pentru calitățile sale gustative și de regenerare a sănătății. În anul curent, conform datelor Biroului Național de Statistică, se estimează că consumul mediu de lapte calculat la o persoană se va majora de la 14,5 până la 14,9 litri. Consumul respectiv este asigurat atât din sursele interne, cât și din cele externe. Fermele de capre din țară asigură o producție medie de 12 litri pe cap de locuitor, celelalți 3 litri sunt asigurați din contul producției importate.

Tabelul 2. **Cantitatea producției de lactate importate în Republica Moldova**

Indicatorul	Anul		
	2019	2020	2021
Cantitatea, tone	2 433	2 680	3 459
Valoarea, mii dolari $	9 624	10 899	14 750
Prețul mediu unei tone, mii dolari $	3,96	4,07	4,26

Sursa: elaborat de autor în baza datelor BNS

Laptele de capră se consumă preponderent sub formă de brânză și cașcavaluri valorificate. Majoritatea producțiilor exportate se referă la producția de cașcavaluri, care se comercializează în magazine de tip super-market.

Laptele de capră se comercializează la un preț mediu de 12-17 lei per litru. Pentru procesare laptele este achiziționat la un preț de 8-9 lei per litru. Totodată, pe piață se achiziționează și brânză de capră care se bucură de o cerere stabilă. În anul 2021 cantitatea de brânză de capră produsă de către toate categoriile de gospodării din țară au fost de circa 4 827 de tone.

Tabelul 3. **Producția și valorificarea brânzeturilor de capră în Republica Moldova**

Indicator	Anul		
	2020	2021	2022
Cantitatea, tone	5 010	4 900	4 827
Valoarea, mii lei	445 893	445 866	448 926

Sursa: elaborat de autor în baza datelor BNS

Potențialul peții autohtone de brânză se estimează la circa 450 mii lei. Prețul unui kg de brânză variază de la 120 până la 140 lei per kg la piețele agricole și magazine. Prețul angro al brânzei se estimează la o valoare de 95-100 lei per kg. Brânza se comercializează cu amănuntul și angro. Cu amănuntul comercializează fermierii care își vând marfa la tarabă în piețele agricole.

Majoritatea dintre fermierii care comercializează produsele proprii la piețele agricole angajează suplimentar o persoană pentru vânzare, suportă cheltuieli de transportare a mărfurilor, cheltuieli de ambalare șu certificare. Sensul comercializării

produselor cu amănuntul relevă din prețul mai mare. Astfel, fermierii care reușesc să-și asigure procesul de comercializare prin intermediul piețelor agricole își sporesc rentabilitatea mărfurilor comercializate. Participarea la diferite expoziții cu producție proprie sporește vizibilitatea companiei și a veniturilor. În cadrul expozițiilor vizitatorii fac cunoștință cu producția expusă, gustă din produsele alimentare, astfel devenind cunoscută producția respectivă.

Proiectul realizat are drept obiectiv producția de lapte în raport cu rasa de capră. Proiectul urmărește exploatarea rasei Saanen. Această rasă este de origine elvețiană, are o talie de 80 – 90 cm la masculi și 74 -80 cm la femele. Numărul total de capre mulgătoare va fi de 300 de capete. Șeptelul de animale într-o fermă se determină în funcție de capacitățile investiționale și de profitul scontat.

Reieșind din șeptelul de caprine la nivel de fermă, în continuare determinăm capacitățile de producție ale proiectului. Calculele au fost efectuate reieșind din normele actuale de producere, productivitatea medie anuală de lapte, coeficienții de transfer ai producției procesate. Suprafețele necesare pentru fermă și încăperile pentru procesare, abator ș.a. s-a determinat reieșind din normele sanitar-veterinare de întreținere a unei capre și a celor de respectare a cerințelor veterinare pentru procesarea primară a producției.

Tabelul 4. **Capacitățile de producție estimative ale fermei cu un șeptel de 300 de capre**

Indicatorul	Valorile
Cantitatea medie anuală de lapte, litri	240 000
Numărul mediu anual de produși vii	525
Numărul mediu anual de piei obținute	499
Cantitatea medie anuală de carne sacrificată, kg	4 909
Cantitatea medie anuală de dejecții animaliere, tone	200

Sursa: date elaborate de autor

În baza datelor din Tabelul 4, determinăm capacitățile producției de lapte pasteurizat și altor produse lactate. Producțiile vor fi obținute în cadrul entității, cu disponibilitatea procurării utilajului respectiv.

Din cantitatea medie anuală de lapte ce va fi valorificată, 40% din producție va fi comercializată sub formă de lapte pasteurizat, 50% sub formă de brânză și 10% în formă de caș proaspăt. O asemenea structură este destul de rațională, astfel se va asigura diversificarea surselor de venit, fiind de bază brânza de capră și laptele pasteurizat.

Capacitățile de producție se referă și la resursele funciare ale proiectului. După cum am menționat mai sus, se planifică gestiunea a 30 ha de teren arabil pentru asigurarea bazei furajere proprii. Pentru primul an de activitate se propune o structură de 5 sole.

Pe suprafața respectivă urmează să fie semănate culturi producția cărora va fi folosită în rația alimentară a caprelor. O parte din producția recoltată, surplusul, se va comercializa. În această ordine de idei menționăm că existența bazei de furaje proprii

contribuie semnificativ la reducerea riscului operațional în raport cu evoluția prețurilor de pe piața furajelor (Parlamentul R. Moldova, 2017).

Disponibilitatea terenurilor proprii demonstrează un nivel de asigurare suficient cu bază furajeră proprie. De asemenea, producția vegetală recoltată mai poate fi și o sursă de venit adițională alături de producția de bază.

Calculele aferente furajelor demonstrează că volumul producției pentru consumul intern la majoritatea culturilor cultivate în primul an de activitate este mai mic decât recolta obținută (producția proprie). Astfel, gradul mediu de asigurare a rației alimentare a caprelor din sursele interne este de circa 123%. Cel mai mare surplus se înregistrează la producția de lucernă, care este ușor un produs cu cerere înaltă. Prin aceste calcule demonstrăm eficiența proiectului investițional cu gestiunea terenurilor agricole. Disponibilitatea terenurilor agricole trebuie să devină un principiu afacerile în ramura zootehnică. Terenurile agricole asigură prevenirea riscurilor ca urmare a schimbărilor climatice (arșiță, înghețuri etc.). În acest sens trebuie orientați crescătorii de animale mari, de bovine, porcine, ovine, caprine ș.a. Conform normelor științifice, un hectar de teren agricol asigură cu furaje 7-9 capre sau oi. În cazul nostru raportul este de 1:10.

Întrucât proiectul investițional, în cazul respectiv, este creșterea caprelor pentru lapte și procesarea primară a lui, aprecierea proiectului investițional se va realiza din primul de activitate. Se preconizează procurarea a 300 de capre gestante și 8 țapi pentru asigurarea întregului proces tehnologic. Țapii vor fi procurați din ferme de prăsilă de peste hotare. Procurarea țapilor trebuie să fie o preocupare aparte, deoarece de calitatea masculilor va depinde în continuare calitatea generațiilor următoare. Potențialul investitor constă în posibilitatea și siguranța de a efectua investiția deplină în primul an de investiții pentru a minimiza riscul de scumpire a mijloacelor fixe care vor fi necesare de procurat în anul al doilea, evident, această acțiune este binevenită. Însă, pe de altă parte, fermierul poate face fiecare activitate pe etape, prin urmare, acest fapt oferindu-i posibilitatea de a reinvesti în continuare în scopul dezvoltării afacerii, spre exemplu, în cazul subvențiilor ce sunt acordate de stat prin intermediul Agenției de Intervenție și Plăți pentru Agricultură, pe care le poate accesa agentul economic.

Calculele expuse în proiect sunt efectuate fără aceste beneficii economice sub formă de subvenții. Acestea pot servi pentru minimizarea diferitor șocuri economice sau a diverselor riscuri care nu sunt luate în calcul. Costurile investiționale pentru primul an de investiții sunt calculate reieșind din prețurile actuale de pe piața Republicii Moldova

Stâna va avea o suprafață de circa 600 m^2, construită capital, cu accesul aerului prin pereții laterali de tip deschis. Spațiul pentru lucrările de procesare va avea o suprafață de 100m^2, cel de depozitare a furajelor o suprafață de 197 m^2, cel de păstrare a dejecțiilor animale solide – 110 m^2, volumul depozitului pentru păstrarea furajelor combinate va avea o suprafață de 2 mii m^3. De asemenea, au fost planificate și achiziții de teren agricol pentru amplasarea fermei. Terenurile pentru amplasarea fermelor de animale, de regulă, se oferă în extravilanul localității. Procedura de procurare a terenului aferent se face prin decizia consiliului local. Valoarea totală a investiției este de circa 2 mil de lei (G. Baltag, 2020).

O altă categorie de investiții ține de cele pentru procurarea animalelor. Investiția în procurarea caprelor valorează circa 4,6 mil de lei. Proiectul prevede procurarea numărului total de animale în primul an de activitate în scopul dezvoltării suficiente a afacerii. Numărul total de capre va fi de circa 300 capete, cel de țapi de 8. Un asemenea număr reiese din direcția afacerii în acest sens. Prețul mediu al unei capre este circa 15 mii lei, al unui țap pentru reproducție de 20-21 mii de lei.

Investițiile în utilaj pentru proiect constituie dotare deplină a fermei cu mașini și utilaje pentru asigurarea procesării producției și a mașinilor agricole pentru cultivarea culturilor agricole și pregătirea furajelor, în special a fânului, baloților de fân ș.a. Necesarul de investiții în utilaj este valorificat la nivelul de 3,396 mil de lei, reieșind din prețurile la data de 01/07/2022. Considerăm că este necesar și oportun asigurarea deplină a fermei cu utilaje proprii și noi. Aceasta va oferi posibilitatea de a aplica pentru subvenționare în baza **Submăsurii 1.4.** – Stimularea investițiilor pentru utilarea şi renovarea tehnologică a fermelor zootehnice. Această submăsură asigură subvenționarea până la 50% din costul utilajului tehnologic procurat. O asemenea abordare a situației este necesară și principială în orice model investițional din domeniul agricol.

Un alt element al investiției ce ar putea fi determinat se referă la suprafețele terenurilor cultivate. Pentru procurarea a circa 30 de ha se estimează o sumă de circa 5,4 mil de lei. Prețul mediu al unui ha teren agricol este de circa 180 mii de lei.

Sistematizând articolele de investiții prezentate mai sus, constatăm structura investițiilor necesare pentru proiectul investițional.

Tabelul 5. **Costurile totale ale proiectului investițional**

Grup de investiție	Valoarea, lei
Investiții în animale, lei	4 650 000
Investiții în construcții, lei	1 981 921
Investiția în utilaj agricol și de procesare, lei	3 396 000
Investiții în procurarea terenului, lei	5 400 000
Total investiții, lei	15 427 921

Sursa: date elaborate de autor

Valoarea proiectului investițional este de circa 15,428 mil de lei. Pentru a iniția o dezvoltare reușită a fermei pentru producerea și procesarea laptelui de capră se solicită asigurarea complexă a procesului tehnologic cu animale și utilaje necesare. Considerăm că o parte din valoarea investiției va fi recompensată din Fondul Național de Dezvoltare a Agriculturii și Mediul Rural prin măsurile de subvenționare. Valoarea investiției per cap de animal este de circa 405 mii de lei, iar per ha de teren agricol este de 514 mii lei.

Proiectul investițional este organizat pentru procesarea producției în mod integral. Producția ce urmează a fi determinată pentru a reuși de realizat procedurile de procesare în mod integral. Pentru aceasta, în proiect prezentăm costurile producțiilor aferente procesului de producție (

Tabelul 6). În costurile de producție se includ următoarele elemente:

- Costurile privind retribuirea muncii;

- Costurile de furaje;
- Costurile pentru produsele zoo-veterinare;
- Costurile lucrărilor mecanizate;
- Alte costuri, inclusiv excepționale (Baltag and Popescu, 2018).

Costurile sistematizate reprezintă totalitatea costurilor entității aferente procesului operațional al proiectului respectiv.

Tabelul 6. **Articole de costuri ale producției**

Producția	Total, lei
1. Lapte	864 000
2. Piei	200
3. Carne	122 719
4. Culturi agricole	170 094
5. Porumb	35 100
6. Mazăre	23 400
7. Grâu	36 480
8. Orz	22 464
9. Lucernă	37 800
10. Ovăz	14 850
11. Lapte pasteurizat	297 984
12. Brânză sărată	326 000
13. Brânză dulce (caș)	46 320
14. Total costuri producție procesată	670 304
15. Costuri excepționale	18 273
Total costuri pe fermă	**1 845 589**

Sursa: date elaborate de autor

Costurile prezentate se referă la perioada unui an. Astfel, pentru primul an de activitate, reieșind din investițiile efectuate și producțiile planificate, ajungla nivelul de circa 1,8 mil de lei. Valoarea costurilor reiese din tarifele executate pentru anul curent, productivitatea muncii, nivelul salarizării, prețurile la inputuri etc. Altă latură a activității operaționale a întreprinderii se referă la cheltuielile proiectului.

În cheltuieli se includ costul materialelor și resurselor care nu participă direct la procesul de producție. Perioada de referință a cheltuielilor se referă la anul financiar. În proiectul investițional au fost prevăzute cheltuieli necesare activității de gestiune, cum ar fi cele de secretariat, de deplasare ș.a.

Cheltuielile generale și administrative reprezintă asigurarea activități personalului administrativ în raport cu mediul extern al entității. Comunicarea și dezvoltarea întreprinderii este vital necesară pentru proiect. Astfel, au fost prognozate cele mai stringente acțiuni aferente cheltuielilor prognozate. Valoarea acestora în anul curent se prognozează la nivelul de 39,5 mii de lei.

Elementul de bază în valorificarea rezultatelor activității operaționale ale proiectului îl reprezintă veniturile din vânzări. Veniturile reprezintă valoarea totală a producțiilor comercializate și se raportează la o unitate de timp, de regulă un an de

activitate. Veniturile din vânzări reprezintă produsul volumului producției comercializate și prețul de realizare a unei unități.

Comercializarea producției de origine animală în piețele agricole este reglementată de Legea nr.257/2006 cu privire la organizarea și funcționarea piețelor produselor agricole și agroalimentare (Ministerul Economiei, 2006) și alte acte normative. În Tabelul 7 prezentăm veniturile aferente comercializării producției proiectului.

Tabelul 7. **Veniturile prognozate în funcție de cantitățile producțiilor comercializate**

Produsul	Cantitatea, kg	Venitul din vânzări, lei
1. Lapte pasteurizat	93 120	1 117 440
2. Brânză sărată	10 000	900 000
3. Brânză dulce (caș)	2 400	192 000
4. Carne abatorizată	4 909	466 331
5. Piei de iezi	499	8 978
6. Cereale	11 894	47 577
7. Lucernă (baloți)	34 373	38 498
Total venituri	×	**2 770 824**

Sursa: date elaborate de autor

Valoarea estimativă a vânzărilor producțiilor proiectului investițional se ridică la nivelul de circa 2,7 mil de lei. Sursele de venit ale proiectului sunt constituite atât din producțiile de bază, cât și din cele auxiliare. Entitatea va putea obține venituri și din comercializarea producției de fân de lucernă ș.a. Cele mai mari venituri sunt obținute din vânzarea laptelui pasteurizat. Structura veniturilor poate fi prezentată în figura de mai jos.

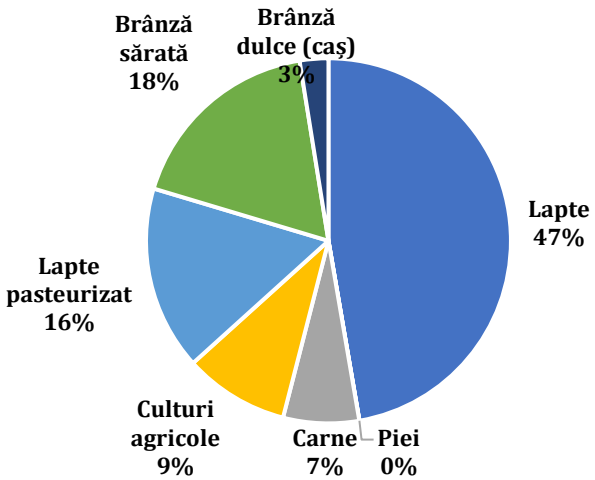

Figura 1. **Structura vânzărilor în primul an de activitate a proiectului, %**

Produsele lactate în structura vânzărilor constituie circa 84% din venituri. Veniturile din comercializarea produselor animaliere auxiliare sunt carcasele de animale după sacrificare și pieile de iezi și capre matura. De asemenea, producția vegetală suplimentară care nu a fost utilizată în calitate de furaje, la fel, se preconizează de a fi realizată. Veniturile din aceste surse ar constitui circa 9% din venituri.

Algoritmul evaluării indicatorilor principali, cât și a proiectului investițional reflectă valoarea de piață a proiectelor investiționale și eficiența investițiilor. În calitate de indicator de bază la aprecierea efectului economic al investițiilor, servește *Termenul de recuperare a investițiilor* (Tp.p.), care este identificat după formula:

$$Tp.p. = \frac{\text{IC}}{\text{Pm.a.}} \quad (ani) \tag{1}$$

unde:

IC – costul inițial al investiției (Inițial Cost – IC), lei;

Pm.a. – profitul (sau venitul NET), asigurat prin exploatarea obiectului investițional respectiv, lei/an.

Însă această formulă are loc să fie în cazul când profitul anual este constant pe toată durata proiectului investițional.

Totuși, dacă profitul (venitul NET) nu este egal în timp, atunci se va utiliza suma profiturilor pe perioade:

$$Tp.p = IC - \sum_{h=1}^{T} Phi \tag{2}$$

În cazul proiectului investițional analizat, mărimea profitului nu este uniform repartizată pe toată durata proiectului investițional și pentru comoditate poate fi reprezentat grafic (Figura 2).

Mărimea *Fluxului de numerar* al proiectului investițional demonstrează recuperarea investiției în anul 7 de activitate. Către această perioadă dezvoltarea fermei trebuie să fie asigurată. În decursul perioadei de recuperare, în mod paralel, ferma de creștere a caprinelor trebuie să se dezvolte din punct de vedere a unui proces investițional permanent.

Prin aceasta se are în vedere îmbunătățirea geno-fondului animalelor, înlocuirea fermei de bază cu animale tinere, menținerea calității producției și sporirea acțiunilor de promovare etc. Valorificarea investițiilor curente și operaționale vor avea drept sursă profitul net al entității.

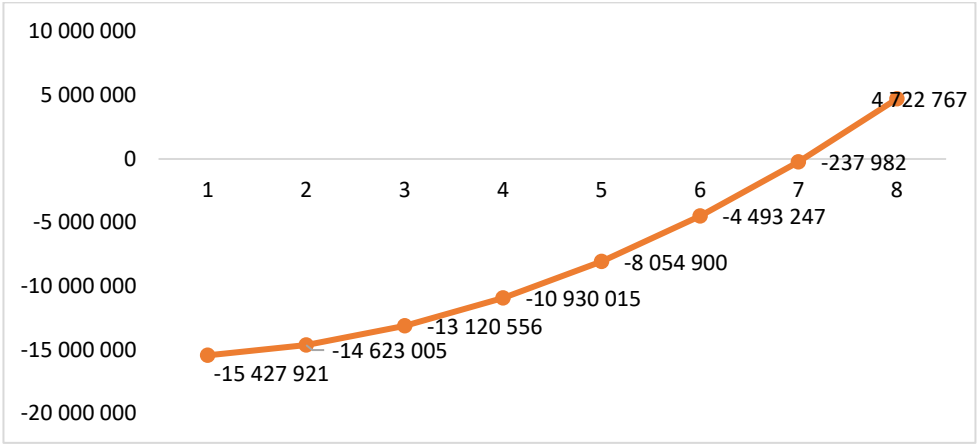

Figura 2. **Perioada de recuperare în raport cu valoarea fluxului de numerar, %**

Fiind un indicator de bază în ceea ce privește evaluarea proiectului investițional, mărimea *Tp.p.*, totuși, nu ne informează cu ce preț obținem acest rezultat. Doar nu este exclus faptul că alte proiecte (alternative) pot asigura obținerea aceluiași rezultat cu cheltuieli mai mici sub forma de investiții inițiale (Балтаг and Баранов, 2013).

Cu scopul depășirii acestor deficiențe alături de indicatorul *Tp.p.* trebuie să fie calculat și *Coeficientul Eficacității Investițiilor* (ARR – accounting rate of return), care este calculat după formula:

$$ARR = \frac{\text{AAP}}{\text{IC}} \times 100\% = \frac{4\,312\,798}{15\,427\,921} \times 100\% = 28{,}0\% \qquad (3)$$

unde:

AAP – profitul mediu anual.

IC – (Inițial Cost – IC) costul inițial al investiției.

Valoarea respectivă (28%) demonstrează că, la fiecare leu de investiție, profitul mediu anual va fi de circa 28 de bani. Un astfel de rezultat poate fi calificat destul de bun și ajustabil pentru activitatea investițională într-un astfel de domeniu de activitate.

Suma actualizată a fluctuațiilor nete de numerar (Net Cash Flow), fiind concomitent și valoarea actuală (prezentă) de piață a obiectului investițional la etapa de punere a acestuia în exploatare în timpul viitor, se numește valoarea prezentă a proiectului investițional (Present Value – PV) și este calculată după formula:

$$PV = \sum_{n=1}^{n} \frac{P_n}{(1+r)^n} \qquad (4)$$

unde:

P_1; P_2; P_3 … P_n – fluxuri anuale nete (Net Cash Flow, MDL;

r – rata de actualizare – întruchipează în sine mai mulți factori cum ar fi: 22% - costul capitalului investit, 4% - profit estimat, 2% – prima de risc (riscurile care nu au fost luate în considerație dar pot să apară).

n – numărul perioadelor de calcul (în cazul nostru – numărul anilor de la înființarea a proiectului investițional n = 11).

Fiind calculată în baza încasărilor viitoare de bani, valoarea prezentă (valoarea actualizată) constituie un criteriu de bază privind luarea deciziei referitor la efectuarea

investițiilor în proiectul investițional respectiv.

Având ca bază de calcul datele anterioare, valoarea prezentă a proiectului dat investițional:

$$PV = \sum_{n=1}^{11} \frac{32\ 012\ 854}{(1+0{,}28)^{12}} = 52\ 251\ 130{,}06 \text{ lei} \qquad (5)$$

Subliniem încă o dată faptul că la etapa inițială de exploatare a obiectului investițional, valoarea lui prezentă, care constituie, totodată, și prețul de piață al acestui obiect, este egală cu 52 251 130,06 MDL (în cazul în care pentru toată perioada de exploatare rata de actualizare va fi constantă, în valoare de 28% anual).

Alături de prețul de piață pentru investitori este important să fie cunoscută și comparația PV cu IC. Drept consecință, apare încă un indicator important, numit – *Valoarea Actuală Netă* (NPV – net present value). De subliniat, că orice proiect investițional, fiind evaluat prealabil de către investitor, nu ar trebui să aibă prețul lui de piață mai mic decât costul inițial al investiției (Stratan Alexandru, Bajura Tudor, 2017).

Deci, orice proiect investițional va fi acceptat de către investitor în cazul că $PV > IC$ și nu va fi acceptat în caz că PV<IC. Pentru proiectul investițional al unei livezi super intensive de măr mărimea NPV este egală:

$$NPV = \sum_{n=1}^{n} \frac{P_n}{(1+r)^n} - IC = 29\ 105\ 028{,}78\ lei \qquad (6)$$

Prin urmare, ajungem la concluzia că PV (Present Value) depășește ca valoare IC (Costurile Investiționale) și NVP (Net Present Value) depășește semnificativ valoarea zero la o rată de actualizare de 28%. Din aceste motive, proiectul poate fi acceptat de potențialii investitori.

Cu toate că rata de actualizare selectată de către autori (28%) este una relativ ridicată, din motivul că include în sine mai multe aspecte, cum ar fi inflația, posibile riscuri etc., termenul de rambursare a proiectului investițional este de 7 ani.

Concluzii și recomandări

Proiectul investițional propus apreciază abordarea producerii laptelui de capră cu procesarea produselor lactate în ferma agricolă prin asigurarea nivelului de autocontrol al calității.

- Abordarea generală a proiectului demonstrează că o afacere în producerea și procesarea producției animaliere poate fi profitabilă în condițiile unui nivel investițional suficient și grad de asigurare complet cu mijloace de producție;
- Proiectul asigurat suficient din punct de vedere tehnic și tehnologic, precum cel prezentat, asigură o perioadă de recuperare de circa 7 ani;
- Proiectul investițional reprezintă o îndrumare tehnologică și de afaceri pentru toți cei interesați în start-up-urile de acest gen;
- Prin calculele oferite proiectul oferă oportunitatea desfășurării unei afaceri în domeniu cu procesarea ulterioară a producțiilor animaliere obținute;
- Proiectul este elaborat reieșind din asigurarea bazei de furaje din surse proprii, gestionând terenuri agricole, ceea ce sporește indicele de profitabilitate a acestuia;

- Rentabilitatea producției în primul de activitate constituie circa 30%;
- Recuperarea capitalului investit atras din sursele interne pentru finanțarea proiectului dat constituie 13,5%;
- Prețul de piață al acestui obiect constituie 52 251 130,06 lei;
- Cererea producției de lapte de capră în Republica Moldova este în creștere, piața acestui segment este în formare;
- Circa 50 de ferme de tip intensiv, conform proiectului tipizat, ar asigura circa 12 mil litri de lapte de capră, ceea ce ar acoperi complet consumul intern în Republica Moldova.

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STATE REGULATION ON THE MANAGEMENT OF NATURAL RESOURCES INTHE FIELD OF AGRICULTURE IN AZERBAIJAN

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Summary

The article provides information on the directions of state regulation in the field of food and agriculture, and presents the FAPDA classification developed by FAO. The main focus of the article is on the direction of natural resources management of food and agricultural policy. The issues related to the ineffective use of land and water resources in Azerbaijan were analyzed, and ways to eliminate existing problems related to soil salinization and irrigation water shortage were indicated in the article. The article also provides information on the importance of globally and nationally significant agricultural heritage systems (GIAHS və NIAHS) in terms of achieving the goals of state regulation of the agricultural sector, such as ensuring the sustainability of agriculture and the development of rural areas and increasing employment and profitability in the regions through the processing of agricultural products and the development of agrotourism. Then the article the possibility of identifying the north-western region of Azerbaijan as a NIAHS site was evaluated.

Keywords: *state regulation, state policy, globally and naturally important agricultural heritage systems, GIAHS, NIAHS, sustainability of agriculture, soil salinization, irrigation water shortage.*

JEL: *Q18, Q34, Q38. A*

UDC: *338.43+330.15] (479.24)*

There are several directions of state regulation and/or state policy in the agricultural sector. The main goal of the state regulation in this field is to ensure the sustainable development of the agricultural sector and increase the income and livelyhoods of people engaged in the production of agricultural products.

Generally, public policy can be defined as the course of action taken by public authorities to solve a problem. Public policy is expressed in a set of laws, regulations and policy frameworks implemented through programs and projects. A political decision, on the other hand, determines how to achieve a particular strategic outcome by specifying what needs to be done and by whom. Policy decisions monitored by FAPDA are designed to address problems in the food and agriculture sectors of developing countries and are reflected in a law, bill, decree, ministerial circular, presidential decree, or any other official statement. This classification can also be considered as directions of state regulation. The classification developed by FAO [1], the country's food and agricultural policy covers the following policies:

• Consumer-oriented policies are policies that improve food security and nutrition outcomes through measures such as fuel tax changes, social safety nets, market support programs, and nutrition and health assistance programs.

• Producer oriented policies are policy decisions in support of producers that include actions such as public procurement from farmers at fixed producer prices, provision of inputs to smallholders or strengthening agricultural extension services, market support policies, natural resource management and regulation, and comprehensive institutional and organizational changes and adjustments;

• Trade-oriented and macroeconomic policies are policies that support consumers and/or producers through measures such as changing tariffs on food imports, export restrictions, introducing technical barriers to trade, or implementing a bilateral or multilateral free trade agreement, in addition to macroeconomic policy.

This classification is the key to the Food and Agriculture Policy Decision Analysis (FAPDA) programme, as it constitutes the method through which public policies are analysed and compiled in the FAPDA tool.

This article focuses on the policy of natural resource management as one of the areas of state regulation. The Natural Resource Management component of the FAPDA classification defines policies regarding the conservation and management of natural resources, which, among other things, lead to solutions for the conservation of the ecosystem and habitat. This decision covers measures that promote the protection, conservation and sustainable use of biologically diverse ecosystems and habitats.

Effective management of natural resources includes their sustainable use. Currently, agriculture is one of the human activities that have a negative impact on the environment. This includes both methane gas released into the atmosphere by farm animals, carbon dioxide emissions released into the atmosphere from the burning of forests to create new farmland, and soil and water pollution from the misuse of fertilizers and pesticides in plant cultivation.

Currently, the countries around the world are trying to ensure the sustainable development of the agricultural sector. Some countries choose intensive methods for this, others - extensive ones. Usually, well-developed countries try to use the achievements of science and technology in the development of the agricultural sector, in other words, they aim to intensively develop the sector. The intensive development of agriculture is an important activity in terms of supplying the population with food products, i.e, ensuring food security. However, intensive development involves ample use of natural resources. On the other hand, the extensive development of the agricultural sector is not entirely positive in terms of sustainability. For example, traditional, i.e., extensive irrigation of agricultural fields leads to the depletion of water resources and soil salinization. As can be seen, both intensive and extensive methods have their own advantages and disadvantages. Research in this direction is ongoing, but one thing is known for sure that if we do not achieve sustainability in the agricultural sector, it will be very difficult to provide sufficient food to the world population in the near future.

In this regard, ensuring the sustainability of agricultural activity is a priority for many countries. As in many countries of the world, there are certain problems related to the sustainability of the agricultural sector in Azerbaijan. It includes issues on all three pillars of the sustainability concept. However, the main focus should be on

ensuring environmental sustainability. Because the problems related to effective and sustainable use of land and water resources in the country are more acute.

Due to the use of flooding and furrow irrigation, both water shortage and soil salinization are widespread in the country. Currently, approximately 600 thousand hectares of irrigated land (1.44 million hectares) in the country are in a salinized state, of which 224 thousand ha are more severely saline lands. The lands most exposed to salinization are in the Kura-Araz plain. Besides, in Siyazan, Khizi regions, partly in Absheron economic region, Nakhchivan MR, Jeyranchol, Acinohur plain, etc. there are also saline soils in places. If timely measures are not taken against salinization, which greatly reduces productivity, its area expands and leads to the degradation of soil and vegetation in a larger area.

In Azerbaijan, salinization develops mostly around large rivers. Because water in large rivers is taken for irrigation by large-scale canals and transferred to a distance of tens of kilometers. Since most such channels are channels with soil coating, half of the water seeps into the soil and raises the level of groundwater in the lower layers, as a result, harmful salts and other substances from the ground rise up to the fertile layer of the soil. In addition, farmers closer to canals irrigate their fields more intensively with the intention of taking advantage of the abundance of water. Such intensive irrigation further aggravates the consequences of canals. That is, on the one hand, the water filtered through the sedimentary canals, and on the other hand, excessive flooding accelerates the rise of the groundwater level. Thus, groundwater is the main cause of salinization.

The main reason for soil salinization is that the soil is not used according to agrotechnical rules. This includes the use of traditional irrigation methods. In general, farmers' knowledge about plant agrotechnics is at a minimum level, since education in the agricultural field is very low in the country. All the farmers growing crops in the Kura-Araz region think that if they give plenty of water to the land, they will get plenty of crops. But in reality it is not like that. First, each plant has a water norm according to its vegetation period, and this water norm is sufficient for the plant's nutrition, and it also creates conditions for protecting the soil from salinization. Although farmers can give some boost to plant growth by irrigating fields more often, it also accelerates soil salinization, which after a few years also causes a sharp drop in productivity.

Another reason for rapid soil salinization in the country is that the drainage systems built during the former Soviet Union are currently in a state of disrepair and have not been updated for quite a long period of time.

Although there are discussions about the restoration of saline soils in the country, the main activities related to the issue are not carried out. Although the farmers are educated about the use of the rotation system, as well as usage of modern irrigation systems in order to protect the quality of the soil, there is no special control and accounting system in this regard.

Land washing or cleaning is an activity that requires large financial investment. Therefore certain subsidies may be provided by the state for the implementation of this activity.

The use of traditional irrigation methods not only leads to soil salinization, but also causes the depletion of water resources. In the survey conducted in 2020, it was

determined that 55% of farmers noted that they had difficulties with irrigation. Climate changes that have occurred on a global scale in recent times have also created problems related to irrigation in the country. In some periods, the water level in the Kura River, which is the country's main source of irrigation, falls too low, so seawater fills the riverbed and farmers are forced to irrigate their fields with seawater. This leads to the degradation of the land and the reduction of farmers' income due to low productivity.

At the same time, the fact that most irrigation canals are soil-coated results in large water losses during transportation. Moreover, the lack of a registration system related to the use of irrigation water leads to the lack of information on the exact volume of water used, and therefore to problems in the collection of payments related to irrigation. In addition to getting irrigation water at discounted prices, farmers sometimes choose not to pay at all for the irrigation water they use is they could not use water for the entire period of time, for example 3 times, instead of 5 times. As a result, irrigation water is used inefficiently.

At present, a number of measures are being implemented by the government in order to effectively use irrigation water in the country and eliminate the mentioned problems. In this regard, the main direction of the state policy is to promote the use of modern irrigation methods (drip, pivot, spray, etc.). For this purpose, imported modern irrigation systems are offered to local farmers at discounted prices. On the other hand, subsidies intended for intensive orchards in the country apply only to orchards planted using modern irrigation methods. At the same time, state control over the activities of Water User Associations is currently being strengthened in the country.

Another issue related to the efficient use of land and water resources in the country is the control of the use of fertilizers and pesticides used in the production of agricultural products. Currently, the use of fertilizers and pesticides by farmers in the country is supported by the state. These inputs are sold to farmers at discounted prices. The purpose of this support policy is to increase the productivity of agricultural crops. However, there are cases of improper use of fertilizers and pesticides by farmers in the country. Improper use of these inputs leads to the pollution of land and water resources, as well as the accumulation of harmful residues in the manufactured products. As a result, there are serious negative effects on the environment and people's health in the long run.

Another aspect of environmental sustainability is the impact of agricultural activities on atmospheric air. The contribution of methane gas emitted into the atmosphere by cattle in agriculture is huge. One of the ways to overcome this problem worldwide is to reduce the number of cattle. Currently, the Azerbaijan government provide subsidies for animals born through artificial insemination. The main purpose of this support is to improve the breed composition and productivity of local animals. For this purpose, activities related to the creation of intensive farms consisting of purebred animals are being carried out. But at the same time, this regulation implemented by the government aims to reduce the number of animals, thereby reducing the pressure these animals exert on the environment.

Generally, ensuring the stability of the agrarian field is always in the center of attention. In this regard, there are many initiatives related to the use of both the

achievements of the modern era and the traditions collected so far to ensure the sustainable development of the agricultural sector. The best practices in the field of agricultural production are activities that ensure a decent level of income, along with the sustainable and economical use of natural resources. Such activities should always be learned and taught to other farmers. In this regard, FAO's GIAHS program is very interesting. The GIAHS represent not only stunning natural landscapes but also agricultural practices that create livelihoods in rural areas while combining biodiversity, resilient ecosystems and tradition and innovation in a unique way [2]. GIAHS initiative aims to set the basis for global and national recognition, dynamic conservation and sustainable management of agricultural heritage systems and their associated biodiversity, knowledge systems and cultures.

The GIAHS methodology was developed by FAO, and the identification of GIAHS sites in the country is ensured as a result of assessments by global experts. However, in a number of cases, sites that do not fully meet the specific criteria are not registered as GIAHS sites, and therefore are ignored. For that reason, many countries register such sites as Nationally Important Agricultural Heritage Systems (NIAHS). Although NIAHS sites are not considered important at the global level, they are considered important sites at the country level. Another advantage of defining NIAHS sites is the need to formulate a specific legislation and enforcement mechanism for their identification and support. Thus, after such a mechanism is established, all measures, from the identification of sites to the support of their activities, are carried out under strict state control and regulation. At the same time, identification of NIAHS sites is a faster process. In this regard, identification and support of locally important agricultural systems can act as one of the important directions of state regulation related to ensuring sustainability in the agricultural field and protecting natural resources.

Besides having ancient history and traditions, Azerbaijan is also an agrarian country. People have been engaged in both crop growing and animal husbandry here since ancient times. From this point of view, there is a high probability of the existence of GIAHS or NİAHS sites in the country.

NIAHS sites are always formed in connection with the production of one or more agricultural products. To determine such sites in the country, the existing GIAHS methodology for the initial period can be used. From this point of view, for the beginning the products of which the country has the largest share in global trade can be considered.

Azerbaijan has favourable conditions to produce hazelnuts, persimmons, honey and number of other local traditional agricultural products due to its climatic and geographical features. The country ranks 4th for persimmon production and it is among the leaders in export of persimmons. The country is the second largest exporter of persimmons after Spain with 125,772 tons. Azerbaijan provides about 20% of the world persimmon exports. The country also ranks 3rd in the world for hazelnut production and the it is among the leaders in hazelnuts exports, it is the third largest exporter of shelled hazelnut after Turkey and Italy with 22,000 tons (for 2020) providing 8% of the world hazelnut exports [3].

Although Azerbaijan is a small country, its natural and geographical environment is quite complex. 9 out of 11 climate types exist in the country.

Therefore, the country has conditions for the cultivation of the most diverse plants. The high biodiversity in the country also increases the possibility of identifying numerous NIAHS sites in the country. For this reason, it is appropriate to implement the identification of such sites in the country in a phased manner. The process can be implemented in 14 economic regions successively.

The north-western region of the country (the territory of Sheki-Zagatala economic region) was selected for evaluation in the article. Shaki-Zagatala economic region is one of the 14 economic regions of Azerbaijan. It borders Russian Federation to the north and Georgia to the west. Region consists of Balakan, Zagatala, Gakh, Shaki, Oghuz and Gabala administrative regions (rayons). This region of the Caucasian mountains is bordered with Russia in the north and Georgia in the west, and consequently the demographic characteristic of the region is an integration of diverse cultures, customs and languages. These geographical features have determined the way of life of the inhabitants. Because of such diverse ethnic composition, a complex social organization functions peacefully, where diverse cultures and value systems co-exist in symbiosis with their natural environment. Therefore, culture and value systems of this region is fundamental to their sustainable lifestyle. Residents of the villages in the target region carry out their agricultural practices in close interaction with nature. They use sloping pastures to graze their animals, get water from rivers to irrigate their fields, place beehives in the foothills, and collect grass from the mountains and forests, which they use as an ingredient in many products and as medicine. In return, bees participate in pollination of plants in forests and farms, and sheep and goats play an appropriate role circulation of substances in nature.

Although the region is famous for the production of many agricultural products, the main products are hazelnuts, persimmons and honey. There is a high probability that there is a NIAHS site for persimmon production in the region. In terms of natural and geographical features of the region, there are favourable conditions for the cultivation of persimmons. The local population has some knowledge and skills related to persimmon cultivation. Persimmons are an economically important product for residents. There are a total of 12,698 hectares of persimmon orchards in Azerbaijan, of which 11,454 hectares are of fruit bearing age [4]. Five regions (Goychay, Shamkir, Agdash, Khachmaz and Balakan) account for 55% of the total persimmon area of the country.

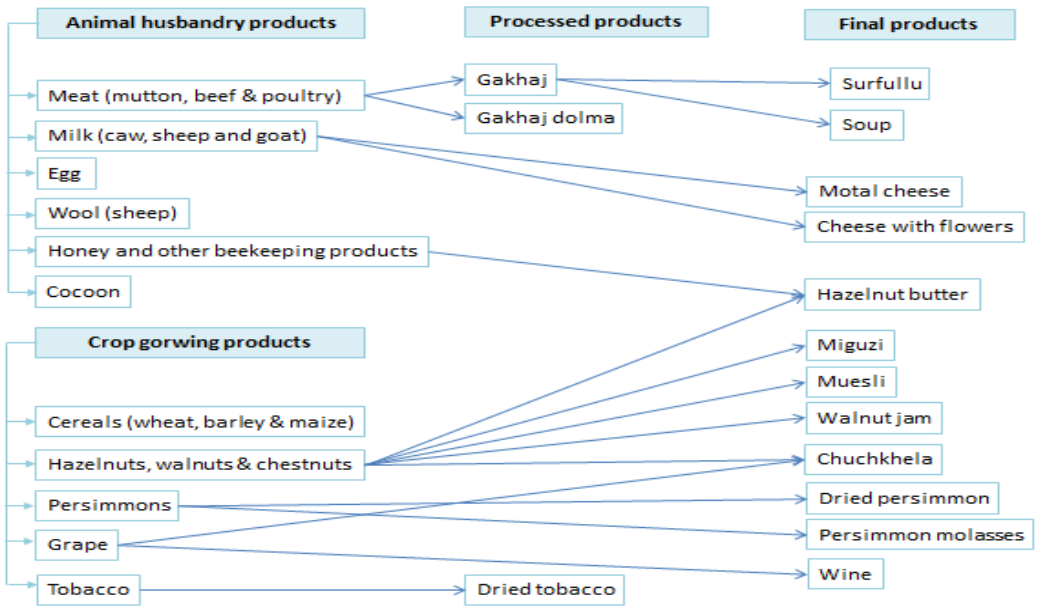
Since the product cannot be kept fresh for a long time, most residents process the product by drying after harvesting, which allows it to be stored for several months, during which they sell it in small batches to provide food and other necessities for their families. In addition, persimmons are processed in the target region by both traditional and industrial methods. Various products are produced from persimmons in the region. The target region is one of the popular persimmons growing zones in Azerbaijan. Furthermore, persimmon orchards here are an important element of the local landscape.

In the region, farmers benefit from traditional food storage practices. This mainly includes drying and storing various fruits. Locals have adopted traditional methods of storing various fruits, as well as meat, for longer period. One of the most dried fruits is persimmon. Most families in the region are engaged in drying this fruit.

It should be noted that dried persimmons have a certain share in the diet of residents of the target region. Various food products (persimmon molasses, candies with persimmon, etc.) are made from them and dried persimmons are used both as a dessert and in the preparation of various dishes.

This region is known not only for persimmons, hazelnuts and honey, but also for many other agri-food products that play an important role in terms of sustainability and livelihoods of the target region. A brief description of these products is presented below.

Graph 1. **Food and agricultural products produced in Sheki-Zagatala region**



Source: prepared by the author using the data collected in the survey conducted by the author in 2021, in the framework of the "Development of sustainable and inclusive local agri-food systems in the North-West region of Azerbaijan" implemented by FAO

Overall, the agricultural production system in the target region is crucial for the livelihood and food security of the inhabitants which are mostly engaged with farming, animal herding and food processing. It also contributes directly to the United Nation's 2030 Sustainable Development Goals. The designation of this region as a GIAHS site and implementation of its action plan, ensuring a dynamic conservation will have positive effects in the income of the beneficiaries (SDG's 1, 2,8), offering better jobs and equal opportunities (SDG's 5,9,10), better education quality (SDG's 4,12), sustainable and more resilient environment (SDG's 3,6,7,11,13,15) as well as offering them a better lifestyle.

In terms of agro-biodiversity, Azerbaijan is the richest country in the South Caucasus in terms of the total number of species of flora. The plant species found here make up 66% of the total number of plant species growing in the South Caucasus. Azerbaijan is also rich in relict species belonging to the third period, the representatives of which are more common in all zones. There are 240 endemic plant

species in Azerbaijan, which is not found anywhere else in the world, which is about 6% of the total flora.

The north-western region is characterized by a diverse landscape, more densely forested than other regions of Azerbaijan. Wild food-plants growing in mountain forests include pears, apples, hazelnuts, kernel cherry, pomegranate, sumac, mashed potatoes, hawthorn, cherries, etc. can be noted.

There are two natural reserves in the region. Zagatala State Nature Reserve which is one of the oldest nature reserves in the country established to preserve the irreplaceable soil-protective and water-repellent properties of these forests, to protect low-lying settlements and arable lands from floods, to protect the natural complex, flora and fauna of the southern slope of the Greater Caucasus. And Ilisu State Nature Reserve established to restore forests, to prevent soil erosion and floods. There are many endemic, rare and endangered plant species in these reserves.

The following policies and strategies to protect traditional production and processing systems in the NIAHS site could be proposed: increasing public awareness; protecting the biodiversity/agriculture and ecosystem; protecting experiences, technologies and agricultural traditional knowledge; economic development of the site; protecting the site landscapes; protecting and improving cultural activities in the site; developing community-based agritourism; supporting local producers in the production, storage, sale and marketing of traditional products, as well as in obtaining food safety certificates; facilitating the creation of local producer groups; promotion of local agri-food products to foreign markets.

reservation of traditional agricultural activities in some parts of the country does not mean limiting the use of modern technologies. On the contrary, the activities that have come to this day using traditional methods are further improved with the help of modern achievements of science. For example, after preparation of dried persimmon, it can be packed, labeled and transported using modern methods. At the same time, compliance with food safety requirements is also required in the production of such products. These requirements sometimes necessitate certain changes in the traditional production method.

In conclusion, the followings can be mentioned as the main directions of state regulation related to the preservation of natural resources in the country: protection and restoration of land and water resources, ensuring compliance with agrotechnical rules, as well as encouraging the use of sustainable agricultural practices, including supporting traditional agricultural practices that protect the environment.

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TENDINȚE DIGITALE ÎN SECTORUL VITIVINICOL

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The paper has been developed within the State Program "Development of new economic instruments for assessing and stimulating the competitiveness of agriculture of the Republic of Moldova for the years 2020 - 2023" (code - 20.80009.0807.16), financed from the state budget of the Republic of Moldova through the National Agency for Research and Development.

Summary

Viticulture and winemaking are areas of strategic importance and an important source of revenue for the state budget, which is why the Republic of Moldova has initiated a complex of reforms to modernize it. Digital tools and data science are driving the most innovative societal developments in our life and economy. The wine sector can adapt at a different pace and at different stages, in some cases, the sector can be subject to profound disruptions. In a changing environment, the reactions of the wine sector can be frightening and therefore even conservative, but at the same time, it is important to realize that these new technologies and capabilities we are gaining will provide invaluable opportunities, analytical and predictive tools, and speed up the pace of all processes.

The paper presents the results of research on the importance and role of digitization in the wine sector as well as its support. The study is based on reports in the field; scientific papers related to the studied problem by researchers; articles by experts in the wine sector. Several research methods have been used in the elaboration of this work, such as monograph, analysis and synthesis, statistics, comparison, etc.

Keywords: *wine sector, digitalization, modern technologies, innovations, economic development.*

JEL: Q1; O1; O13; O14.

UDC: 663.25:004

Agricultura fiind cel mai important sector al economiei, iar pentru deceniul următor - cel al agriculturii digitale, fermierii vor fi nevoiți să se adapteze timpurilor și să adopte soluții tehnologice, care să-i ajute să lucreze mai inteligent și mai profitabil. Lumea întreagă se schimbă cu ajutorul tehnologiei și nici sectorul vitivinicol nu va rămâne la fel. Pentru Republica Moldova, viticultura și vinul sunt o carte de vizita.

Peste 850.000 de moldoveni sunt antrenați în sectorul agricol al țării și generează circa 12-13% din PIB. Țara noastră are un potențial enorm pentru a obține performanțe în agricultură, dacă fermierii ar adopta mai multe inovații și ar implementa un șir de instrumente digitale în producere.

Sectorul vitivinicol este și va rămâne unul important, lucru demonstrat și prin faptul că viticultura formează 3% din PIB-ul țării, dar și că această ramură reprezintă 7% din totalul de exporturi. Statul, prin politicile sale, contribuie la dezvoltarea echilibrată a tuturor componentelor din acest sector. În acest sens, anual, din fondul de subvenționare se alocă circa 110 milioane de lei

În anul 2020, suprafața totala ocupata de vița-de-vie a constitut circa 122000 ha, suprafețele plantate cu soiuri tehnice în gospodăriile de producție-marfă pe rod au ajuns până la 68200 de hectare, iar soiurile autohtone ocupă 1732 ha, în creștere cu 23% față de anul 2019. Totodată, anul 2020 a înregistrat cea mai mare creștere a suprafețelor de noi podgorii plantate cu soiuri tehnice, din ultimii cinci ani. Astfel, au fost plantate 443 ha cu viță-de-vie, cu următoarele soiuri: Fetească Neagră, Chardonnay, Saperavi, Pinot Gris, Sauvignon, Viorica, Bianca.

Suprafața podgoriilor incluse în Registrul Vitivinicol în 2020, a ajuns la 36000 ha, fiind în creștere cu 6% comparativ cu anul 2019. Potrivit datelor introduse în Registrul Vitivinicol, cele mai cultivate soiuri tehnice sunt: Cabernet Sauvignon - circa 4999 ha, Merlot - 4794 ha, Pinot Noir - 1340 ha, Aligote - 5099 ha, Sauvignon - 4467 ha, Chardonnay - 2585 ha.

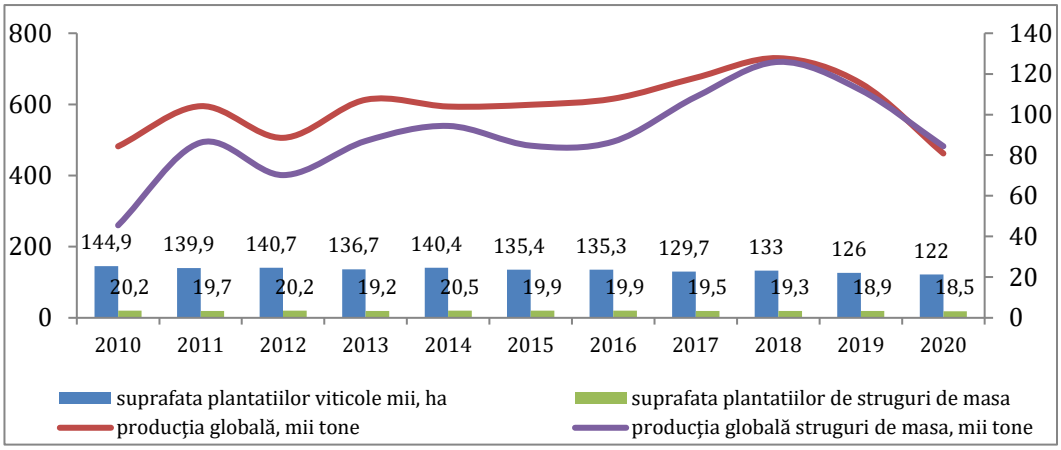

Figura. 1. **Tendințele sectorului vitivinicol în Republica Moldova**
Sursa: Elaborat de autor, conform datelor Biroului Național de Statistica

Agricultura este o ramură importantă a oricărei economii naționale cu funcții dintre cele mai diverse: biologice, sursă principală de activitate economică și de utilizare a forței de muncă, factor ecologic de protecție a mediului ambiant și de luptă împotriva deșertificării în multe zone ale Terrei, un mod de viață, o tradiție tehnică şi culturală şi, nu în ultimul rând, agricultura este o civilizație. Instrumentele digitale și știința datelor conduc cea mai inovatoare evoluție a societății din viața și economia noastră. Indicele digitalizării în agricultura R. Moldova se află la nivelul de 66,8% comparativ cu țările UE.

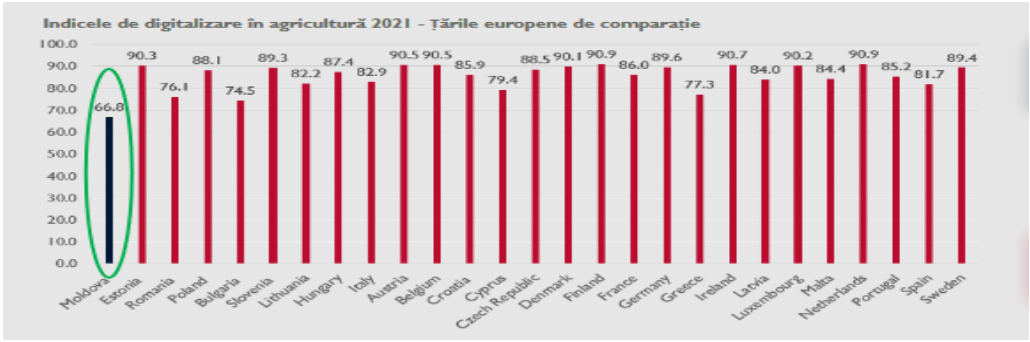

Figura 2. **Nivelul de digitalizare a agriculturii R. Moldovei**

Sursa: Date de la Banca Mondiala. (2021). What's Cooking: Digital Transformation of the Agrifood System.

Tot mai des se discută despre digitalizarea agriculturii, care este un concept nou și, totodată, un element-cheie al succesului. Digitalizarea agriculturii este transformarea digitală, integrarea tehnologiei digitale în toate domeniile unei organizații, pentru a adăuga valoare societății, pentru a schimba modul în care funcționează și modul în care oferă valoare companiilor, produselor sale, lanțului de aprovizionare, proceselor, angajaților și clienților.

Digitalizarea și gestionarea tuturor proceselor de producție în zilele noastre se aplică nu numai producției și serviciilor, ci și sectorului agricol. Agricultura de astăzi crește continuu datorită standardizării prin utilizarea tehnologiilor sofisticate, care includ imagini prin satelit, tehnologie GPS, roboți și senzori de temperatură, umiditate și altele. Toate aceste progrese ajută agricultura să fie mai eficientă, mai sigură și mai ecologică. Digitalizarea în agricultură devine un obiectiv, indiferent dacă suntem pregătiți sau nu. Obiectivele principale din spatele unității pentru digitalizare sunt eficiența sporita, productivitatea, transparența, noile modele de afaceri/ propuneri de valoare și sustenabilitate.

Figura 3. **Obiectivele din spatele impulsului către digitalizare**

Sursa: https://www.onvpv.ro/sites/default/files/20220324_digital_world_2021_oiv.pdf:

Digitalizarea poate îmbunătăți condițiile de lucru pentru fermieri și reduce impactul negativ al agriculturii asupra mediului. Totodată, fluxurile de date agricole îmbunătățite pe întreg lanțul agroalimentar generează foarte multe avantaje pentru cei implicați, inclusiv pentru fermieri și pentru părțile interesate din sectorul distribuției și al comerțului cu amănuntul.

Ca urmare a inovației apar noi produse, tehnologii și forme de organizare și gestionare a producției, care este una dintre condițiile necesare pentru funcționarea

efectivă a producătorilor agricoli într-o economie de piață. Statul are cel mai important rol în inovație, care asigură finanțarea și selectarea priorităților în sfera inovării. Ministerul Agriculturii și Industriei Alimentare al Republicii Moldova a discutat conceptul *Programului privind Digitalizarea agriculturii pentru perioada 2023-2027.* Acest program este elaborat cu suportul FAO și se bazează pe descrierea provocărilor la nivelul cadrului instituțional și fermierilor, urmărind patru obiective generale:

- Dezvoltarea infrastructurii informaționale, precum și a serviciilor publice electronice;
- Dezvoltarea cunoștințelor și competențelor digitale, promovarea incluziunii digitale;
- Integrarea instrumentelor digitale în practicile agricole;
- Dezvoltarea și aplicarea instrumentelor digitale în scopul facilitării accesului la piețe și sporirii potențialului de export pentru produsele agro-alimentare.

Totodată, în cadrul Centrului de Consultanță în Afaceri se implementează proiectul „*BSB Smart Farming - Pregătirea în comun a condițiilor pentru transformarea digitală în sectoarele agricole și conexe din zona bazinului Mării Negre*" (BSB908), al cărui scop este de a răspunde nevoii imediate și nesatisfăcute pentru o schimbare semnificativă a condițiilor existente în toate țările bazinului Mării Negre legate de creșterea transformării digitale în agricultură și sectoarele conectate din întreaga lume, care afectează, de asemenea, profund zona.

Tehnologiile digitale și rețelele de informații transformă rapid sistemele agricole la nivel mondial. Un număr tot mai mare de dovezi relevă avantajele semnificative pentru productivitatea, rentabilitatea și sustenabilitatea agriculturii prin crearea unui ecosistem de inovare agricolă.

Figura 4. **Avantajele digitalizării viticulturii**

Sursa:https://maia.gov.md/sites/default/files/Documente%20atasate%20Advance%20Pagines/Tehnologiile%20Viitorului%20%C3%AEn%20Agricultur%C4%83.pdf

Digitalizarea podgoriilor oferă potențialul de a exploata, de a recolta mai eficient și de a îmbunătăți controlul în timpul prelucrării. Unul dintre principalele motive pentru utilizarea soluțiilor tehnologice în podgorii este reducerea riscurilor în timpul recoltatului. Majoritatea senzorilor și imaginilor prin satelit utilizate în prezent în podgorii se concentrează pe controlul calității viței de vie și aspecte meteorologice: monitorizarea solului și apei, condițiilor pentru utilizarea eficientă a apei, managementul irigațiilor și prognoza meteo. De asemenea, permit existența unei chei de monitorizare a unor parametri, precum temperatura mediului ambiant, viteza vântului, umiditatea relativă a aerului, umiditatea la nivelul frunzelor, umiditatea solului și precipitațiile. Există, de asemenea, multe aplicații datorită combinației de tehnologii, precum dronele și imaginile în infraroșu sau multispectrale, utilizate în avertizarea și combaterea dăunătorilor în plantațiile viticole. Viticultorul are nevoie de informații, despre toate aspectele care pot influența creșterea viei, iar acestea sunt rezultatul prelucrării datelor brute provenite de la mai multe surse de date (senzorii din teren, stațiile meteo, dronele care pot survola și supraveghea via sau oamenii de pe teren).

Cu ajutorul tehnologiilor moderne, de asemenea se poate de monitorizat și controlat o serie de factori ce influențează atât calitatea strugurilor, cât și a vinului, ceea ce este foarte important pentru producătorii care activează în domeniile viticulturii și vinificației. Informațiile colectate pot include detalii despre recoltă, originea, descrierea geografică mai specifică, precum numele podgoriei, tipul de struguri, categoria de calitate sau aroma și chiar valorile analitice. Toți cei implicați în lanțul de creare a valorii, începând cu viticultorii, autoritățile de supraveghere și terminând cu laboratoarele analitice la distribuitori angro și cu amănuntul și chiar pub-urile și restaurantele își gestionează datele în formă digitalizată.

Implementarea digitalizării sectorului vitivinicol, reprezintă o șansă pentru întregul sector, o transformare care va aduce eficiență, transparență și productivitate și poate genera noi modele de business pe piața locală, care să devină competitive la nivel global.

De aceea numeroase studii de caz internaționale demonstrează avantajele măsurabile ale investițiilor în tehnologiile digitale, cum ar fi: eficiența utilizării apei; calitatea și fertilitatea solului; exporturi externe; generarea de venituri, dar și optimizări la utilizarea erbicidelor; pierderi de recoltă, emisii de CO2 și la consumul de combustibil. Investițiile în tehnologiile digitale au contribuit la optimizarea în mod direct a mai multor aspecte ale producției agricole, îmbunătățind în același timp rezultatele pentru agricultori și alte întreprinderi.

Folosind diverse programe (softuri) care integrează datele primite prin satelit sau de la senzorii pe care i-am instalat în solar sau în câmp, de la drone, imagistică de înaltă rezoluție şi alte surse, fermierii sunt informați, în detaliu şi în timp real, despre condițiile de creștere şi dezvoltare a plantelor, având posibilitatea de a lua cele mai bune decizii, zilnic, de la plantare până la recoltare. Utilizând softuri specifice, calculatorul poate lua el deciziile în locul cultivatorului, eliminându-se erorile umane legate de acțiunile pripite sau pregătirea profesională relativ precară.

Totodată, digitalizarea sectorului viței-de-vie trebuie să se bazeze pe cele mai bune practici și să țină cont de eșecurile sau „***capcanele***”cu care s-au confruntat alte țări.

Cu toate acestea, exista numeroase provocări ce trebuie de depășit înainte de a atinge un nivel mai ridicat de maturitate tehnologica (lipsa sprijinului publicului inițiat, costuri mari de implementare pentru micii producători și angajamentul scăzut al utilizatorului final).

În concluzie putem menționa că: transformarea digitala oferă o oportunitate pentru sectorul vitivinicol pentru a câștiga eficiență, transparență, productivitate, deschide oportunități de avansare către noi modele de afaceri/propuneri de valoare și îmbunătățire a durabilității.

Sunt necesare investiții mari în termeni de competențe, capital și timp, de unde apare și trecerea lenta către noul Nou.

Utilizarea tehnologiilor digitale poate avea un impact pozitiv asupra calității vieții în zonele rurale și poate atrage o generație mai tânără către inițiativele de afaceri rurale.

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*** Legii viei și vinului nr. 57-XVII din 10 martie 2006. Publicat în Monitorul Oficial nr.75-78/314 din 19.05.2006

*** Moldova, pe harta vitivinicolă mondială: A rămas o săptămână până la cel mai important eveniment de totalizare a anului vitivinicol 2018-2019. Disponibil: http://www.vinmoldova.md/ro/news_md/moldova-na-mirovom-rynke-vina/

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TENDINȚE ACTUALE ÎN DEZVOLTAREA PRODUCȚIEI DE CIREȘE ÎN REPUBLICA MOLDOVA

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Summary

In recent years, the production of cherries in the Republic of Moldova has been constantly increasing, reaching a significant share in the horticultural field in terms of area and share of value in the total value of agricultural production. The development of this sector has impacted the focus of many investors and experts from the agrarian sector, proved by the fact that during the period 2016-2021 it has contributed to the increase of both, the average yield per hectare by approximately more than 3 times in agricultural enterprises and peasant farms and the actual cherry production by more than 30% in all categories of agricultural entities. Foreign trade in cherries is represented by a positive trade balance, but there are also some specific risks related to this product that will be further investigated in this paper. The purpose of the work is to carry out an analysis of the situation related to the production of cherries in the Republic of Moldova, as well as the presentation of some trends in the development of the sector. Analytical, descriptive and comparative research methods allowed the formulation of conclusions regarding the current state of the sector. Although the average yield per hectare in the analyzed period increased significantly, the occuring fluctuations of this coefficient lead us to the conclusion that there are still increased risks specific for production of cherries that deserve to be removed in order to obtain a profitable business.

Keywords: *cherries, production, trade, Revealed Comparative Advantage, Republic of Moldova*

JEL*:* Q17, Q18

UDC: 631.151+338.439.5]:634.232(478)

Introducere. Sectorul agricol al Republicii Moldova are un impact major asupra economiei naționale (Petrea et al, 2020), Moldova fiind una dintre țările cu un potențial semnificativ în agricultură, una dintre cele mai mari suprafețe ale terenurilor agricole ca pondere din totalul terenurilor (Timofti et al, 2016).

În prezent, sectorul agricol trece printr-o perioadă semnificativă de modernizare și dezvoltare, mizând pe trecerea treptată la o agricultură competitivă, ceea ce presupune existența unor avantaje, atât pe pieţele interne, cât și pe cele externe (Lucasenco, Ceban, 2020). Producția agricolă are o tendință de creștere relativ stabilă, cu excepția anilor cu condiții climatice severe precum secetele din 2007, 2012, 2020. Producția agricolă vegetală domină în continuare structura producției agricole, cu o pondere de peste 70% în ultimii 3 ani (Ceban, Lucasenco, 2021).

Creșterea fructelor în Republica Moldova reprezintă o activitate importantă pentru agricultura țării. Încă din perioada sovietică, fructele moldovenești erau apreciate pentru calitățile gustative și calitatea acestora, Moldova fiind unul dintre cei mai importanți producători și procesatori de fructe (Ceban, 2022).

Printre fructele exportate, o nișă importantă este ocupată de cireșele moldovenești, care pas cu pas încep a-și realiza potențialul de export. Acest fapt este demonstrat de implicarea tot mai intensivă a întreprinderilor agricole în cultivarea cireșelor și suportul statului prin intermediul diverselor măsuri de sprijin pentru defrișarea plantațiilor vechi, înființarea plantațiilor noi și subvenții acordate sectorului de procesare. Acești factori au dus la modernizarea plantațiilor de cireși și, prin urmare, la o creștere a recoltei medii la hectar, ceea ce permite de a fi mai competitiv pe plan internațional. Bineînțeles, ca și în oricare altă ramură a agriculturii creșterea fructelor întâmpină o multitudine de riscuri specifice creșterii și comercializării produselor date. Însă merită de menționat că au fost întreprinse măsuri spre minimizarea sau reducerea parțială a acestor riscuri atât din partea statului, cât și din partea antreprenorilor.

Gradul de abordare a temei în literatura științifică. Pe plan internațional, comerțul extern cu cireșe a fost explorat prin prisma indicatorului RCA de către Arisoy H. et al (2022). Eastlake T. (2017) a abordat tematica prin intermediul managementului procesului de post-recoltare, iar Nagai T. et al (2006) prin prisma rolului intervențiilor tarifare asupra comerțului cu cireșe.

În literatura științifică din Republica Moldova, abordarea propusă de autori, și anume, analiza lanțurilor de producție, comercializare și export al cireșelor nu a fost supusă anterior unei evaluări și analize complexe. Comerțul extern cu fructe al Republicii Moldova, în aspecte generale, a fost analizat de Ceban A. (Ceban, 2022) prin observarea sub-grupelor cele mai competitive pe plan internațional, respectiv, cele cu un potențial de export. Tematica cireșelor este prezentă în lucrările autorilor autohtoni, în special prin abordarea aspectelor tehnologice de creștere și cultivare (Iurea et al., 2017), (Balan et al, 2022), (Gumeniuc et al, 2021) și (Pește anu et al, 2020).

Metodologia cercetării. Scopul lucrării este de a efectua o analiză a situației actuale și tendințele de dezvoltare a producției de cireșe în Republica Moldova, precum și evaluarea gradului de competitivitate pe plan internațional, respectiv, metodele de cercetare selectate și utilizate pentru articolul dat se referă la metoda analitică, descriptivă, comparativă, precum și prin intermediul indicatorului Avantajului Comparativ Relevat.

Avantajul Comparativ Relevat (RCA) reprezintă un indicator frecvent utilizat în evaluarea nivelului de specializare în comerț, precum și gradul de competitivitate al unui produs sau grup de produse (Ceban, 2022). Formula RCA cel mai des utilizată pentru a evalua competitivitatea anumitor produse sau categorii de produse este următoarea:

$$RCA = \frac{\frac{X_{ij}}{X_{it}}}{\frac{X_{nj}}{X_{nt}}} = \frac{\frac{X_{ij}}{X_{nj}}}{\frac{X_{it}}{X_{nt}}}$$

unde, X reprezintă exporturile, i – o țară, j – un produs sau un grup de produse, t – un set de produse sau grupuri de produse, și n – un set de țări (Balassa, 1965). Dacă RCA> 1, denotă existența unui avantaj comparativ, de exemplu: sectorul în care țara este relativ specializată din punct de vedere al exporturilor (Moroz et al, 2011).

Rezultate principale. În pofida faptului că în perioada anilor 2016 – 2021 plantațiile pomicole, nucifere și arbuști fructiferi au atins suprafața maximă în anul 2019, după care au urmat doi ani consecutivi când suprafețele acestora au înregistrat reduceri, plantațiile pomicole de cireși au fost într-o continuă creștere în ceea ce privește suprafețele plantate. Astfel, dacă în anul 2016 plantațiile de cireși au constituit 3,1% (sau 4,2 mii hectare) din totalul suprafețelor de plantații pomicole, nucifere și arbuști, atunci în anul 2021 acestea au atins 3,8% (sau 5,3 mii ha).

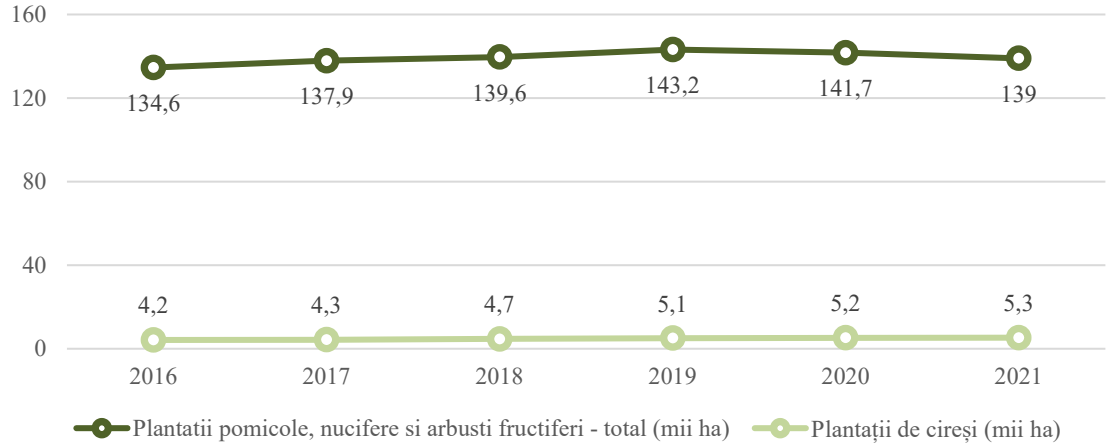

Figura 1. **Suprafața totală a fructelor, pomușoarelor și nucilor, precum și suprafața de cireși 2016 -2021, mii hectare**

Sursa: Calculele autorilor în baza datelor Biroului Național de Statistică

Această creștere se datorează, în mare parte, majorării suprafețelor plantațiilor de cireș în cadrul întreprinderilor agricole ce constituie 45,3% din totalul suprafețelor pomicole de cireș și a gospodăriilor țărănești (de fermier), care constituie 34,0% din totalul suprafețelor pomicole de cireș pentru anul 2021.

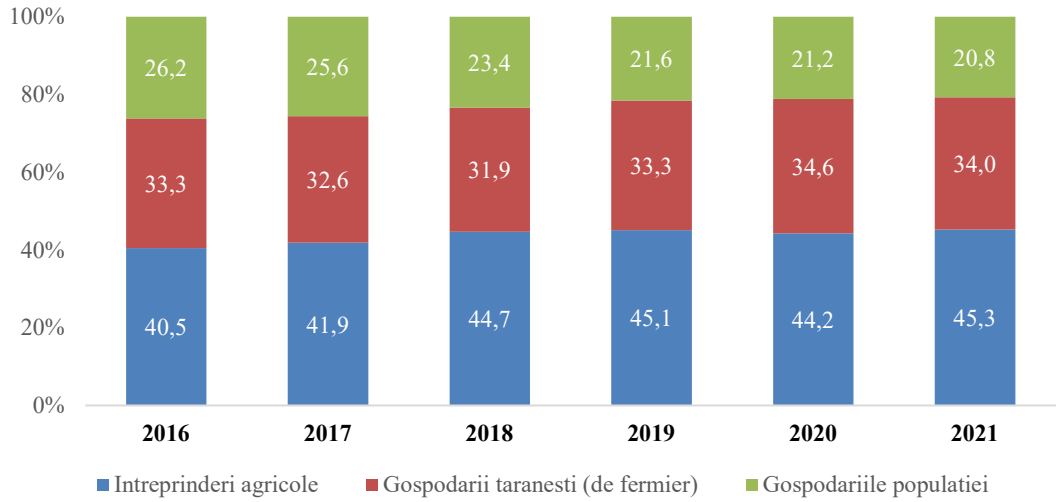

Figura 2. **Suprafața plantațiilor de cireși divizată pe categorii de gospodării, %, 2016 - 2021**

Sursa: Calculele autorilor în baza datelor Biroului Național de Statistică

În anul 2007, aproximativ jumătate din suprafețele de plantații pomicole de cireși ce aparțineau întreprinderilor agricole și gospodăriilor țărănești (de fermieri) au fost amplasate în partea de nord a țării. Însă pe parcursul anilor 2007 – 2021 acest raport s-a modificat în favoarea întreprinderilor agricole și gospodăriilor țărănești (de fermieri) din partea de centru a Republicii Moldova. În același timp, și în partea de sud a țării au existat tentative de dezvoltare a plantațiilor pomicole de cireși, care în perioada respectivă s-au soldat cu o creștere de 3,1% a suprafețelor plantate.

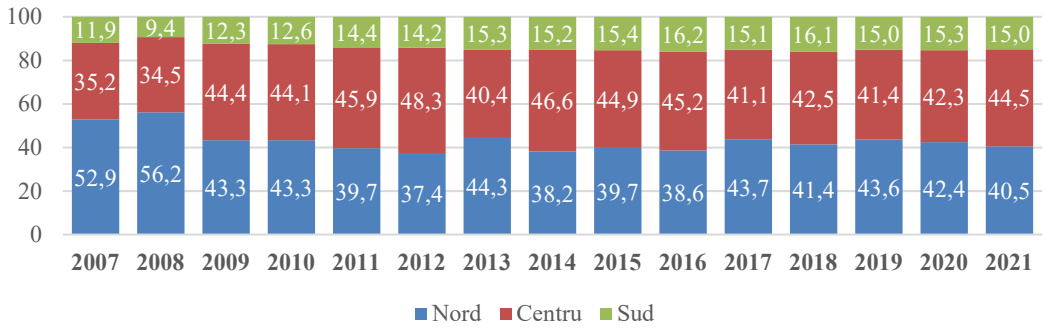

Figura 3. **Suprafața plantațiilor de cireși divizată pe zone geografice ale Republicii Moldova, %, 2007 - 2021**

Sursa: Calculele autorilor în baza datelor Biroului Național de Statistică

Pe lângă creșterea suprafețelor plantațiilor de cireși în perioada analizată, o atenție semnificativă a fost acordată atât metodelor tehnologice moderne, cât și speciilor noi de pomi care permit crearea unor livezi intensive și prin urmare, obținerea unei recolte mai mari. Acest fapt este bine reflectat prin roada medie la hectar, care pe parcursul anilor analizați a crescut în medie de trei ori în cadrul întreprinderilor agricole și gospodăriilor țărănești (de fermier). Bineînțeles că

dependența acută de condițiile climatice este foarte actuală, ceea ce contribuie la o prezență a fluctuațiilor sporite pe parcursul anilor în ceea ce privește roada medie la hectar. Însă, oricum, nu pot fi evitate progrese sporite în ceea ce privește minimizarea riscurilor atât în procesul de creștere cât și în perioada de post recoltare a cireșilor.

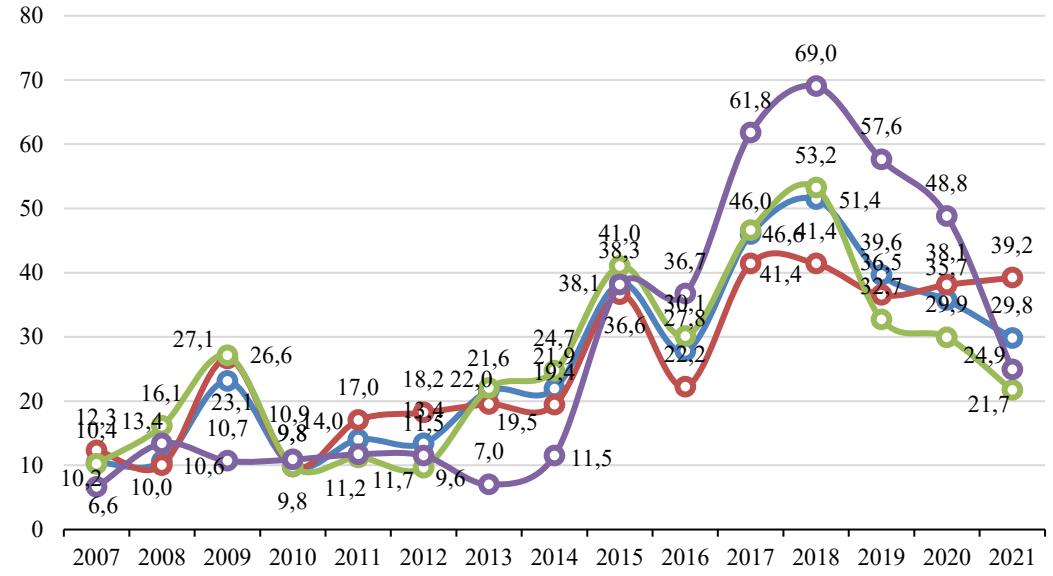

Figura 4. **Roada medie a plantațiilor de cireși în cadrul întreprinderilor agricole și gospodăriilor țărănești (de fermier), 2007 – 2021, chintale/hectar**

Sursa: Calculele autorilor în baza datelor Biroului Național de Statistică

Creșterea suprafețelor plantate și a roadei medii la hectar inevitabil au dus la sporirea recoltei globale de cireșe, care pe parcursul perioadei 2016 – 2021 a înregistrat o creștere cu aproximativ 34%. Bineînțeles, că această cantitate de cireșe nu poate să fie pe deplin absorbită de piața internă, astfel, în dependență de an, dar în medie aproximativ 70% din produs își găsește cumpărătorul pe piața externă, fiind destinate exportului.

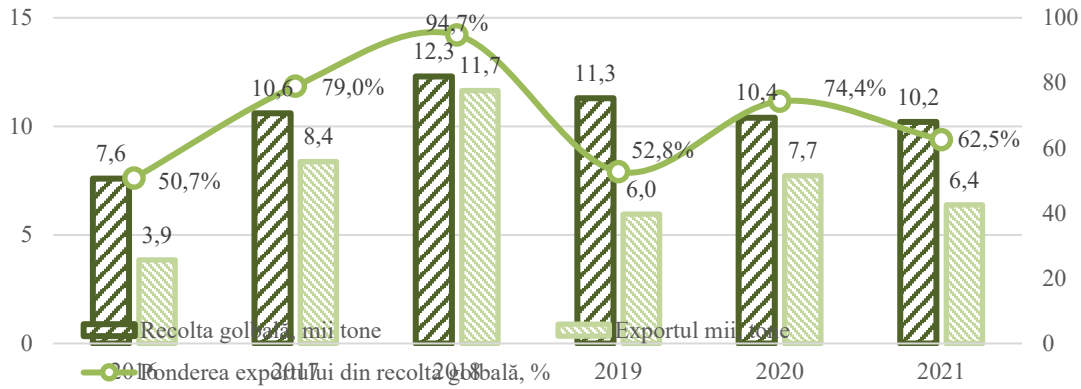

Figura 5. **Recolta globală, exportul și ponderea exportului din recolta globală de cireșe, 2016 - 2021**

Sursa: Calculele autorilor în baza datelor comtrade.un.org.

În același timp, un impuls substanțial pentru dezvoltarea sectorului de producere a cireșelor este faptul că și prețurile de export pe parcursul anilor nu sunt mai mici comparativ cu cele locale sau în unii ani sunt chiar și mai mari.

Tabelul 1. **Prețul mediu și prețul mediu de export al cireșelor pe parcursul anilor 2016 - 2021**

	2016	2017	2018	2019	2020	2021
Prețul mediu de export al cireșelor, USD/Kg	0,48	0,50	0,56	0,64	0,83	0,69
Prețul mediu de vânzare al cireșelor, lei/kg	7,71	8,58	9,02	9,30	12,48	10,64

Sursa: Calculele autorilor în baza datelor wits.worldbank.org și datelor Biroului Național de Statistică

Balanța comercială a comerțului exterior a fost mereu pozitivă, Republica Moldova poziționându-se în calitate de exportator net al produsului dat. Însă, este important de menționat că este prezent și importul cireșelor, care în anii de vârf atinge un volum de aproximativ 6,0 % din volumul de cireșe exportate, cu o medie de aproximativ 3,4% pe parcursul anilor 2016 – 2021.

Tabelul 2. **Importul și exportul de cireșe pe parcursul anilor 2016 – 2021, Kg**

	2016	2017	2018	2019	2020	2021
Importul de cireșe, kg	234 830	366 280	655 838	191 391	40 751	27 675
Exportul de cireșe, kg	3 855 819	8 375 973	11 651 724	5 963 145	7 733 915	6 379 380

Sursa: în baza datelor wits.worldbank.org

De asemenea, comparativ cu celelalte țări, producția de cireșe a Republicii Moldova are un Avantaj Comparativ Relevat semnificativ. Drept urmare, în perioada anilor 2015 – 2021, valorile RCA pentru cireșele de origine moldovenească depășesc semnificativ valorile minime ce semnifică prezența unui avantaj competitiv.

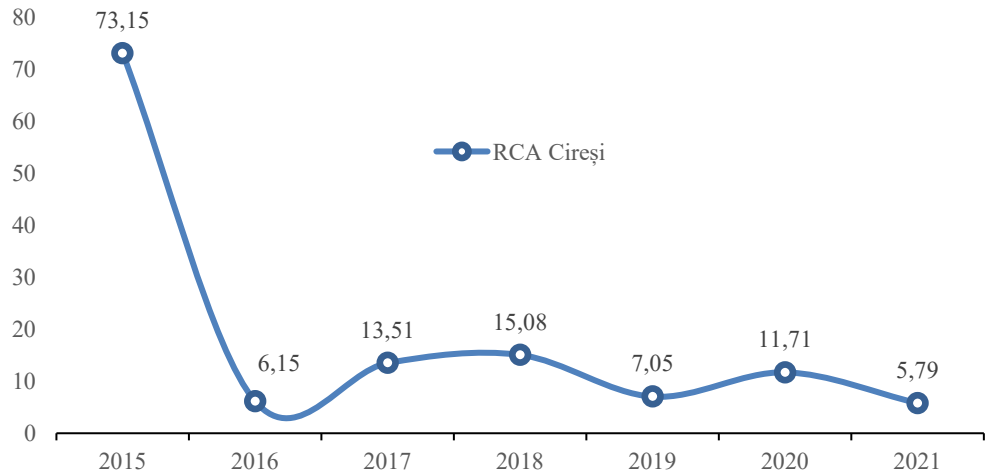

Figura 6. **RCA a producției de cireșe în raport cu țările lumii, 2015 – 2021**

Sursa: Calculele autorilor în baza datelor https://wits.worldbank.org/

În același timp, un dezavantaj în acest context îl prezintă spectrul îngust de parteneri de export ai Republicii Moldova. Astfel, principalii importatori de cireșe originare din Republica Moldova sunt Federația Rusă și Belarus, care în anul 2016 au fost unicii parteneri de export ai produsului dat. Cu toate că dependența față de acești parteneri pe parcursul anilor 2016 – 2021 a scăzut, oricum, în anul 2021 ea era încă foarte mare și deținea o cotă cumulativă de aproximativ 93% din totalul exporturilor de cireșe pentru anul 2021.

În scopul minimizării riscurilor care, eventual, pot apărea ca urmare a conjuncturii geopolitice, se impune diversificarea pieței externe de desfacere. În acest context, un semnal important a fost oferit din partea Uniunii Europene, care în urma negocierilor cu autoritățile Republicii Moldova și prin intermediul Acordului de Liber Schimb Aprofundat și Cuprinzător, începând cu anul 2021 permite producătorilor moldoveni să exporte pe piața UE un asortiment de produse, printre care sunt și cireșele, la o relație comercială preferențială. Avantajul constă în eliberarea taxelor de import a produsului dat până la o cantitate anumită, în cazul cireșelor cantitatea fiind fixată până la 1500 tone. Desigur că depășirea acestei cantități nu interzice exportul către aceste piețe, ci doar va fi impusă la o cotă standard. Dacă în anul 2021 în Uniunea Europeană au fost exportate 65 tone de cireșe care au constituit doar 4% din limita admisibilă care poate fi scutită de taxe de import, atunci în anul 2022 la data de 04.07.2022 acest volum a atins suma de 113 tone și a constituit deja 8% din limita admisibilă care este scutită de taxe la import. Drept urmare, poate fi observată o tendință a cireșelor moldovenești de a pătrunde pe noi piețe de desfacere.

Concluzii.

1. Creșterea suprafețelor de plantații noi de cireși prin înființarea plantațiilor noi, precum și modernizarea acestora în cadrul întreprinderilor agricole și gospodăriilor țărănești demonstrează sporirea interesului din partea antreprenorilor pentru cultura dată.
2. Atât modernizarea livezilor, cât și selectarea soiurilor noi are un impact pozitiv asupra minimizării riscurilor de ordin climatic, precum și asupra creșterii roadei medii la hectar.
3. După procesul de recoltare, entitățile agricole care dispun de capacități frigorifice și de stocare sunt avantajate prin faptul că au posibilitatea de a negocia un preț mai bun în perioada extrasezon și nu sunt nevoite să vândă producția în câmp deschis nemijlocit în perioada de recoltare.
4. În cadrul exporturilor cireșelor, numărul redus al partenerilor externi prezintă un factor de risc major, ceea ce sporește posibilitatea de a fi supuși unor consecințe negative ale conotațiilor geopolitice.

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CURRENT STATE, OBSTACLES AND OPPORTUNITIES FOR THE DEVELOPMENT OF THE CHAMPIGNON MUSHROOM PRODUCTION INDUSTRY IN THE REPUBLIC OF MOLDOVA

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Summary

Due to their nutritional and economic value, champignon mushrooms are appreciated by both consumers and domestic agricultural entrepreneurs. The ability of this culture to provide up to five - six harvests during the year, the constant demand on the local market for the given product, reflects, at first sight, guaranteed economic successes for potential mushroom producers. However, the specifics of the local market, as well as the technical and material conditions available for carrying out the production process in the conditions of the Republic of Moldova, carry a series of risks that can seriously compromise the success of the given business.

The purpose of this work is to confirm the economic advantage of producing champignon mushrooms in the conditions of our country, to reflect the necessary technological measures to be implemented, the risks that may arise in the production process.

General research methods (empirical and theoretical methods) were used in the preparation of the report, the analysis of statistical data reflecting the dynamics of the foreign and local markets was widely applied.

The report presents both the analysis of the statistical data and the derived conclusions, and the effects are interpreted through the lens of promoting agricultural products with a high economic value.

The results of the report present the dynamics of the local mushroom production sector, development opportunities and measures to make the field more efficient.

***Keywords**: agriculture, mushrooms, technologies, production, efficiency*
***JEL:** Q12, Q13, Q16.*
***UDC**: 631.151:635.82] (478)*

Introduction. The production of edible mushrooms of the Champignon species (Agaricus bisporus) or simply - champignon, represents an agricultural entrepreneurial activity with great economic prospects. It is a crop with a high food and economic value, and from a technological point of view it can be grown in

protected conditions, which greatly reduces the dependence on unfavorable climatic factors.

This species can be produced both in small spaces, in auxiliary households, and on an industrial scale, using underground limestone quarries, warehouses of agricultural enterprises, basements with extensive areas.

The exceptional food value, the wide area of use in the field of medicine imposes a constant demand for the respective product. With a marketing price accessible to most consumers, the varied way of use, mushrooms generate constant income for producers around the world.

In the Republic of Moldova, around two thousand tons of mushrooms are produced annually, most of the production being intended for fresh marketing. For the manufacturing industry, domestic production does not meet the technological requirements and domestic producers cannot guarantee the requested quantities. Regulation of the given situation can only be done by introducing modern production technologies, adapted to the conditions of the Republic of Moldova.

Material and method. The elaboration of the report was carried out on the basis of general research methods (empirical and theoretical methods), the analysis of statistical data reflecting the dynamics of production and commercialization of Champignon mushroom production in the Republic of Moldova was widely applied.

Primary documents represented by specialized literature (books, monographs, scientific reports and didactic materials, etc.), as well as secondary documents in the form of institutional sources (statistics by field) were used as sources for the research. Extensive use was made of the information provided by the National Bureau of Statistics.

Results and discussions. Being an accessible food product with valuable nutritional qualities, with the passage of time, people gradually tried to transform the development of mushrooms from a spontaneous culture to a culture obtained in a directed way. Thus, over time countless attempts were made, but plausible results were obtained only in the XVII century by gardeners from France and the cultivation was carried out in the surroundings of Paris, in old quarries, from where the stone for construction was once acquired. Galleries were used in which the constant temperature (12-14 oC) and good ventilation was maintained throughout the year. [1].

Becoming the main edible sponge in the world, champignon production began to be widely practiced in other countries as well. Starting in 1918, a superior form of mushroom cultivation was adopted based on Lambert's (USA) technology, which produced mycelium in pure cultures, through spore germination, and thus began the selection of mushroom breeds (sexes) with superior productive qualities. For eight decades the French were the biggest mushroom producers in the world. Currently, along with France, mushrooms are cultivated in commercial quantities in England, Holland, Germany, USA, Belgium, Russia, Hungary, Japan, etc. [2].

Currently, the main producers of Champignon mushrooms are China, Italy, the United States of America, the Netherlands, and Great Britain. Worldwide, about 2,800,000 tons of mushrooms are produced annually. On the European level, approximately 60% of this quantity is produced, or around 1,680,000 tons. On the European continent, the main mushroom producing countries are France, Poland, Italy and Hungary.

In the world industry of mushroom production, three types of production are distinguished, which differ both according to the capacity of work intensification and according to the level of applied investments.

The first type of production shows a massive use of manual labor but with a low level of automation. This method is characteristic for China, where the share of small production enterprises is significant, the level of investment is very low, manual operations predominate, and the harvest for a production cycle is relatively small (12 – 15 kg/m2). Due to the very large number of producers, China manages to produce over one million tons of mushrooms annually.

The second type of production is widely used in the USA and Australia, where initial investments are higher but manual operations predominate. This type can be attributed to semi-industrial production, it is carried out by medium-sized enterprises and can provide relatively high and stable yields.

The third type of mushroom production is based on maximum technological production (up to 85%) and is practiced in the Netherlands. Manual operations are performed only to perform harvesting. This method is defined by massive investment injections and the organization of production enterprises of large economic dimensions [3].

Mushroom production in the Republic of Moldova is mostly characterized by the first type of production. Thus, the share of local mushrooms are produced in small or even auxiliary households, with the maximum application of manual operations. Accordingly, the results obtained do not differ much from those obtained by Chinese manufacturers. The share of domestic enterprises that implement semi-industrial technology is tiny.

The low level of development of the local mushroom production industry is determined by the following factors [4]:

Lack of adequate financial resources, which would allow businesses to develop;

- Insufficient organization of the industry, especially at the level of producers;
- Lack of regulatory environment;
- Lack of dialogue between different economic agents of the industry;
- There is no access to modern technologies;
- High production initiation costs;
- Lack of a competitive basis for the production of mycelium, compost, etc.;
- Inadequate preservation, storage and marketing infrastructure.

Compared to the main world producers, the quantities of mushrooms produced in the Republic of Moldova are insignificant. The total annual production of native mushrooms is approximately 2000 tons, of which 70% belong to the Champignon species, and 30% to the Pleurotuss (Trout) species. Both species are marketed fresh, and imports are made for processing (approximately 600-700 tons, Champignon species) from China, Poland, Romania and Ukraine. As an example, in 2020 our country imported 567 tons of mushrooms worth 747 thousand USD.

The use of mushrooms in the menu of the local population has an occasional character. If the annual worldwide average of mushroom consumption per person is 2 kg (in the USA and Canada – 2.2 kg, Great Britain – 2.7 kg, France – 3 kg, China – 5 kg), then this indicator for the Republic of Moldova it is approximately 1 kg. But, thanks to the frequent campaigns to promote the consumption of healthy foods,

including the product in question, recently there has been an increase in demand for mushroom preparations. The large variety in different forms (fresh, dried, marinated, thermally processed) only increases the population's interest in this product. This trend proves that mushroom culture has a future in our country.

At the same time, the specifics of the development of mushrooms in the protected environment allow their production both in rooms with limited surfaces, as well as in warehouses, halls, cellars with extended dimensions or, similar to the French, in stone mines in the municipalities of Chisinau, Criuleni or Ialoveni. This fact allows the production of mushrooms both by auxiliary households (family business) and by large specialized enterprises (legal entities).

The short period from sowing to harvesting (60-80 days) allows to obtain 5-6 production cycles, which guarantees a high profitability of the business but also a short period of recovery of the investments used. According to the analysis of economic indicators, carried out by the collaborators of the National Institute of Economic Research in Chisinau as part of the State Program "Elaboration of new economic instruments for evaluating and stimulating the competitiveness of the Republic of Moldova's agriculture for the years 2020-2023" (number - 20.80009.0807.16), the period real recovery of the investments made is equal to 15 production cycles or – 30 months (2.5 years).

An important factor is the accessibility of the raw material necessary for the production of the development substrate. Most of these components are found on the domestic market (straw, poultry litter, malt tusks, soybean meal, fodder chalk, urea, sand), they can be easily procured, the most expensive material being only red and black peat. The share of involvement of mechanized technique in the production of small quantities of substrate is minimal. Instead, large specialized households must own the entire arsenal of mechanized aggregates, because the amount of raw material subjected to processing is of the order of thousands of tons.

The next aspect, which tilts the balance towards a mushroom business, is the non-covering of needs by local producers with raw material for the processing industry (canning, marinating). This situation is fueled by the inability of local producers to ensure the homogeneity of the production obtained but also the quantities requested by the processor. In this case, it is appropriate to develop large specialized households along the lines of those in the USA and Australia, to meet the demands and requirements in force.

As previously noted, due to the specific cyclic fruiting, mushroom production is obtained throughout the year. This fact, as well as the high degree of perishability of mushrooms, requires the determination of a relevant and stable chain of goods production. In the case of the production of fresh mushrooms, it is necessary to conclude prior and long-term contracts with the main manufacturers of food products.

The main directions of making Champignon mushrooms in our country are grocery store chains and local markets. Large store chains have high requirements, such as: product production must have a superior appearance; the mushrooms should be as fresh as possible but also conditioned beforehand; he packaging must meet the requirements and regulations in force; the purchase price should be as favorable as possible to the producer; and most importantly – the producer's ability to consistently provide the producer with the required production quantities. These requirements, in

most cases, can only be met by large manufacturers with a solid technical and material base.

Small producers, due to their reduced capacities both in terms of productivity and product quality, are limited in their activity on the local market, the main direction of achievement being local agricultural markets and small grocery stores.

The retail price of domestic Champignon mushrooms on the domestic market varies depending on the season (the most intense demand is seen in the winter and spring months) and falls within the limits of 35-40 lei/kg. The price range can be influenced by the size and commercial appearance of the mushrooms.

For the processing or preservation industry, other production standards are imposed, manifested by the homogeneity of the mushrooms (size 2-3 cm), the fruit must have a closed cap, the delivered production quantities must correspond to the requested needs. Namely the last argument – the constant provision of primary production processors is the main impediment to the development of the given segment.

In the given context, the majority of domestic producers are oriented towards the production of fresh mushrooms, a fact that extremely limits their scope of activity, and the economic crises of the last period make the given segment even more vulnerable. As a result, in the Republic of Moldova in the last five years the number of companies producing mushrooms decreased by 60%. This fact presents a major risk that in the coming years this branch will completely disappear in our country.

In order to improve the given situation, it is necessary: the direct intervention of the state materialized through the financial support of entrepreneurs; producers must identify and attract massive investments to modernize the production process; it is necessary to organize large specialized enterprises; to diversify the commodity product by adding economic value; producing significant quantities to be able to compete in foreign markets.

Conclusions

1. The exceptional food value, the wide area of use in the field of medicine imposes a constant demand for mushroom products. Mushrooms have one of the shortest vegetation periods of 75-85 days and can offer the advantage of achieving 6-8 harvests per year from the same area throughout the year.
2. In the culture of mushrooms, agricultural land is not necessary, their production being carried out in closed spaces such as unused rooms, warehouses, basements, cellars. Stone mines can be widely used, which currently in the Republic of Moldova constitute approximately 2000 ha and can be successfully organized for the production of mushrooms. When there are no such spaces, modern mushroom houses can be built, made of masonry or thermally insulated solariums.
3. The production of native mushrooms is carried out by small or even auxiliary households, with the maximum application of manual operations. However, due to the recent economic crises, the number of local producers has decreased considerably.
4. In order to rehabilitate the given situation, it is recommended to establish and develop large specialized households on the model of those in the USA and Australia to cope with the demands and requirements in force.

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IMPORTUL DE PREPARATE DIN LEGUME, FRUCTE ȘI NUCI AL REPUBLICII MOLDOVA

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Summary

The paper aims to analyze the import of preparations of vegetables, fruit, nuts or other parts of plants. The methods used in this paper is: analysis, synthesis and comparison, and the information base was the recent works in the field, as well as the statistical data of the NBS. The results show that the area of plums shows a decreasing trend in 2020 compared to years 2011, 2012, 2013, 2017, 2018 and 2019 years. It also decreased the area of peaches in 2020 compared to 2011, 2012, 2013, 2014, 2015, 2016, 2017, 2018 and 2019 years.

The production of seeds orchards shows an increase in 2020 compared to 2011, 2012, 2013, 2014, 2015 and 2016 years, the reason being the increase of the yield per hectare during this period, and compared to 2017, 2018 and 2019 years it decreased, the reason being the reduction of the area and the yield per hectare influenced by the unfavorable climatic conditions.

The production of apples increased in 2020 compared to 2011, 2012, 2013, 2014, 2015 and 2016 years, the reason being the increase of the yield of fruit per hectare, and compared to 2017, 2018 and 2019 years it decreased, the reason being the reduction of both the area, as well as the yield per hectare of apples. As a result, the apples were of a small caliber and inferior quality. So the import of preparations of vegetables, fruits, nuts or other parts of plants in increased in 2020 compared to 2011, 2012, 2013, 2014, 2015, 2016, 2017 and 2018, and compared to 2019 it decreased insignificantly.

***Keywords**: import, fruit, nuts, fruit preparations, seed orchards.*
***JEL:** Q1; Q10; Q17.*
***UDC:**338.439.5:339,562(478)*

Introducere. „Importul este definit ca fiind achiziția (cumpărarea) de bunuri și servicii de pe piețele externe de către persoane fizice situate în străinătate [1, p. 9]".

„O marfă, pentru a rezista pe piață, trebuie să "convingă", bazându-se pe aspectul său fizic, trebuie să "dureze", mulțumită caracteristicilor sale și trebuie să dețină un stil în măsură să "seducă". F. Celaschi, în lucrarea sa "Il design della for merce" (2000) scrie că "marfa direcționează sensul, marfa structurează spațiul în care se găsește, marfa formează și dezvoltă comportamente și atitudini subiecților, marfa încearcă senzații de neplăcere legate de lipsurile sale, marfa încearcă insatisfacția posesorului său (…)" [2., p.21].

„Astfel, marfa contemporană prezintă o configurație totalizatoare, care include:

o componentă funcțională- satisface o destinație precisă, corespunde unui scop bine stabilit;

o componentă instrumentală- circulația tehnico-economică a mărfii se bazează pe o logistică tehnică și comercială judicios stabilite;

o componentă estetică- marfa reprezintă un element de mediere între sfera nevoilor și oportunitățile sistemului de producție prin intermediul designului și esteticii sale;

o componentă socială, respectiv determină un anumit nivel de satisfacție în utilizare și în consum, creează preferințe și fidelizează consumatorul, îi conferă prestigiu în societate și îi asigură un statut social. ” [2., p.21].

„Marfa posedă în timp și în spațiu infinite forme: într-un fel apare într-un anumit moment istoric, în alt fel - în procesul de distribuție a produselor prin intermediul schimbului pe piață și în alt fel - de-a lungul unui proces de producție, guvernat de diferite influențe culturale și posibilități materiale. Existența mărfii este condiționată, așadar, de un spațiu tempo-cultural dinamic în care produsele stabilesc care este rolul designerului în procesul de producție a mărfii” [2., p.21].

Material și metodă. Calculele au fost efectuate utilizând bazele de date ale Biroului Național de Statistică.. În procesul de elaborare a prezentei lucrări s-a aplicat metoda de analiză și comparație.

Rezultate și discuții. Producerea fructelor asigură creşterea profiturilor și veniturilor în spațiile rurale. Astfel valoarea indicatorilor economici obținuți pe unitate de suprafață (hectar) este mai mare la fructe comparativ cu culturile de câmp.

Consumul de fructe este recunoscut de nutriționiști ca fiind un mijloc de ameliorare a sănătății publice. La nivel mondial, creşterea consumului de fructe reprezintă o prioritate pentru Organizația Națiunilor Unite pentru Alimentație și Agricultură (FAO).

În figura următoare este prezentată suprafața de sâmburoase.

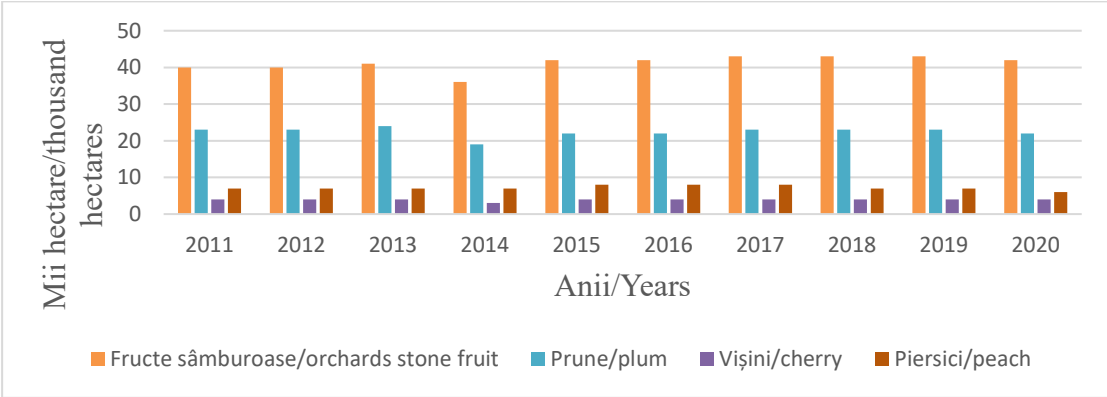

Figura 1. **Suprafața de sâmburoase în toate categoriile de gospodării, mii ha**
Sursa: elaborată de autor în baza [4]

Suprafața de sâmburoase a înregistrat o tendință de majorare în anul 2020 față de anii 2011, 2012, 2013 și 2014 respectiv cu 2; 2; 1 și 6 mii ha în mărime absolută sau cu 5; 5; 2,44 și 16,67 p.p. în mărime relativă, iar față de anii 2017, 2018 și 2019 aceasta indică un trend negativ, astfel aceasta s-a diminuat respectiv cu 1; 1 și 1 mii ha în mărime absolută sau cu 2,33; 2,33 și 2,33 p.p. în mărime relativă. Specialiștii

menționează faptul că producătorii nu au plantat livezi din cauza secetei, dar și din cauza pandemiei deoarece nu au avut posibilitatea de a merge la pepinierele de peste hotare pentru a procura puieți.

Suprafața de prune indică o tendință de scădere, astfel aceasta s-a diminuat în anul 2020 comparativ cu anii 2011, 2012 și 2013 respectiv cu 1; 1 și 2 mii ha în mărime absolută sau cu 4,35; 4,35 și 8,33 p.p. în mărime relativă, iar față de anii 2017, 2018 și 2019 acest trend se menține, indicând faptul că mărimea acestui indicator s-a redus respectiv cu 1; 1 și 1 mii ha în mărime absolută sau cu 4,35; 4,35 și 4,35 p.p. în mărime relativă.

De asemenea trendul de scădere se atestă și la suprafața de piersici care s-a redus în anul 2020 față de anii 2011, 2012, 2013 și 2014 respectiv cu 1; 1; 1 și 1 mii ha în mărime absolută sau cu 14,29; 14,29; 14,29 și 14,29 p.p. în mărime relativă, iar față de anii 2015, 2016, 2017, 2018 și 2019 aceasta își menține trendul și s-a diminuat respectiv cu 2; 2; 2; 1 și 1 mii ha în mărime absolută sau cu 25, 00; 25,00; 25,00; 14,29 și 14,29 p.p. în mărime relativă. Înghețurile din primăvară au afectat până la 50 % din suprafața de piersic. Majoritatea producătorilor sunt de părerea că această cultură nu este profitabilă din cauza costurilor mari de întreținere.

În continuare este prezentat graficul producției la hectar de sămânțoase.

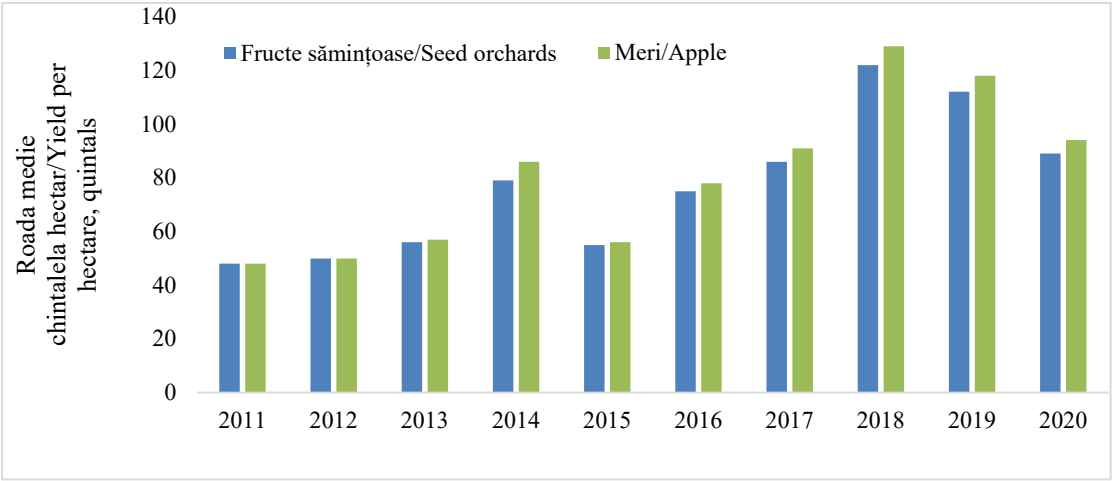

Figura 2. **Roada medie la hectar de fructe sămânțoase în toate categoriile de gospodării, chintale la ha**

Sursa: elaborată de autor în baza [4]

Din datele graficului de mai sus reiese faptul că roada medie de sămânțoase la hectar înregistrează o tendință de creștere, astfel încât aceasta s-a majorat în anul 2020 comparativ cu anii 2011, 2012, 2013, 2014, 2015, 2016 și 2017 respectiv cu 41; 39; 33; 10; 34; 14 și 3 chintale la hectar în mărime absolută sau cu 85,42; 78,00; 58,93; 12,66; 61,82; 18,67 și 3,49 p.p. în mărime relativă, iar față de anii 2018 și 2019 aceasta indică un trend negativ deoarece s-a redus respectiv cu 33 și 23 chintale la hectar în mărime absolută sau cu 27,05 și 20,54 p.p. în mărime relativă.

De asemenea se atestă o creștere a roadei medii de mere la hectar în anul 2020 comparativ cu anii 2011, 2012, 2013, 2014, 2015, 2016 și 2017 respectiv cu 46; 44; 37; 8; 38; 16 și 3 chintale la hectar în mărime absolută sau cu 95,83; 88,00; 64,91;

9,30; 67,86; 20,51 și 3,30 p.p. în mărime relativă, iar față de anii 2018 și 2019 această tendință este în scădere, astfel acest indicator s-a diminuat respectiv cu 35 și 24 chintale la hectar în mărime absolută sau cu 27,13 și 20,34 p.p. în mărime relativă, cauza fiind condițiile secetoase și grindina care a căzut în unele localități.

În graficul următor este prezentată roada medie de pomușoare, nuci și struguri de masă.

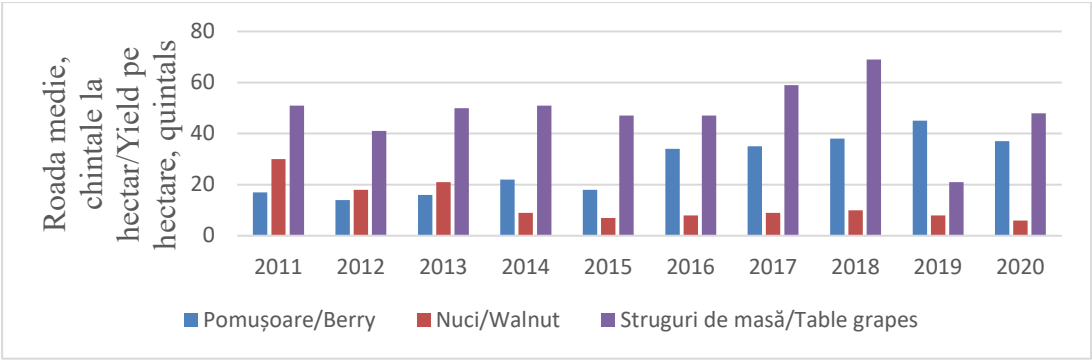

Figura 3. **Roada medie la hectar de pomușoare, nuci și struguri de masă în toate categoriile de gospodării**

Sursa: elaborată de autor în baza [4]

Analizând datele graficului de mai sus conchidem faptul că roada medie de pomușoare la hectar atestă o tendință de creștere în anul 2020 față de anii 2011, 2012, 2013, 2014, 2015, 2016 și 2017 respectiv cu 20; 23; 21; 15; 19; 3 și 2 chintale la hectar în mărime absolută sau de 2,18 ori; de 2,64 ori; de 2,31 ori; cu 68,18 p.p.; de 2,06 ori; cu 8,82 p.p. și 5,71 p.p. p.p. în mărime relativă, iar față de anii 2018 și 2019 mărimea acestui indicator în dinamică este în descreștere, reducându-se respectiv cu 1 și 8 chintale la hectar în mărime absolută sau cu 2,63 și 17,78 p.p. în mărime relativă. Temperaturile negative care s-au înregistrat pe parcursul nopților de primăvară a anului 2020 au compromis recolta de pomușoare.

O tendință de descreștere se atestă la roada medie de nuci care s-a redus în anul 2020 față de anii 2011, 2012, 2013, 2014 și 2015 respectiv cu 24; 12; 15; 3 și 1 chintale la hectar în mărime absolută sau cu 80,00; 66,67; 71,43; 33,33 și 14,29 p.p. în mărime relativă, iar față de anii 2016, 2017, 2018 și 2019 această tendință se menține, iar indicatorul dat s-a redus respectiv cu 2; 3; 4 și 2 chintale la hectar în mărime absolută sau cu 25,00; 33,33; 40,00 și 25,00 p.p. în mărime relativă, cauza fiind înghețurile care au fost înregistrate la sfârșitul lunii martie și începutul lunii aprilie ce au afectat plantațiile de nuc. Lipsa de precipitații și grindina au fost alți factori care au compromis recolta medie de nuci în anul 2020.

De asemenea observăm o reducere a roadei medii de struguri de masă în anul 2020 față de anii 2011, 2013, 2014, 2017 și 2018 respectiv cu 3; 2; 3; 11 și 21 chintale la hectar în mărime absolută sau cu 5,88; 4,00; 5,88; 18,64 și 30,43 p.p. în mărime relativă, cauza fiind lipsa zăpezii și a precipitațiilor în anul 2020. Mărimea acestui indicator față de anii 2012, 2015, 2016 și 2019 a sporit respectiv cu 7; 1; 1 și 27 chintale la hectar în mărime absolută sau cu 17,07; 2,13; 2,13 p.p. și de 2,29 ori

în mărime relativă. Lipsa zăpezii și a precipitațiilor din anul 2020 a diminuat roada medie de struguri.

În continuare este prezentat graficul producției de sămânțoase.

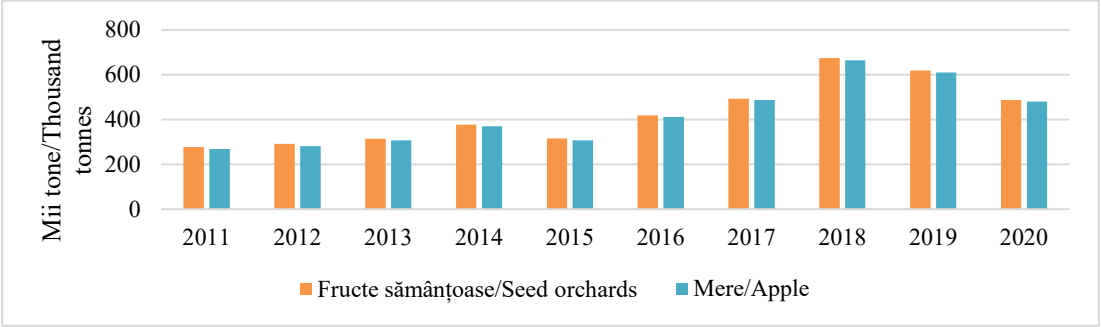

Figura 4. **Producția de sămânțoase în toate categoriile de gospodării, mii tone**
Sursa: elaborată de autor în baza [4]

Analizând datele graficului de mai sus putem afirma faptul că la producția de sămânțoase se atestă o tendință de creștere. Aceasta s-a majorat în anul 2020 față de anii 2011, 2012, 2013, 2014, 2015 și 2016 respectiv cu 210; 197; 174; 111; 172 și 69 mii tone în mărime absolută sau cu 75,54; 67,70; 55,41; 29,44; 54,43 și 16,47 p.p. în mărime relativă, motivul fiind creșterea roadei medii la hectar în această perioadă, iar față de anii 2017, 2018 și 2019 aceasta s-a diminuat respectiv cu 5; 186 și 131 mii tone în mărime absolută sau cu 1,01; 27,60 și 21,16 p.p. în mărime relativă, cauza fiind reducerea suprafeței cultivate și a roadei medii la hectar ca urmare a influenței condițiilor climaterice.

Producția de mere obținută indică o tendință de majorare în anul 2020 față de anii 2011, 2012, 2013, 2014, 2015 și 2016 respectiv cu 211; 198; 173; 110; 172 și 68 mii tone în mărime absolută sau cu 78,44; 70,21; 56,35; 29,73; 55,84 și 16,50 p.p. în mărime relativă, motivul fiind creșterea roadei medii la hectar, iar față de anii 2017, 2018 și 2019 aceasta a scăzut respectiv cu 7; 185 și 131 mii tone în mărime absolută sau cu 1,44; 27,82 și 21,44 p.p. în mărime relativă, cauza fiind reducerea atât a suprafeței cultivate, cât și a roadei medii la hectar de mere. În anul 2020 merele sunt de calitate proastă și de calibru mic.

Importul de fructe, nuci și preparate din legume este redat în graficul următor.

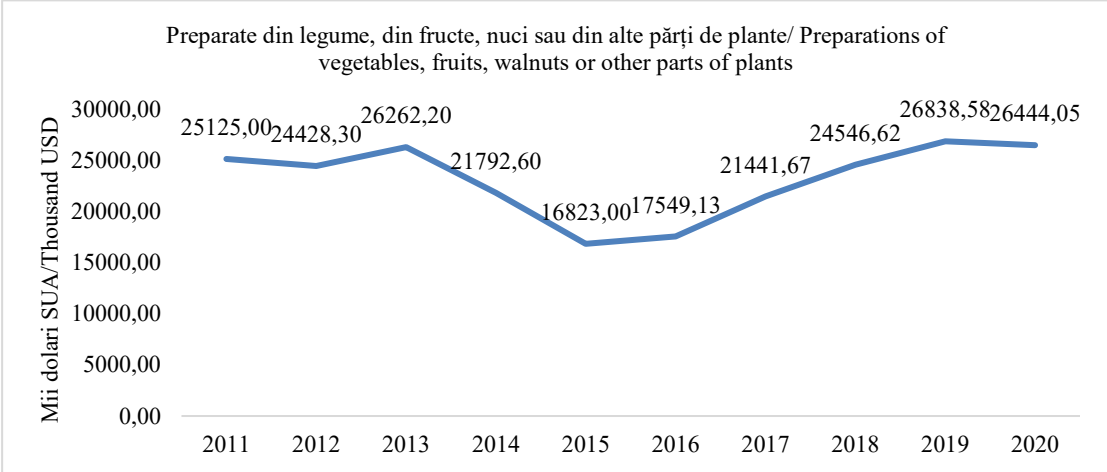

Figura 5. **Importul de preparate din legume, fructe și nuci**
Sursa: elaborată de autor în baza [5]

Din datele graficului de mai sus reiese faptul că importul de preparate din legume, din fructe, nuci sau din alte părți de plante a înregistrat o tendință de creștere în anul 2020 față de anii 2011, 2012, 2013, 2014, 2015, 2016, 2017 și 2018 respectiv cu 1319,05; 2015,75; 181,85; 4651,45; 9621,05; 8894,92; 5002,38; 1897,43 mii dolari SUA în mărime absolută sau cu 5,25; 8,25; 0,69; 21,34; 57,19; 50,69; 23,33 și 7,73 p.p. în mărime relativă, iar față de anul 2019 acesta s-a diminuat cu 394,53 mii dolari SUA sau cu 1,47 p.p. în mărime relativă.

"În Republica Moldova s-a intensificat importul de fructe și legume. Este vorba în special despre produsele ușor perisabile din această categorie. Printre ele se numără căpșunii, afinele, zmeura, perele, strugurii, prunele, cireșele, dovleceii, dar și verdețurile. Anunțul a fost făcut de Responsabilii din cadrul Agenției Naționale pentru Siguranța Alimentelor. Laboratorul Central Fitosanitar este responsabil de verificarea a reziduurilor de pesticide în plante și produsele vegetale. De asemenea, printre responsabilitățile specialiștilor se numără și acordarea serviciilor de testare privind inofensivitatea produselor din domeniile sale de competență". [6]

"Concentratul de mere este folosit în țară la producerea sucului sau este exportat. Deși cota R. Moldova din volumul de producere a sucului din Europa este de 5-10%, peste 90% din sucurile prezentate ca fiind moldovenești sunt, de fapt, fabricate din concentrate de import. În context, antreprenoarea Diana Crudu consideră că pomicultorii ar trebui să se reorienteze spre transformarea mărului în suc sau produse derivate" [7].

„Exportăm concentrat de suc și importăm suc ambalat, de multe ori tot de-al nostru, doar cu adaos de apă, zahăr, acid și conservanți. R. Moldova produce anual peste 500 de mii de tone de mere, dintre care 95% ajungeau, până de curând, în F. Rusă. Dar piața rusească de mere nu doar că devine autosuficientă, însă în câțiva ani va fi un mare jucător pe piața mondială. Soluția pentru agricultorii moldoveni ar fi să transformăm mărul fie în suc, fie în produse derivate, chipsuri, crackeri, piureuri. Este nevoie ca autoritățile să lanseze un program de țară care ar permite construcția a noi hale de procesare pe modelul țărilor europene", susține Diana Crudu" [7].

Producătorii mari de fructe importă material săditor de peste hotare, iar cei mici procură de pe intern sorturi nesolicitate de piața externă.

Cerințele impuse de importatorii de fructe sunt:

- produse de calitate înaltă;
- livrări stabile şi la timp;
- onorarea acordurilor cu partenerii de afaceri;
- ambalare calitativă;
- certificarea GlobalGAP pentru produsele proaspete şi HACCP pentru cele prelucrate [3, p.80].

"Sectorul de fructe din RM a reușit sporirea calității, dar nu dispunem de toate opțiunile concurenților, ceea ce împiedică dezvoltarea cu succes a businessului. Rezultate pozitive înregistrate sunt următoarele:

- ambalaj din lemn mai atractiv și dispun de ambalaj din carton și linii de producerea a lor;
- doar 28 linii de ambalare pentru fructe;
- din totalul volumelor de frigidere (220-230 mii tone) cca. 150-200 mii tone sunt destinate păstrării fructelor (în special mere și prune);
- tendință pozitivă în plantarea livezilor bazate pe tehnologii intensive și super-intensive, ceea ce asigura calitate/competitivitate producției de fructe;
- 10 producători dispun de certificat GlobalGAP și se constată un interes sporit în rândul producătorilor de fructe pentru accesarea piețelor din UE (30 producători)" [3, p.80].

Concluzii

Suprafața de sâmburoase a înregistrat o creștere în anul 2020 față de anii 2011, 2012, 2013 și 2014, iar față de anii 2017, 2018 și 2019 tendința a fost de diminuare. Suprafața de prune atestă o tendință de reducere în anul 2020 comparativ cu anii 2011, 2012, 2013, 2017, 2018 și 2019. De asemenea s-a produs o micșorare a suprafeței de piersici în anul 2020 față de anii 2011, 2012, 2013, 2014, 2015, 2016, 2017, 2018 și 2019. Producătorii în anul 2020 nu au reușit să planteze livezi din cauza secetei, dar și din cauza pandemiei, ei nu au putut pleca la pepinierele din străinătate pentru a achiziționa puieți.

Roada medie de sământoase, inclusiv cea de mere la hectar indică o majorare în anul 2020 comparativ cu anii 2011, 2012, 2013, 2014, 2015, 2016 și 2017, iar față de anii 2018 și 2019 acest indicator atestă o tendință de descreștere din cauza condițiilor secetoase și grindinei care a distrus multe plantații.

Roada medie de pomușoare la hectar a sporit în anul 2020 față de anii 2011, 2012, 2013, 2014, 2015, 2016 și 2017, iar față de anii 2018 și 2019 aceasta s-a redus, cauza fiind temperaturile negative pe parcursul nopților de primăvară în anul 2020. De asemenea s-a redus roada medie de nuci în anul 2020 față de anii 2011, 2012, 2013, 2014, 2015, 2016, 2017, 2018 și 2019, cauza fiind înghețurile, seceta și grindina. La fel s-a atestat o tendință de reducere a roadei medii de struguri de masă în anul 2020 față de anii 2011, 2013, 2014, 2017 și 2018, iar față de anii 2012, 2015, 2016 și 2019 aceasta a sporit.

Producția de sămânțoase indică o majorare în anul 2020 față de anii 2011, 2012, 2013, 2014, 2015 și 2016, motivul fiind creșterea roadei medii la hectar în această perioadă, iar față de anii 2017, 2018 și 2019 aceasta s-a diminuat, cauza fiind reducerea suprafeței cultivate și a roadei medii la hectar influențate de condițiile climaterice nefavorabile.

Producția de mere s-a majorat în anul 2020 față de anii 2011, 2012, 2013, 2014, 2015 și 2016, motivul fiind creșterea roadei medii la hectar, iar față de anii 2017, 2018 și 2019 aceasta s-a redus, cauza fiind reducerea atât a suprafeței cultivate, cât și a roadei medii la hectar de mere. Ca rezultat merele au fost de un calibru mic și calitate inferioară.

Importul de preparate din legume, din fructe, nuci sau din alte părți de plante a înregistrat o creștere în anul 2020 față de anii 2011, 2012, 2013, 2014, 2015, 2016, 2017 și 2018, fapt determinat de înghețurile de primăvară, secetă și grindină în anul 2020, iar față de anul 2019 acesta s-a redus nesemnificativ.

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7. https://www.zdg.md/reporter-special/reportaje/merele-de-la-marginea-livezilor-mi-se-rupea-inima-in-7-bucati-cand-ma-uitam-ce-mere-duc-la-suc/ (Diana Crudu)

ANALIZA ACTORILOR CHEIE DIN SECTORUL PRODUCȚIEI AGRICOLE ECOLOGICE DIN REPUBLICA MOLDOVA

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Summary

The general purpose of this article is the analysis of the stakeholders involved in organic agriculture sector in the Republic of Moldova, determining their role in this sector. Agriculture is one of the key economic sectors in the Republic of Moldova and is the main source of raw material for the agri-food industry, assure a big part of exports and income of the rural population. Orienting ourselves towards the European and other Western markets, it is necessary to mention the increasing trends in the demand for ecological products.

The consumption of organic products per capita in the European Union increased from 40.8 EUR per capita in 2016 – to 63.2 in 2020, Austria has the highest consumption respectively – 177 EUR in 2016 and 254 EUR in 2020. In the world, Switzerland holds the first place in per capita consumption - 418 EUR/capita. The EU action plan mentions the need to increase organic surfaces up to 25% of the total arable land. In this context, the key actors acquire a special importance in the development of the value chain of organic agricultural production. In process of developing the article, the following research methods were applied: analysis of existing information, comparative analysis, synthesis of existing information, deduction method. Following the use of research methods, quantitative and qualitative parameters were established and the role of the key stakeholders of organic agriculture in the Republic of Moldova defined.

Keywords: *key stakeholder, organic agriculture, per capita consumption.*
JEL: *Q01, M11.*
UDC:*.439.4(478)*

Agricultura este unul dintre sectoarele-cheie ale economiei din Republica Moldova și este principala sursă de materie primă pentru industria agro-alimentară, dar și asigură o mare parte din exporturi, precum și venituri ale populației rurale. Orientându-ne către pieţele europene și alte pieţe occidentale, este necesar de menționat tendințele în creștere a cererii de produse ecologice. Consumul de produse ecologice pe cap de locuitor în Uniunea Europeană a crescut în ultimii ani de la 40,8 EUR pe cap de locuitor în 2016 la 63,2 EUR (FIBL, 2020) în 2020 (FIBL, 2022). Cel mai mare consum pe cap de locuitor în UE este înregistrat în Austria - 254 EUR în 2020 comparativ cu 177 EUR în 2016, înregistrând o creștere de circa 43%. La nivel global Elveția deține primul loc la consumul de produse ecologice pe cap de locuitor - 418 EUR/locuitor/an în anul 2020 (FIBL, 2022).

Planul de acțiune al UE menționează necesitatea creșterii suprafețelor organice cu până la 25% din totalul terenurilor arabile. În acest context, actorii-cheie capătă o importanță deosebită în dezvoltarea lanțului valoric al producției agricole ecologice.

Moldova este o țară care practică agricultura ecologică având la bază legea Nr. 115 a Parlamentului Republicii Moldova din 09.06.2005.

În acest articol au fost analizate grupurile principale de actori implicați în sub-sectorul agriculturii ecologice după rolul și modul lor de operare. Astfel au fost identificate 8 grupuri principale de actori cheie și anume:

1. Actorii implicați în elaborarea cadrului normativ și legislativ
2. Producătorii agricoli ecologici
3. Instituțiile de certificare
4. Cercetare, inovare, educație
5. ONG-ri din domeniu
6. Donatori, proiecte internaționale
7. Structurile comerciale și logistice
8. Consumatorii, (finali și industriali)

Pentru a prezenta mai bine structura și interacțiunea între principalele grupuri de actori-cheie implicați in agricultura ecologică, acestea au fost analizate și descrise în conformitate cu modul de operare (vezi figura 1).

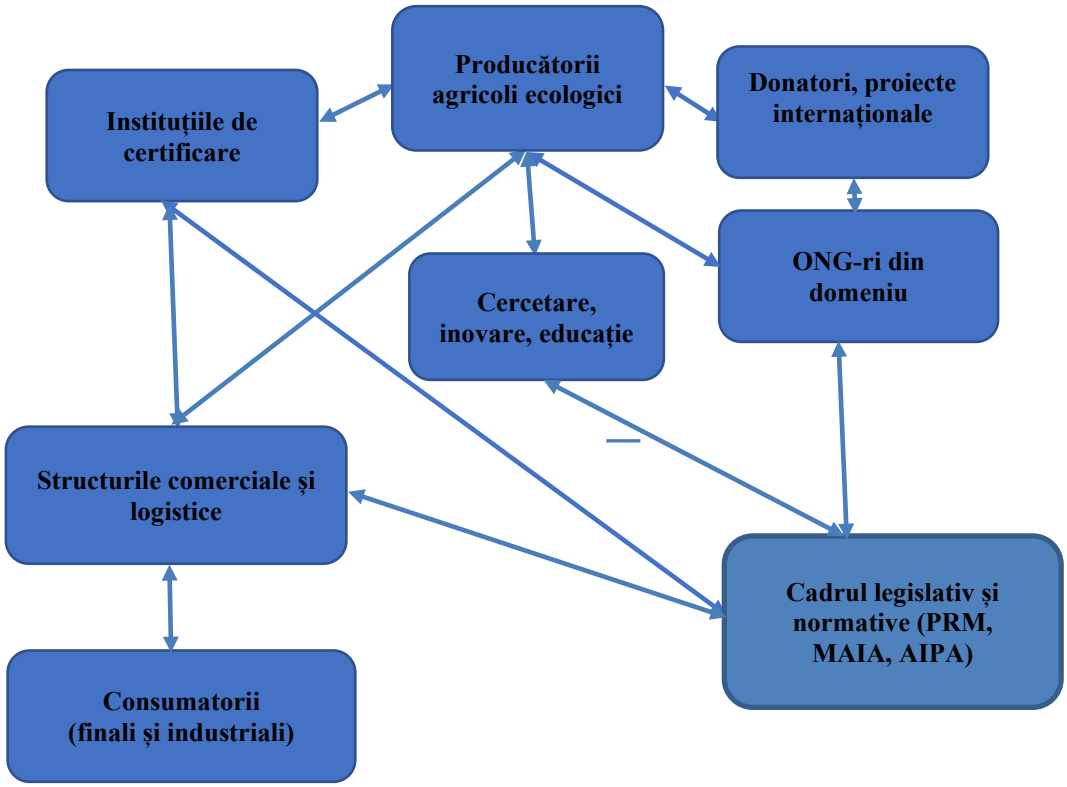

Figura 1. **Interconexiunile dintre principalele grupuri ale actorilor-cheie din sub-sectorul de producție agricolă ecologică din Republica Moldova**

Structurile responsabile de elaborarea și monitorizarea cadrului de politici, legislativ și normativ

Actualmente sectorul agriculturii ecologice este ghidat de către autoritatea competenta – Ministerul Agriculturii și Industriei Alimentare (MAIA), stabilită prin legea Nr. 115. (Parlamentul RM, 2005). Prin această lege MAIA i-au fost atribuite o gama largă de competențe și atribuții. Cele mai principale fiind:

- elaborarea de politici, acte normative, regulamente în domeniul producției agroalimentare ecologice şi asigurarea implementării acestora;
- înregistrarea și evidența agenților economici care practică activități de întreprinzător în domeniul producției ecologice;
- autorizarea, supravegherea și evidența organismelor de inspecție și certificare acreditate și autorizate;
- efectuarea controlului de stat asupra respectării actelor normative în domeniu și monitorizarea integrală a tuturor segmentelor agroecosistemului echilibrat și durabil;
- coordonarea activității de elaborare a standardelor naționale privind producția agroalimentară ecologică;
- elaborarea proiectelor de acte normative armonizate cu reglementările europene și internaționale în domeniu;
- elaborarea și asigurarea implementării Programului National privind producția agroalimentară ecologică, aprobat de Guvern;
- participarea la colaborarea internațională în domeniul producției agroalimentare ecologice;
- organizarea de programe de pregătire a agenților economici, persoanelor fizice și juridice pentru a activa în domeniul producției agroalimentare ecologice;
- autorizarea utilizării mărcii naționale „Agricultura Ecologică – Republica Moldova” și plasarea pe pagina web oficială a listei produselor pentru care a fost aprobată;
- asigurarea transparenței tuturor datelor ce se referă la practicarea agriculturii ecologice.

Secția "Agricultura ecologica și produse de origine" a fost creată în cadrul Ministerului Agriculturii și Industriei Alimentare pentru a sprijini dezvoltarea agriculturii ecologice. Primul program de Acțiuni pentru dezvoltarea sectorului a fost elaborat pentru anii 2006-2010 și aprobat prin Hotărârea de Guvern nr. 149 din 10/02/2006.

Planul de acțiuni pentru realizarea Programului Național privind producția agroalimentară ecologică a inclus două scopuri principale:

- Cantitativ - creșterea suprafețelor cultivate după modul de producție agroalimentară ecologică;
- Calitativ - plasarea producției agroalimentare ecologice în centrul agriculturii din Republica Moldova, ca motiv al dezvoltării durabile a acesteia.

Planul de Acțiuni elaborat a fost ambițios și includea următoarele strategii:

- Crearea sistemului de coordonare a activităților în producția agroalimentară ecologică, elaborarea şi implementarea politicilor de stat în domeniu.
- Strategia de extensiune

- Strategia de cercetare
- Strategia de educație

Planul de Acțiuni prevedea inclusiv elaborarea și armonizarea documentelor normative cu legislația europeană și internațională de management, monitorizare, audit, acreditare, inspecție și certificare pentru produsele agroalimentare ecologice.

O parte din acțiunile propuse au fost implementate parțial, cum ar fi de exemplu - extinderea suprafețelor cultivate cu producție ecologică de la 10755 hectare cultivate în anul 2005 până la 19740 in 2010 (EcoConect, 2020), obiectivul stabilit fiind de 31100 ha.

In anul 2010 programul a fost actualizat de către personalul Secției luând în considerație progresele înregistrate, precum și noile provocări. Dar din anumite motive noul plan de acțiuni nu a trecut procesul de aprobare de către Guvernul Republicii Moldova.

Republica Moldova are un sistem de subvenționare agricol administrat de către AIPA, dar care nu specifică masuri speciale pentru producătorii ecologici și nu are o cotă parte din bugetul anual aprobat destinat în mod particular producătorilor ecologici. Se operează după modelul: primul venit – primul servit. Schema actuală de subvenționare se bazează pe HG nr. 455 din 21.06.2017.

Respectiv, nici până in prezent MAIA nu este încă în măsură să exercite un control eficient asupra producerii, procesării, importurilor și certificării ecologice. Serviciul de Producție Ecologică și Produse de origine al Ministerului nu dispune de competențele și capacitățile necesare pentru a-și exercita funcțiile și atribuțiile, fiind compus doar din două persoane.

Moldova nu are, de asemenea, o listă oficială actualizată a imput-urilor permise în agricultura ecologică în baza Legii 115/2005. În prezent, Ministerul Agriculturii nu este informat cu privire la producătorii ecologici care sunt controlați și certificați de organismele de certificare (OC) acreditate de UE. În plus, Ministerul nu dispune de niciun mecanism de supraveghere a produselor alimentare și furajere de import, certificate ecologic.

Producătorii agricoli ecologici

În perioada anilor 2016-2019 MAIA a raportat o creștere a numărului de agenți economici care practică agricultura ecologică de la 113 la 152, sau cu circa 34%. Totodată, în anul 2020 numărul acestora s-a redus cu circa 5% pana la 144 (vezi figura 2).

Tendințele contradictorii când, pe de o parte, cresc suprafețele destinate agriculturii ecologice, iar pe de alta, scade numărului fermierilor ce practica agricultura organică, se explică prin abandonarea agriculturii ecologice de către un număr semnificativ de fermieri mici și dezvoltarea câtorva companii mari producătoare de culturi anuale pentru piețele de export, cum ar fi Agricereal ȘRL, Agrostoc Coop., Rostan ȘRL, Glia PAC si Proget Agro ȘRL

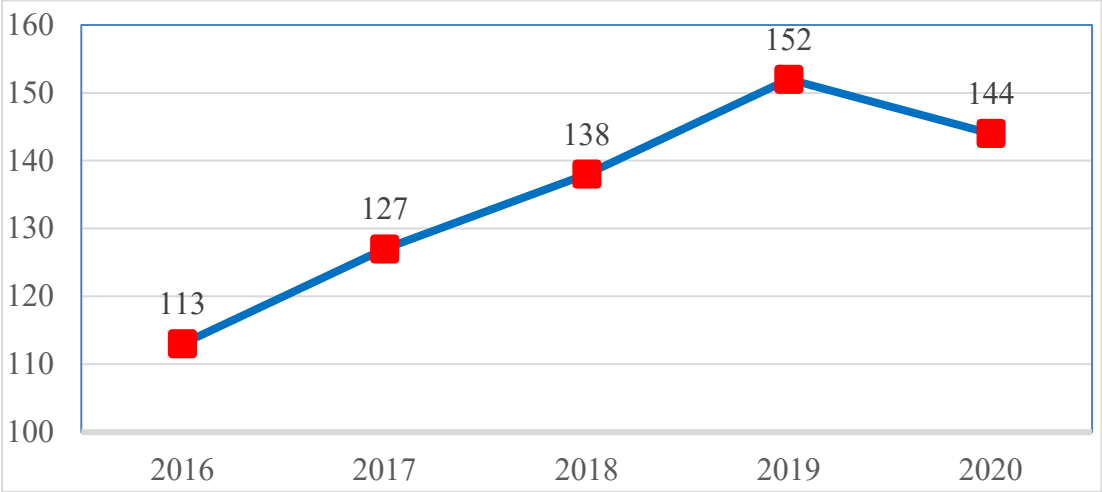

Figura 2. **Dinamică numărului de agenți economici care practică agricultura ecologică, 2016-2020**

Sursa: Elaborată de autor în baza datelor din (EcoVizio, 2022).

Instituțiile de certificare

În perioada 2019-2020 în Republica Moldova au activat 10 organisme de inspecție și certificare și anume: A Cert, AGRECO, Bio Inspecta, CERES, Certificat ECO, Control Union Dnjestr (CUD), Ecocert, KIWA BCS, Organic Standard și STC. Cele mai multe exploatații agricole ecologice au fost certificate de Control Union Dnjestr (41 unități în 2020) și Certificat ECO (42 unități în 2020). Acestea sun urmate la ceva distanță de AGRECO (28 unități în 2020) și KIWA BCS (10 unități în 2020). Celelalte organisme de inspecție și certificare au certificat un număr considerabil mai mic de exploatații agricole ecologice (vezi figura 3). Mai jos este prezentată o scurtă descriere a acestor organisme de inspecție și certificare.

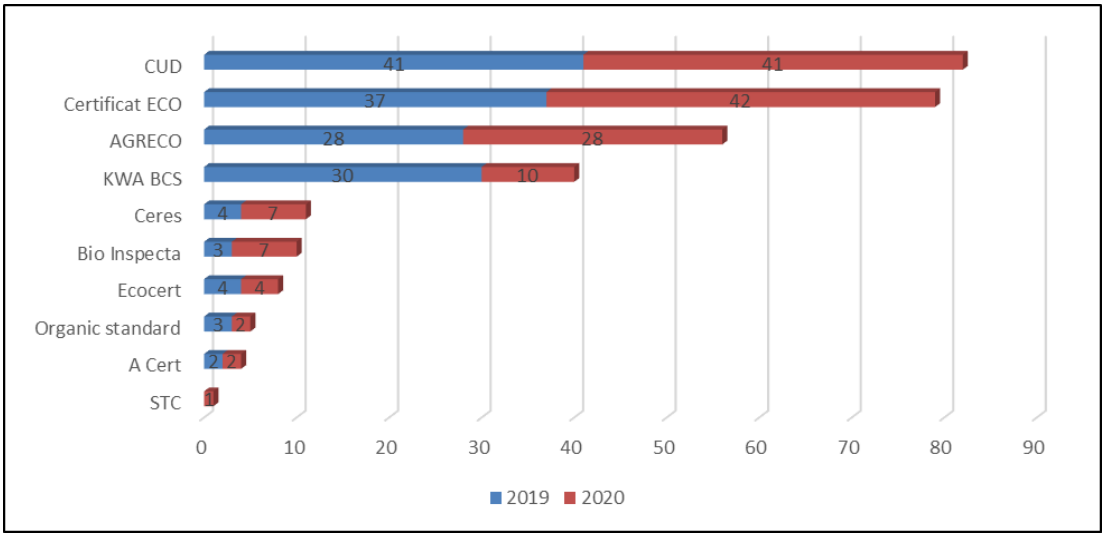

Figura 3. **Instituțiile de certificate acreditate, după numărul de exploatații agricole certificate în Republica Moldova, 2019-2020.**

Sursa: Elaborată de autor în baza datelor Ecovisio (2022*)*

STC

Societatea actuală cu răspundere limitată „Sertifikācijas un testēšanas centrs” (STC) își desfășoară activitatea în Priekuli, municipiul Cesis, Vidzeme, Letonia, începând cu anul 1911, când aici și-a început activitatea Stația de Testare a Mașinilor Baltice.

La începutul anului 2019, STC a cunoscut schimbări semnificative și s-a transformat dintr-o societate publică într-o societate cu răspundere limitată continuând să îndeplinească funcții delegate de stat în domeniul evaluării tractoarelor și remorcilor de tractor construite și reconstruite la comandă, îmbunătățind serviciile existente în domeniul certificării agriculturii ecologice, evaluarea conformității și testarea mașinilor, utilajelor agricole și forestiere, inspecții echipamentelor de aplicare a produselor fitosanitare, instruirea și introducerea de servicii complet noi și extinderea ariei geografice a serviciilor sale (STC, 2022).

Certificat-ECO

OC CERTIFICAT-ECO este primul organism privat de certificare a produselor ecologice din Republica Moldova. Acreditat de Centrul Național de Acreditare - MOLDAC, în conformitate cu cerințele standardului SM SR EN ISO/CEI 17065:2013, Certificat de Acreditare Nr. OCprec – 001. Autorizat de Ministerul Agriculturii, Dezvoltării Regionale și Mediului – Certificat de autorizare MD-ECO-11 din 29.12.2020. Scopul principal al activității OC Certificat-Eco este de a furniza garanția că produsele certificate de acesta sunt în conformitate cu standardele/documentele normative în vigoare privind agricultura ecologică, iar procesul de certificare se efectuează în mod independent, nediscriminatoriu, transparent și credibil pentru consumator (Certificat-ECO, 2022).

Control Union Dnjestr (CUD)

Control Union Dnjestr din Republica Moldova, a primit acreditarea locală conform ISO 17065 pentru produsele ecologice moldovenești (OC-prec005) și ca urmare o recunoaștere de către Ministerul Agriculturii din Moldova.

Control Union Dnjestr poate oferi certificare conform Moldavian Organics fapt ce permite producătorilor agricoli certificați să primească o subvenție semnificativă de la guvern și este catalogat de Uniunea Europeană ca organism de certificare care oferă garanții echivalente care permite exportatorilor din Moldova să exporte produse ecologice către Uniunea Europeană (Reg. 1235/2008). Această combinație oferă importatorilor și exportatorilor un beneficiu semnificativ în activitatea lor.

Control Union Dnjestr poate audita, într-o singură vizită, o operațiune pentru toate standardele ecologice internaționale majore, inclusiv standardele ecologice moldovenești. Cu certificatul Uniunii de Control eliberat conform standardelor locale moldovenești, fermierii pot aplica pentru subvenții în Moldova conform deciziei nr. 455 din 21.06.2017 (Control Union, 2022).

AGRECO

AGRECO este unul dintre primele organisme de control ecologic din Europa și este acreditat pentru toate domeniile de control ecologic. AGRECO a fost fondat în Germania în anul 1987 cu funcția de a asigura calitatea în agricultura ecologică. În 1992 AGRECO a obținut ca unul dintre primele organisme de certificare şi control acreditarea de către statul german și codul "DE-012-Ökokontrollstelle" azi DE-ÖKO-012. În prezent AGRECO este un organism de control și certificare activ la nivel internațional.

În România, AGRECO lucrează deja din 1993 ca un organism de inspecție și a fost acreditat în anul 2006 în conformitate cu codul "RO-ECO-015."

Primele activități ale AGRECO în Republica Moldova au fost înregistrate în anul 2020. AGRECO supraveghează exploatații agricole de toate tipurile, grădinării, culturi speciale, livezi, stupine și dispune de un personal cu competență și experiența necesară pentru a efectua inspecțiile și certificările conform cerințelor legilor respective (AGRECO, 2022).

Kiwa BCS Öko-Garantie GmbH

Kiwa NV a fost fondată de câteva companii olandeze de apă potabilă ca Keuringsinstituut voor WaterleidingArtikelen in anul 1948. Pe parcursul anilor testarea, inspecția și certificarea oferită de companie au crescut semnificativ pentru a acoperi numeroase piețe și a ajută mii de clienți din întreaga lume. În anul 2005 Kiwa a făcut primele achizitii in Germania și a fuzionat cu filialele Inspecta din Finlanda și Suedia, iar în 2008 Kiwa se extinde în Spania. În 2014 Kiwa își extinde domeniile de activitate în industria alimentară, furajeră și producția agricolă prin BCS Öko-Garantie în Germania, America Latină și China. Prin serviciile oferite în domenii precum asigurarea, testarea, inspecția, certificarea, instruirea și consultanță Kiwa BCS creează încredere în produsele, serviciile, procesele, sistemele de management și angajații proprii. Kiwa BCS are în prezent circa 10.000 de angajați în peste 40 de țări din Europa, Asia, America și Oceania (Kiwa BCS, 2022).

CERES

CERES este o companie internațională de certificare pentru alimente organice, textile organice și sustenabile, CERES este un organism de inspecție și certificare care oferă servicii în domeniul alimentelor ecologice, producției textile ecologice și sustenabile, bunelor practici agricole și standardelor de sustenabilitate în sectorul alimentar, precum și a parametrilor de sustenabilitate pentru toate tipurile de producători, industrii, furnizori de servicii. Oficiul de bază este în Germania, dar filialele companiei sunt organizate în Europa, America, Africa și Asia (CERES, 2022).

A CERT

A CERT European Organization for Certification SA este un organism de inspecție și certificare pentru sisteme de management, produse și persoane, cu sediul în Salonic, Grecia, fondat în anul 2005. Compania A Cert dispune de birouri în Germania (Stuttgart), Belgia (Bruxelles), Federația Rusă (Moscova) și Bulgaria (Sofia). Are alianțe strategice la nivel mondial și o rețea largă de parteneri și

reprezentanți (Albania, FYROM, Serbia, Belarus, Kazahstan, Armenia, Ucraina, Moldova, Turcia, Liban, Iordania, Palestina, Iran, Pakistan, Egipt etc.), pentru ca să rămână aproape de clienții săi și de piețele cărora li se adresează.

Importanța fundamentală pentru toți clienții A CERT este protecția fiabilității, sănătății și siguranței, având în vedere interesul public și dezvoltarea durabilă, prin oferirea de servicii de inspecție și certificare valabile și apreciate (A Cert, 2022).

ORGANIC STANDARD

Organic Standard Ltd este primul organism național de certificare ucrainean care oferă servicii de inspecție și certificare a producției ecologice. A fost fondat în cadrul proiectului elvețiano-ucrainean „Certificarea organică și dezvoltarea pieței în Ucraina" în 2007. Organic Standard a fost înființat în ianuarie 2007 de organizații ucrainene orientate spre produse ecologice în cadrul Proiectului Elvețiano-Ucrainean de cooperare și sprijin tehnic internațional, conform Acordului dintre guvernul ucrainean și guvernul Confederației Elvețiene privind cooperarea tehnică și financiară din 13 octombrie 1997 cu sprijinul financiar acordat de Secretariatul de Stat pentru Afaceri Economice (SECO, Elveția) și implementat de Institutul de Cercetare a Agriculturii Ecologice - FiBL, Elveția. Printre partenerii companiei se numără o serie de organizații străine și toți jucătorii cunoscuți din sectorul organic al Ucrainei. În prezent, Organic Standard Ltd oferă certificare de producție ecologică în toată Ucraina și Republica Belarus, Kazahstan și Republica Moldova. (Organic Standard, 2022).

BIO INSPECTA

Bio inspecta AG este o companie care furnizează servicii de inspecție și certificare. Ea oferă o serie de servicii diferite în diviziile „Agricultură", „Procesare și comerț" și „Internațional". Portofoliul de servicii include inspecții și certificări recunoscute ale produselor ecologice și etichetate, precum și certificare ISO și certificare conform standardelor de siguranță alimentară. În plus, sunt sprijinite fermele și firmele din sectorul alimentar, ajutându-le să se dezvolte sustenabil și să-și consolideze poziția pe piață. Calitatea, fiabilitatea și beneficiul clienților sunt esențiale ale gamei cuprinzătoare de servicii prestate de compania Bio Inspecta.

Cea mai mare problemă în activitatea acestor organisme de inspecție și certificare constă în faptul că conform legislației în vigoare, doar exploatațiile agricole ecologice certificate de către autoritățile naționale pot beneficia de subvențiile oferite de către Agenția de Intervenții și Plăți în Agricultură, dar aceste instituții nu sunt recunoscute peste hotarele Republicii Moldova. În același timp pentru a fi în stare de a exporta produsele ecologice, importatorii solicită certificarea producătorilor de către o entitate recunoscută, de peste hotarele Republicii Moldova. Dar certificarea de către aceste organisme internaționale nu este recunoscută de către Agenția de Intervenții și Plăți în Agricultură drept valabilă pentru aplicarea la subvențiile destinate producției ecologice. Astfel, producătorii agricoli ecologici stau în fața unei probleme cu mai multe necunoscute: fie ei exportă produsele ecologice, dar nu sunt acceptați pentru programul de subvenții, fie invers - acceptă subvențiile dar nu pot exporta, fie ultima variantă – să fie certificați de un organism local si de unul internațional, ceea ce ridică implicit costurile de certificare.

Structurile responsabile de cercetare, inovare și de educație

Cele mai importante organizații publice care susțin agricultura ecologică sunt trei institute de cercetare:

- Institutul de Cercetare pentru Culturile de Câmp „Selecția" din Bălți,
- Institutul de Genetică, Fiziologie și Protecție a Plantelor,
- Institutul de Cercetări și Amenajări Silvice.

Universitatea Agrara de Ștat din Moldova în 2006 a inclus agricultura ecologica în catedra de "Știința Solului". Până în Septembrie 2022 catedra "Agroecologie și Știința Solului" avea trei componente educaționale prioritare:

- Pregătirea de specialiști licențiați în domeniul agroecologiei;
- Cercetare fundamentala și aplicativă focusată pe știința solului;
- Servicii de extensiune.

In anul 2022 Universitatea Agrara de Ștat din Moldova a fost restructurată prin absorbție de către Universitatea Tehnică din Moldova. Evoluția de mai departe a științei și educației în domeniul agriculturii, inclusiv a celei ecologice este destul de neclară, aceasta depinzând în mare măsură de viziunea managementului UTM.

ONG-urile active in domeniu

Agricultura ecologică în anii 2010-2020 a cunoscut o dezvoltare importantă fiind stimulată și din partea consumatorilor cu implicarea societății civile și anume a diferitor ONG-uri. Asociația Naționala a Producătorilor de Produse Agricole Ecologice din Moldova - "APEM - AGRO" a fost întemeiată în anul 2010, numărând peste 40 membri. Asociația promova produsele ecologice ale membrilor săi și organiza standuri comune în cadrul târgurilor locale și internaționale. Asociația dată a încercat sa fie vocea sectorului privat în dialogul cu Guvernul.

ProRulalInvest ONG este o organizație națională neguvernamentală, non-comerciala, apolitică. ProRuralInvest și-a început activitățile în iunie 2003 ca organizație parteneră a Landell-Mills Management Consultants (Marea Britanie), care a fost responsabilă de implementarea în Republica Moldova a Proiectului Sprijin pentru Investiții și Servicii Rurale. Totodată, Asociația Națională a Fermierilor Ecologici (APEM-AGRO), precum și ONG-ul ProRuralInvest, active în trecut, au în prezent activitățile suspendate din motive necunoscute (EkoConnect, 2020).

Un alt ONG - *Ecovisio,* a început în 2013, târgurile anuale locale – IarmarEco, care sensibilizau consumatorii pentru durabilitate, nu numai în ceea ce privește produsele alimentare, ci și produsele de igienă, textilele și energia.

În urma campaniei de promovare a produselor ecologice autohtone, in perioada anilor 2015-2017, susținută de proiectul „People in Need Moldova", în 2018 a fost creată Asociația Consumatorilor și Producătorilor Ecologici și Artizanali din Moldova (ONG EcoLocal), care a continuat organizarea piețelor săptămânale în Chișinău. Până în prezent aceste piețe se concentrează pe produse artizanale și tradiționale, dar cu regret produsele ecologice certificate sunt încă rare.

EcoLocal creează primul și unicul web portal din Republica Moldova-Ecoportal.md. Portalul este creat pentru a facilita conexiunea dintre agenții economici, care practică agricultura ecologică în Republica Moldova, și consumatori, Cu regret, acest portal nu poate fi accesat în prezent.

Alianța Lanțului Valoric în Agricultura Ecologică din Moldova" (*MOVCA*) este o organizație non-guvernamentală, care a fost fondată în anul 2015. Membrii ei includ: fermieri, procesatori, asociații de fermieri, distribuitori, importatori, exportatori, consultanți, vânzători, consumatori etc. Până în prezent este cea mai mare asociație din Republica Moldova care susține agricultura ecologică.

Scopul principal al asociației este de a susține toți operatorii și a încuraja toți doritorii din lanțul valoric al agriculturii ecologice. Agricultura ecologică oferă o soluție unica pentru a păstra calitatea solurilor pentru generațiile următoare.

MOVCA a facilitat participarea fermierilor ecologici din Moldova la târguri internaționale de produse ecologice, ceea ce a generat venituri suplimentare pentru ei.

În 2020, MOVCA lansează platforma de educație în domeniul agriculturii ecologice: eLearning studii.movca.md. Platforma este accesibilă tuturor doritorilor și se bucură de un număr record de studenți din domeniul agriculturii și a altor participanți în lanțul valoric al agriculturii ecologice.

De asemeni MOVCA a lansat propria platformă de vânzări. Membrii organizației au posibilitatea să-și vândă produsele prin intermediul platformei, iar cetățenii RM au posibilitatea să procure produce sănătoase prin simpla accesare a platformei.

Donatori, proiecte internaționale

Mai mulți donatori internaționali au susținut și susțin financiar dezvoltarea sub-sectorului de producere agricolă ecologică prin implementarea diverselor proiecte. Printre cele de succes putem enumera următorii donatori și proiectele implementate pe teritoriul RM cu susținerea lor.

Agenția Austriacă pentru Dezvoltare

Proiectul: "Creșterea competitivității sectorului agroalimentar prin integrarea în lanțurile valorice interne și globale, în special ale sectorului culturii de soia/ Increasing the competitiveness of the agri-food sector by integrating into the domestic and global value chains especially of the soybean culture sector".

(Implementatori: Donau Soya Moldova, Pro Didactica)

Agenția Cehă pentru Dezvoltare

Proiectul: " Sprijin instituțional în agricultura ecologică în Republica Moldova / Institutional support in ecological agriculture in the Republic of Moldova";

(Implementator: ONG People In Need, Moldova)

Filiala Agenției Liechtenstein pentru Servicii de Dezvoltare în Moldova

Proiectul: "InfOrganic Moldova 2020-2022"

Agenția Statelor Unite pentru Dezvoltare Internațională / United States Agency for International Development (USAID)

"Farmer-to-Farmer" PROJECT Moldova (2018-2023) (Implementator: CNFA Moldova, ONG EcoVisio)

Experiența anilor arată ca implicarea ONG-lor depinde în mare măsură de finanțările primite de la donatori. Acestea de obicei nu mai sunt active atunci când proiectele se încheie. Unele din ele și-au menținut cunoștințele și rețelele dobândite în organizațiile lor.

Structurile comerciale și logistice implicate în circuitul de produce agroalimentare ecologice

În Republica Moldova la moment nu există nici o rețea comercială specializată în comercializarea produselor ecologice. Totodată în mai multe supermarketuri pot fi găsite rafturi sau secții destinate produselor ecologice. De asemenea, în orașul Chișinău, se petrec cu regularitate târguri ecologice în cadrul cărora producătorii autohtoni au posibilitatea de a-și prezenta produsele, de a comunica la direct cu consumatorii și de a vinde produsele consumatorilor finali.

Consumatorii sunt reprezentați în principal de către două categorii de bază: consumatori finali și consumatori industriali. Din prima categorie fac parte consumatorii de produse gata de consum procurate fie direct de la producători în cadrul diferitor evenimente comerciale, fie în magazinele specializate sau în supermarketurile ce dispun de secții sau rafturi specializate pentru produse ecologice.

Consumatorii industriali sunt preponderent întreprinderile ce concentrează cantități omogene de produse ecologice pentru a fi ulterior exportate. Un exemplu în acest caz este întreprinderea ”ProGrain Organic” specializată în exportul cerealelor ecologice. Un segment mai mic al consumatorilor industriali este reprezentat de entitățile ce procură materia primă ecologică locală pentru procesarea ei ulterioară în produse alimentare cum ar fi uleiurile, uleiurile esențiale, si alte produse agroalimentare ecologice.

Concluzii

1. Lipsește o evidență clară a proiectelor finanțate de diverși donatori (perioadă, sumă, perioada de implementare, obiectivele, rezultatele obținute).
2. ONG-rile implicate în domeniu își încheie activitatea odată cu terminarea finanțării. din partea donatorilor
3. MAIA nu dispune de niciun mecanism de supraveghere care ar asigura un control eficient asupra producerii, procesării, importurilor și certificării produselor alimentare ecologice.
4. MAIA nu dispune de suficiente capacități pentru a face față cerințelor necesare (ajustarea legislației, evidența producătorilor bio (cifră de afaceri, volum de export, produse etc.).
5. Deoarece cadrul legislativ nu este ajustat la cel al UE, fiecare producător care dorește să exporte producția sa necesită certificarea din partea unul certificator, iar această producție nu poate fi realizată în RM, deoarece se cere certificarea de o organizație autohtonă.
6. Nu există un mecanism eficient de raportare de către producătorii de produse ecologice către MAIA, BNS.

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IMPACTUL RĂZBOIULUI DIN UCRAINA ASUPRA SECURITĂȚII ALIMENTARE ȘI INFLUENȚA ACESTUIA ASUPRA CALITĂȚII VIEȚII POPULAȚIEI REPUBLICII MOLDOVA

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Summary

The beginning of 2022 has been shaken by the beginning of the war in Ukraine, which will affect Moldova in the long term. As a neighbouring country dependent on access routes with other states, namely through the territory of this country, it is feeling the negative impact of this war enormously and is strongly facing impediments to trade. This scourge will also generate profound changes in the design of security relations in the region and even globally, which may generate a food crisis due to the disruption of food exports, but will also create major humanitarian and social crises.

The aim of the research is to analyse the impact of this war on the country's population and food security, highlighting vital needs and how to respond to new challenges and changes in the social and economic sphere.

The research was carried out based on data provided by the National Bureau of Statistics using analytical, synthetic, tabular and graphical methods.

Based on the research it was found that the impact of the crisis caused by this war is a threat to the national economy and the standard of living of citizens. However, these obstacles, force the development of the agro-industrial sector and its increased adaptation to the situation created and provides primarily for the development of infrastructure for production, post-harvesting and processing, which is in the early stages of development and has been influenced by the presence of cheaper raw materials from Ukraine.

Keywords: *agriculture, life quality, war, food security, agrifood, risks, opportunities.*

***JEL:** Q1; Q17;Q18;Q34;H56.*

***UDC:** 338.439.02(478)*

Introducere

Motto: „*Omenirea trebuie să pună capăt războiului, altfel războiul va pune capăt omenirii.*"
John F. Kennedy

Războiul fiind, ca atare, un fenomen socio-politic extrem de complex, are capacități distructive, cu implicații incontestabile atât asupra prezentului, cât și asupra viitorului omenirii. Având la bază diverse motive, precum dorința de expansiune teritorială sau de apărare în fața unor amenințări, diferențe de natură etnică, religioasă sau multe alte cauze declanșatoare de conflict, nu pune niciodată accentul pe om, ignorând în totalitate viața

acestuia. Oricare ar fi motivele de la care pornesc, aceste evenimente lasă urme adânci în conștiința individului, cu ecou sumbru peste generații întregi...

Războiul din Ucraina a generat schimbări profunde și în arhitectura relațiilor de securitate din zonă și chiar de pe glob și este cert faptul că poate genera o criză alimentară din cauza perturbării exporturilor de produse agroalimentare, iar societățile din preajma conflictului nu vor mai fi aceleași, o lungă perioadă de timp.

În Republica Moldova conceptul securității alimentare este bazat pe sporirea ofertei interne și substituția importurilor. Autosuficiența, însă, nu garantează securitatea alimentară, iar integrarea în sistemul alimentar global și regional oferă o diversitate pronunțată de surse de aprovizionare și acces la produse noi care nu pot fi produse local și are un rol important în asigurarea securității alimentare a țării, inclusiv din punct de vedere al accesibilității economice, în special în cazul în care comerțul internațional nu este afectat de situații de criză [1].

Conform Raportului FAO elaborat în cooperare cu alte agenții ale ONU „The State of Food Security and Nutrition in the World 2021" [4], numărul populației afectate de insecuritate alimentară moderată sau severă în Republica Moldova s-a majorat în perioada 2018-2020 cu cca 300 mii oameni, comparativ cu perioada 2014-2016.

Astfel, pe plan local cca 27,2% din populație este afectată de un nivel moderat sau sever al insecurității alimentare (comparativ cu 19,3% în perioada 2014-2016), dintre care 4,5% din populație este afectată de un nivel sever al insecurității alimentare (comparativ cu 1,6% în perioada 2014-2016), în timp ce media europeană în perioada 2018-2020 a constituit 8,1% comparativ cu 1,3% în perioada 2014-2016.

Securitatea alimentară rămâne o problemă reală pentru circa 10% din populație, care în perioada 2014-2020 s-a aflat în sărăcie extremă, situație care denotă insuficiență de resurse pentru procurarea unui coș alimentar adecvat. În mediul rural riscul de sărăcie extremă este de 4 ori mai mare decât în cel urban. Totodată, cu riscuri majore se confruntă persoanele vârstnice solitare și gospodăriile casnice cu mulți membri, conduse de persoane cu nivele inferioare de studii și a căror principală sursă de venit provine din activitatea agricolă. Creșterea generalizată a prețurilor din anul 2021 și riscurile inflaționiste pun presiuni mari pe bugetele gospodăriilor și amplifică insecuritatea alimentară (Tabelul 1).

În anul 2022, cheltuielile pentru produse alimentare și băuturi nealcoolice ar putea să ajungă la 48,8% din total în gospodăriile casnice rurale și la 41,9 în cele urbane [2].

Tabelul 1. **Structura cheltuielilor de consum pentru produsele alimentare a gospodăriilor casnice pe medii de reședință în perioada 2019-2022, %**

Destinația cheltuielilor	Rural				Urban			
	2019	2020	2021	2022	2019	2020	2021	2022
Cheltuieli de consum, total, MDL	2336	2331	2676	3108	3469	3489	3971	4575
Produse alimentare și băuturi nealcoolice	44,5	47,2	48,3	48,8	36,6	39,8	41,1	41,9

Sursa: Datele Biroului Național de Statistică [6];

Notă: pentru anul 2022 sunt prognozele autorilor Strategiei naționale de dezvoltare „Moldova 2030".

Gradul de abordare a temei în literatura științifică. De-a lungul secolelor, omenirea s-a confruntat pe parcursul existenței sale de prea multe ori cu fenomenul complex denumit „război”, i-a cunoscut și îndurat efectele devastatoare și impactul negativ care i-au scris istoria și marcat parcursul. În literatura mondială, din toate timpurile, a fost imortalizată grozăvia acestuia, iar operele elaborate de diferite personalități ale culturii universale rămân martori siguri ai acestui flagel.

Un fenomen atât de frecvent de-a lungul existenței omenirii nu putea să nu fie reflectat în literatură și artă, unica modalitate prin care omul poate imortaliza grozăvia războiului, în speranța că tot el, omul, va învăța din lecțiile trecutului. Însă după cum vedem, omenirea nu și-a învățat lecția.

Un „spectacol” oferit umanității ca o lecție de istorie din care să fie trase învățăminte, dedicat tuturor generațiilor, este surprins pe hârtie sau pânză prin intermediul unor reprezentanți ai culturii ruse precum Vasili Grossman, Lev Tolstoi sau Vasili Vereșciaghin [5] .

Gândirea politică în domeniul relațiilor internaționale a fost structurată și dezvoltată de gânditori clasici precum Thomas Hobbes, Immanuel Kant, Jean-Jacques Rousseau, Machiavelli și alții. Filosofia războiului presupune că natura sa este inevitabil și fundamental înclinată către căutarea puterii în raport cu ceilalți și a dominației sale asupra celorlalți, construind o viziune ce conduce către un război al tuturor împotriva tuturor.

În comunicatul de presă al Consiliului Economic și Social European nr. 14/2022 din 24/03/2022, privind războiul din Ucraina și impactul său economic, social și ecologic, membrii acestuia și-au exprimat solidaritatea cu Ucraina și au subliniat rolul societății civile în sprijinirea poporului ucrainean și a refugiaților ucraineni.

În deschiderea dezbaterii, președinta Christa Schweng a subliniat: „Acest război a pus în pericol securitatea și valorile noastre, iar Uniunea Europeană este alături de Ucraina în mod legitim și cu fermitate, răspunzând cu unitate și solidaritate” și a adăugat: „Societatea civilă este unul dintre elementele constitutive ale democrației noastre: în primul rând prin abordarea consecințelor umanitare, economice și sociale ale războiului, dar și demonstrându-și hotărârea de a ajuta poporul ucrainean să susțină valorile europene. Ne transformăm solidaritatea în acțiune, acordând fără ezitare sprijinul nostru pentru Ucraina”.

Comisara pentru afaceri interne, Ylva Johansson, a subliniat rolul extrem de important în utilizarea cunoștințelor pe teren, deoarece Europa a primit, până în prezent, 3,5 milioane de refugiați ucraineni, dintre care 1,8 milioane sunt copii. Solidaritatea fără precedent față de persoanele care fug din calea războiului din Ucraina de care au făcut dovadă organizațiile societății civile, cetățenii și autoritățile a fost remarcabilă.

Raportorii rezoluției au subliniat provocările esențiale cu care se confruntă Europa ca urmare a războiului și au solicitat liderilor Uniunii Europene să ia măsuri, în special în ceea ce privește politica în domeniul migrației, inflația, creșterea prețurilor la energie, asigurarea unui sistem alimentar durabil, reducerea dependențelor și construirea autonomiei strategice și tehnologice a Europei [7].

Scopul cercetării. Scopul studiului este de a analiza impactul acestui război asupra populației și securității alimentarea a țării, punând în evidență necesitățile vitale, dar și felul în care se răspunde noilor provocări și schimbări în sfera socială și economică.

Metodologia cercetării. Lucrarea dată reprezintă un studiu aprofundat al cercetărilor în domeniu, al cadrului legislativ național, al informațiilor statistice furnizate de Biroul Național de Statistică. Prezenta cercetare este, în fond, un studiu analitic descriptiv, de sinteză, tabelar și grafic, care tinde să scoată în evidență impactul major al războiului, în general și rolul acestuia asupra calității vieții populației, inclusiv identificarea unor soluții și stabilirea unor recomandări necesare redresării problemei analizate, în particular.

Rezultate principale. Urmare a începerii războiului la finele lunii februarie, mai multe loturi de mărfuri alimentare, produse de uz fitosanitar și fertilizanți, destinate pieței Republicii Moldova, au fost blocate pe teritoriul statului vecin sau redirecționate spre alte state.

Situația în cauză, imprevizibilă, de altfel, a dus la un șir de probleme, precum imposibilitatea de introducere în țară, la timp, a produselor destinate consumatorului autohton, generând cheltuieli suplimentare agenților economici naționali și determinând nerespectarea termenului de furnizare planificat.

Ucraina fiind al patrulea partener comercial al Republicii Moldova, la capitolul volumului de produse importate, după România, Belarus și Rusia, odată cu izbucnirea conflictului, comerțul acesteia a fost sistat, iar majoritatea dintre cele mai solicitate produse, în special agroalimentare importante de acolo, au fost blocate.

Ca urmare, prețurile medii de consum, de pe piața din Republica Moldova, au început să crească, unele produse sunt expuse riscului de deficit, iar aglomerația după provizii, devine unul dintre subiectele momentului, în rândul oamenilor. Potrivit experților în domeniu, PIB-ul (produuls intern brut) al Republicii Moldova ar putea scădea cu 5% din cauza războiului din țara vecină.

Conflictul în cauză a avut un efect șocant asupra pieței Republicii Moldova din considerentul vecinătății cu Ucraina, cu care are legături economice strânse atât cu aceasta, cât și cu țările implicate în război: Rusia și Belarus. În plus, Ucraina a fost, de fapt, singura țară tranzitată în procesul de export al produselor din Republica Moldova către piețele Comunității Statelor Independente (CSI), dar în acest moment tranzitul prin această țară este practic imposibil.

Pe lângă scăderea veniturilor din export, Moldova se mai confruntă și cu faptul că multe bunuri importate anterior din Ucraina, inclusiv alimente, au încetat a mai fi livrate. Acest lucru a creat panică în rândul consumatorilor și reprezintă un adevărat test pentru Republica Moldova pe termen lung.

Conform datelor statistice, cca 20-22% din totalul importurilor de alimente în Moldova provin din Ucraina, care a fost principalul furnizor de produse alimentare în țarai noastră. Printre principalele articole de import care au devenit brusc inaccesibile sau ale căror livrări s-au stopat se numără: produsele lactate, anumite legume, hrana pentru animale, produsele de cofetărie, de panificație și sarea.

Potrivit unui studiu al Organizației pentru Alimentație și Agricultură, Ucraina în ultimii 20 de ani a devenit un producător agricol mare, situându-se printre liderii mondiali la producerea producției cerealiere și culturile tehnice. Dezvoltarea porturilor maritime din Odessa, Nicolaev, Reni a dinamizat exporturile de materii prime agricole către multe regiuni ale lumii. Începând cu anul 2005, Ucraina se află pe poziția de lider în producerea și exportul uleiului de floarea soarelui. În anul 2021 Ucraina a obținut o producție record de ulei de floarea soarelui în mărime de 7,2 mil tone, ceea ce a constituit cu 24% mai mult decât în anul 2020. Drept rezultat, volumul exportului de ulei de floarea soarelui a constituit circa 6,1 mil tone, dintre care circa 32% au fost direcționate către țările Uniunii Europene, 32,5% către India și 15,3% către China. Între anii 2021-2022, Ucraina, împreună cu Federația Rusă au asigurat circa 77% din exporturile mondiale de floarea soarelui, dintre care 48% din volume au fost din Ucraina. La nivel regional Ucraina s-a remarcat ca producător de fructe și legume. Producția medie anuală de fructe este de circa 2,9 mil tone, iar cea de legume – 9,7 mil de tone. Anual pe această piață se importă circa 900 mii tone de fructe și 200 mii tone de legume în stare proaspătă. Exportul anual variază la circa 60 mii tone de fructe și 86 mii tone de legume. Ca producător de grâu, în ultimii ani Ucraina și-a dezvoltat infrastructura de producere a făinii de grâu. În ultimii ani producția a ajuns la cantitatea de circa 2 mil de tone, dintre care spre export este orientată o cantitate de circa 300 mii de tone.

Republica Moldova în ultimii ani și-a dezvoltat relații economice apropiate cu țara vecină, o bună parte din produsele alimentare necesare pentru piața autohtonă fiind importate din aceasta. Spre exemplu, în perioada anilor 2020-2021, agenții economici au importat făină de grâu la nivel de 18% din volumul total de făină ucraineană destinată exportului, astfel Moldova devenind principala țară de destinație a făinii ucrainene. Prin portul ucrainean Reni agenții economici din Republica Moldova exportă cele mai mari cantități de cereale, datorită faptului că infrastructura portuară este dotată pentru încărcarea navelor cu astfel de producție.

Astfel, se constată o dependență majoră și reciprocă a economiei Republicii Moldova de cea a Ucrainei la nivel macro- și micro- economic.

În conformitate cu datele statistice, volumul total al exporturilor moldovenești în 2021 a fost de 3,14 miliarde dolari, din care 466,2 mil dolari sau 14,8% revin țărilor CSI. În contextul războiului, cel mai vulnerabil sector la sistarea exportului spre Ucraina sunt fabricile de vinuri, care exportă lunar produse alcoolice în volum de un milion de dolari sau 12 milioane dolari anual. La fel, sistarea exporturilor va afecta în primul rând agricultorii, care exportă lunar fructe în valoare de 6,5 milioane de dolari sau 77 de milioane de dolari anual, ceea ce reprezintă 33% din toate exporturile spre Federația Rusă.

În 2021, volumul importurilor către Republica Moldova a fost de 7,17 milioane dolari, din care 1,9 milioane dolari (26,5%) revin țărilor CSI, iar din Ucraina – de 667 milioane dolari [3].

Se poate presupune că țara noastră se va confrunta cu o dificultate la anumite produse alimentare. Într-adevăr, produsele din Rusia, Ucraina și Belarus ocupă de multă vreme o pondere semnificativă în comerțul cu produse agro-alimentare. Asta nu înseamnă, însă, că va exista un deficit de astfel de produse, așa cum acestea vor putea fi importate fără probleme din România și alte state europene.

Ucraina rămâne printre principalii parteneri comerciali chiar și în condițiile de război. În perioada ianuarie – iunie a anului curent, valoarea producției importate s-a majorat cu circa 34,4% și se menține la o pondere de 9-10% din valoarea totală a importurilor de mărfuri și servicii în țară (*Tabelul 2*).

Tabelul 2. **Dinamica structurii importurilor pe principalele țări de origine, %**

Țara	Ianuarie-iunie 2017	Ianuarie-iunie 2018	Ianuarie-iunie 2019	Ianuarie-iunie 2020	Ianuarie-iunie 2021	Ianuarie-iunie 2022
1. România	13,8	14,1	14,2	12,3	12,9	16,2
2. Federația Rusă	12,0	11,8	12,4	12,4	11,5	15,3
3. China	10,1	10,4	9,9	11,0	11,8	9,4
4. Ucraina	10,3	9,4	9,7	9,6	9,0	9,1
5. Turcia	6,7	5,9	6,5	6,8	7,2	7,1
6. Germania	8,0	8,6	8,5	8,3	8,3	6,6
7. Italia	7,1	7,2	7,1	6,7	6,7	5,3
8. Polonia	3,2	3,5	3,3	3,9	3,8	3,3
9. India	0,6	0,5	0,6	0,7	0,7	2,6
10. Franța	2,7	2,8	2,7	2,8	2,6	2,4

Sursa: Biroul Național de Statistică [8].

La per general, produsele de bază importate din Ucraina pe piețele locale au un impact direct asupra securității alimentare a țării și asupra vulnerabilității sociale (*Tabelul 3*).

Tabelul 3. **Produse importate din Ucraina cu cea mai mare pondere în cantitatea totală a importurilor**

Produsul	Ponderea importului din Ucraina, %	Cantitatea importată, tone
Făină de grâu	60%	12000
Crupe și griș	88%	2447
Sucuri din fructe	26%	341
Carne de bovine congelată	69%	204
Carne și organe comestibile proaspete	53%	6127
Lapte și smântâna din lapte, neconcentrate	33%	7577
Lapte și smântâna din lapte, concentrate	33%	781
Lapte acru, lapte și smântâna covăsite, iaurt, chefir	22%	2086
Unt	79%	3010
Brânză și caș	29%	2178

Sursa: Informație ajustată în baza datelor Biroului Național de Statistică.

Războiul din Ucraina afectează în mod direct procesele comerciale ale Republicii Moldova cu această țară. În primul rând, o parte din partenerii de afaceri ucraineni nu au posibilitatea de a organiza procesul logistic al comerțului cu partenerii din țara noastră. O parte din exportatorii autohtoni nu-și pot onora obligațiile față de partenerii din țara vecină, deoarece capacitățile de producție au fost distruse, iar altele

nu pot fi valorificate din cauza infrastructurii de transport blocată sau stopată. În esență, războiul duce la încetinirea relațiilor comerciale bilaterale, iar drept urmare se creează deficit la unele categorii și grupe de produse.

Totodată, exportul produselor autohtone către Ucraina și alte țări din regiunea de Est în perioada ianuarie – iulie a anului curent sunt stabile sau chiar se majorează în mărime relativă (*Figura 1*).

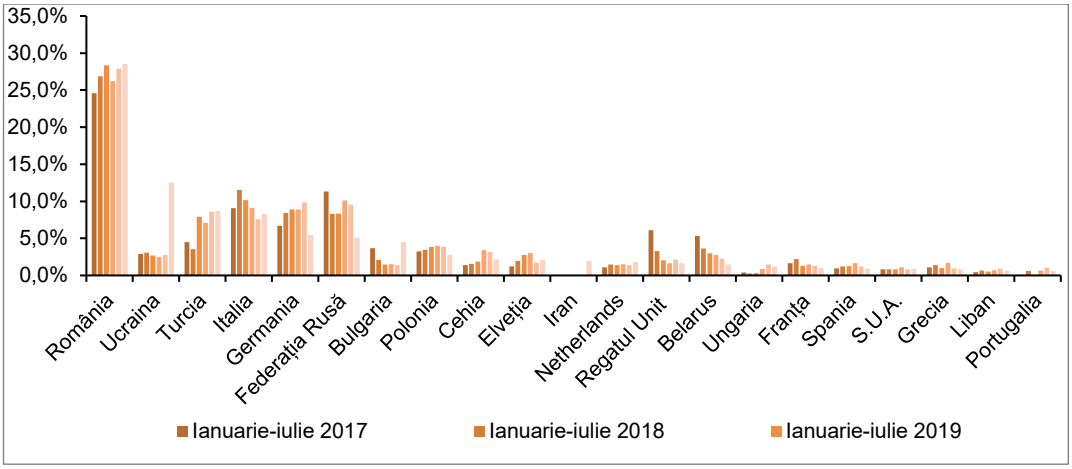

Figura 1. **Structura exporturilor pe principalele țări de destinație în perioada ianuarie-iulie, 2017-2022, %**

Sursa: Biroul Național de Statistică [9].

Dacă e să analizăm exportul de mărfuri către Ucraina în primul semestru al anului curent, se observă că este într-o majorare de circa 11% față de anul 2021, însă acest fapt se datorează mărfurilor livrate de către agenții economici și instituțiile de stat în perioada de război. În perioadele anterioare, media ponderii exporturilor produselor autohtone către Ucraina a constituit circa 2,7% din valoarea totală.

O problemă majoră a țării în contextul războiului este piața regională a cerealelor și oleaginoaselor, care afectează producătorii și exportatorii de cereale din Republica Moldova. Actualmente în portul Reni, care era până la război preponderent singura destinație a cerealelor din Republica Moldova spre export, se formează cozi imense de camioane cu cereale ucrainene. Exportul cerealelor din Ucraina este un proces prioritar, astfel agenții economici din Moldova sunt nevoiți să aștepte cîteodată și zile întregi pentru a putea exporta.

Totodată, având în vedere situația actuală din regiune, inclusiv pe piața produselor de protecție a plantelor și a îngrășămintelor minerale, precum și creșterea semnificativă a prețurilor pentru purtătorii de energie și materiile prime, producătorii agricoli nu pot satisface nevoile pieței regionale și mondiale, fiind și în imposibilitatea asigurării îngrășămintelor minerale în Republica Moldova.

În scopul soluționării problemelor create de circumstanțele invocate supra, a susținerii agentului economic autohton și în cazul în care produsele ce urmează să intre în țară sunt conforme și corespund tuturor parametrilor de inofensivitate și calitate, Guvernul a operat un șir de modificări și derogări la anumite prevederi ale legislației naționale să fie permisă vămuirea și importul produselor blocate la graniță,

prin eficientizarea certificării producției agricole, însă insistând ca prin prisma facilitării comercializării produselor agricole să fie păstrat echilibrul cu siguranța acestor produse.

Începând cu toamna anului trecut, pentru a asigura securitatea alimentară, Federația Rusă prin Decretul Guvernului nr. 1910 din 3 noiembrie 2021 a introdus restricții cantitative temporare la exportul anumitor tipuri de îngrășăminte, care include nemijlocit și măsuri restrictive pentru tranzitul mărfurilor pe teritoriul Ucrainei. Aceste circumstanțe au dus la imposibilitatea realizării logisticii îngrășămintelor minerale pe rutele tradiționale din teritoriul Republicii Moldova.

Pe lângă situația cauzată de factori, precum seceta, scumpirile input-urilor, lipsa de logistică, diminuarea cererii la anumite produse, amprenta războiului din Ucraina este un factor decisiv în asigurarea pieței cu produse de uz fitosanitar și fertilizanți, fapt demonstrat de datele statistice privind importul acestor produse în anul curent, comparativ cu anii precedenți (*Tabelul 4*).

Tabelul 4. **Importurile de fertilizanți în Republica Moldova în ianuarie-martie 2020-2022**

Denumirea mărfii	Unitate de măsură	Ianuarie-martie 2020		Ianuarie-martie 2021		Ianuarie-martie 2022	
		Cantitatea	Valoarea, mii dolari SUA	Cantitatea	Valoarea, mii dolari SUA	Cantitatea	Valoarea, mii dolari SUA
Îngrășăminte minerale sau chimice azotate:	kg azot	35042494,88	22153,22	19728196,81	12785,86	15987,97	34626,90
Îngrășăminte minerale sau chimice care conțin doua sau trei dintre elemente fertilizante	kg	29663267,09	12436,05	26350867,84	10804,05	18018,38	14359,87
Insecticide, rodenticide, fungicide, erbicide etc.	kg	3190627,10	41511,34	3348084,11	39866,03	2768,45	43607,21

Sursa: Biroul Național de Statistică [10].

În vederea soluționării divergențelor invocate în multiplele adresări din partea importatorilor de produse de uz fitosanitar și fertilizanți și ținând cont de necesitatea stringentă de fertilizanți pentru sectorul agricol, care nemijlocit pot influența asigurarea securității alimentare a țării, Guvernul a solicitat prin canale diplomatice ajutorul și identificarea soluțiilor privind înlăturarea obstacolelor de circulație și traversare a frontierei a loturilor de fertilizanți blocate și a organizat diverse ședințe de lucru cu reprezentanții autorităților centrale și a companiilor importatoare de îngrășăminte minerale, în care mediul de afaceri a manifestat deschidere pentru diversificarea pieței de aprovizionare.

Riscuri. Analizând ultimele evoluții ale pieții interne, cu referire la produsele agricole și alimentare și problemele enumerate mai sus, pot apărea unele riscuri cum ar fi:

- Incapacitatea de a asigura un proces normal de export a produselor agro-alimentare, în special cereale, oleaginoase și fructe;
- Vulnerabilitatea la importul produselor alimentare importate din Ucraina;
- Imposibilitatea producătorilor agricoli autohtoni de a-și recupera investițiile, ca urmare a prețurilor mici și politica promovată de operatorii din Ucraina;
- Pierderi enorme ale producătorilor agricoli, ca rezultat al imposibilității de comercializare a produselor agroalimentare autohtone;
- Incapacitatea producătorilor agricoli autohtoni de a-și onora angajamentele față de impozite și de alte servicii contractate.

Oportunitățile Republici Moldova în contextul actual. Consecințele războiului asupra infrastructurii de producere, post-recoltare și procesare se resimt puternic pentru partea de sud-est a Ucrainei, principala zonă de producere a legumelor, produselor din lapte, semințelor etero-oleaginoase, care servea, în primul rând, ca sursă de asigurare a pieței locale și pentru export.

Aceste blocaje pe termen mediu si lung, de care este afectată Ucraina pot servi ca oportunități de dezvoltare a sectorului agro-industrial al Republicii Moldova.

Discutarea rezultatelor, concluzii. Declanșarea războiului din Ucraina a afectat puternic economia națională prin scumpirea tuturor produselor agro-alimentare, începând cu martie 2022. Agenții economici au fost nevoiți să reorienteze importurile din alte țări, cu o logistică mai costisitoare, ceea ce s-a răsfrânt foarte mult asupra prețului final de vânzare a produselor pe rafturile supermarketurilor și piețelor din țară. De asemenea, scumpirea prețurilor la produsele agro-alimentare a avut loc și pe fundalul scumpirii combustibilului utilizat pentru transportarea produselor.

Totodată, sporirea rezilienței la transformările ce au loc drept urmare a războiului devine prioritate pentru politicile de stat și anume a dezvoltării continue și într-un mod consolidat a agriculturii și industriei alimentare, realizarea oportunităților apărute fiind imperios necesare.

Dezvoltarea sectorului agroindustrial și sporirea adaptării acestuia la situația creată, prevede în primul rând dezvoltarea infrastructurii pentru producere, post-recoltare și procesare, care este în faza de dezvoltare incipientă și care a fost influențată de prezența materiei prime mai ieftine din Ucraina. La moment au apărut mai multe opțiuni de dezvoltare a sectoarelor agricole și infrastructurii post-recoltare și procesare în Republica Moldova.

Capacitatea Republicii Moldova de a reacționa la riscuri și realizarea unui plan bine gândit de viitor, poate schimba radical importanța sectorului agroindustrial autohton nu doar în contextul intern, dar și pe cel internațional.

Rezultatele cercetării au impus formularea câtorva măsuri de politici recomandate pentru a limita impactul negativ asupra populației și a menține cât de puțin calitatea mai bună a vieții:

Pe termen scurt:

✓ asigurarea sprijinului temporar pentru producători, pentru a stabili stimulente pozitive, de exemplu subvenții ex ante sau scutiri fiscale pentru a îmbunătăți posibilitatea de planificare a producătorilor;

✓ îmbunătățirea infrastructurii logistice (rutiere, feroviare și porturi dunărene), care ar putea reduce o parte din presiunea asupra coridoarelor de transport (de exemplu, îmbunătățiri ale căilor ferate, achiziționarea de vagoane suplimentare), facilitarea investițiilor private în infrastructura logistică, după posibilitate;

✓ costul de finanțare pentru fermieri poate fi redus cu instrumente precum garanții de credit sau subvenții ale dobânzii, de exemplu, instrumentele existente ar putea fi extinse temporar.

Însă, este de menționat faptul că este important să nu se creeze dependență de instrumentele de sprijin, acestea fiind doar un imbold de a evita stagnarea afacerii.

Pe termen lung:

✓ îmbunătățirea și extinderea infrastructurii de irigare, care ar putea reduce vulnerabilitatea la fenomenele naturale imprevizibile;

✓ îmbunătățirea și dezvoltarea infrastructurii post-recoltare (depozitare, procesare), care poate oferi fermierilor autohtoni mai multă flexibilitate în reacția la modificările prețurilor internaționale și creșterea marjelor de profit;

✓ concentrarea pe dezvoltarea produselor cu valoare adăugată mai mare, pentru a trece de la exporturile de materie primă la exporturile de produse procesate;

✓ acordarea sprijinului pentru tranziția către sisteme de cultivare rezistente la intemperiile climatice (inclusiv servicii de cercetare, educație și extindere).

Impactul crizei cauzate de acest război reprezintă o amenințare pentru economia națională și pentru nivelul de trai al cetățenilor, însă consolidând forțele proprii ale conducerii, ale mediului de afaceri, dar și ale societății, prin evaluarea obiectivă a situației, printr-o planificare corectă, prin elaborarea de politici socio-economice bune și implementarea corespunzătoare a acestora, vom izbuti să nu permitem creștereanivelului sărăciei și dacă nu vom reuși să îmbunătățim calitatea vieții, cel puțin vom menține un nivel de trai, cât de cât decent.

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IMPORTUL DE FRUCTE ȘI NUCI AL REPUBLICII MOLDOVA

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Summary

The aim of the paper is to analyze the import of edible fruits and nuts; citrus or melon peels. From methodological point of view, the following methods are used: analysis, synthesis and comparison. The recent works in the field, as well as the statistical data of the NBS, served as an information base. The results show that the production of peaches obtained shows an increase in 2020 compared to 2011, 2012, 2013 and 2014 years, the reason being the increase of the yield of fruit per hectare during this period, and compared to 2015, 2016, 2017, 2018 and 2019 years the size of this indicator decreased, the reason being the reduction of the yield per hectare due to the unfavorable weather conditions in 2020.

A positive trend is registered at the production of berry during the analyzed period, increasing in 2020 compared to 2011, 2012, 2013, 2014 and 2015 years, the reason being the increase of the area and the yield per hectare during this period, and compared to 2016, 2017 and 2018 years it increased due to the rise of the area.

The production of walnuts increased in 2020 compared to 2011, 2012, 2013, 2014, 2015 and 2016 years, the reason being the increase of the area, and compared to years 2017, 2018 and 2019 years the trend of decreasing, the reason being the reduction of the yield per hectare of walnuts due to the severe climatic conditions during the 2020 year.

The import of edible fruits and nuts; citrus or melon peels recorded an increasing trend in 2020 compared to 2011, 2012, 2013, 2014, 2015, 2016, 2017, 2018 and 2019.

***Keywords**: import, fruit, nuts, plums, seed orchards.*
***JEL:** Q1; Q10; Q17.*
***UDC:**338.439.5:339.562(478)*

Introducere. "Analiza comerțului exterior agroalimentar poate fi efectuată în baza:

- rezultatelor comerțului agroalimentar exterior;
- structurii comerțului exterior agroalimentar pe categorii de mărfuri;
- orientării geografice a comerțului exterior agroalimentar;
- evoluției în timp a fluxurilor comerciale;
- eficienței activității de comerț exterior agroalimentar" [2, p. 362].

„Într-o abordare modernă, marfa este descrisă ca reprezentând *„totalitatea obiectelor și subiectelor asupra cărora intervine designerul pentru crearea așa-numitei* **formă a mărfii** sau **valoare adăugată**". Valoarea adăugată a mărfii este dată de ansamblul de calități perceptibile și neperceptibile ale acesteia, inclusiv cele de ordin socio-cultural, care în procesul de schimb al mărfii determină alegerea sa și

influențează preferința consumatorului, modificând valoarea de schimb și atrăgând atenția în particular asupra designului mărfii.

Studiul mărfurilor pare să se axeze pe două sfere problematice:

- pe de o parte, acea sferă care descrie bunul sau serviciul în sine, ca obiect specific de schimb (tranzacție)- *marfa ca obiect de schimb*;
- pe de altă parte, sfera relațiilor dintre subiecți prin intermediul bunurilor- *marfa ca mijloc de transfer al relațiilor între consumatori.*

Pot face obiect de schimb pe piață bunurile materiale, serviciile, bunurile imateriale în general (persoane, idei sentimente). Toate acestea alcătuiesc *marfa contemporană*. Condițiile temporale, ambientale, culturale, existente la un moment dat, permit materializarea acestui concept.

Nu toate bunurile produse capătă statut de marfă, ci acesta pare să fie o cerință tranzitorie legată de un tip particular de schimb pe piață, specific societății contemporane, sub impactul unui ansamblu de factori determinați (variațiile temporale, spațiul ambiental, condițiile culturale și ambientale)." [1., p. 20].

Material şi metodă. Analiza cantitativă se realizează pe baza datelor de tip cifric care sunt selectate şi prelucrate de autor în baza datelor Biroului Național de Statistică al Republicii Moldova.

Materialul informativ care a stat la baza redactării acestei lucrări cuprinde studii ştiinţifice din literatura internaţională şi naţională. Preferinţă s-a acordat metodei de analiză și celei de comparaţie.

Rezultate și discuții. Importanța fructelor în alimentație este uriașă, ele nu se pot separa de legume din meniul fiecăruia dintre noi. Consumul de fructe are numeroase beneficii pentru sănătate, reducând riscul bolilor cronice. Fructele oferă nutrienți vitali organismului, ajutându-ne să ne menținem mereu în formă.

Suprafața de semințoase în toate categoriile de gospodării este prezentată în figura ce urmează.

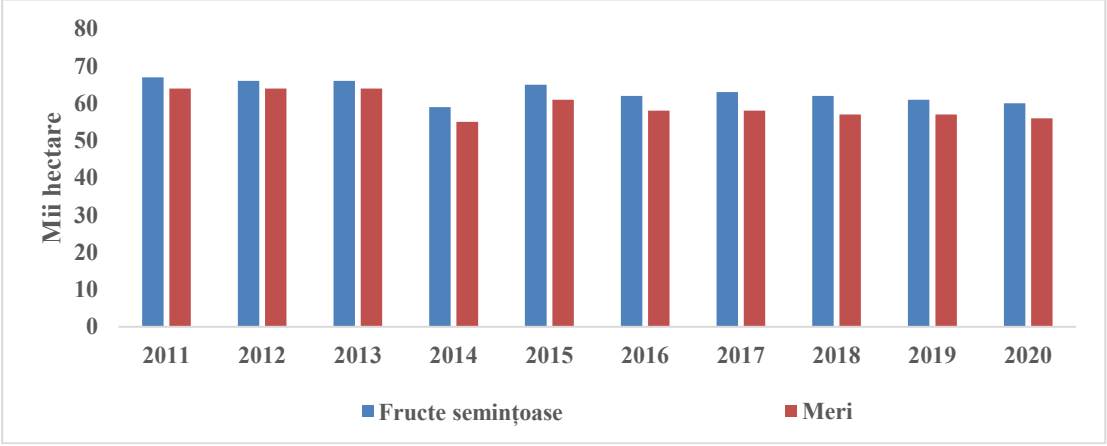

Figura 1. **Suprafața de semințoase în toate categoriile de gospodării, mii ha**
Sursa: elaborată de autor în baza [3]

Analizând datele graficului de mai sus putem conchide faptul că suprafața de semințoase a înregistrat o tendință de scădere în anul 2020 față de anii 2011, 2012, 2013 și 2015 respectiv cu 7; 6; 6 și 5 mii ha în mărime absolută sau cu 10,45; 9,09;

9,09 și 7,69 p.p. în mărime relativă, iar față de anii 2016, 2017, 2018 și 2019 aceasta păstrează aceeași tendință, reducându-se respectiv cu 2; 3; 2 și 1 mii ha în mărime absolută sau cu 3,23; 4,76; 3,23 și 1,64 p.p. în mărime relativă.

Suprafața ocupată de meri de asemenea a înregistrat o tendință negativă, aceasta diminuându-se în anul 2020 comparativ cu anii 2011, 2012, 2013 și 2015 respectiv cu 8; 8; 8 și 5 mii ha în mărime absolută sau cu 12,50; 12,50; 12,50 și 8,20 p.p. în mărime relativă, iar față de anii 2016, 2017, 2018 și 2019 aceasta își păstrează această tendință, fiind mai mică respectiv cu 2; 2; 1 și 1 mii ha în mărime absolută sau cu 3,45; 3,45; 1,75 și 1,75 p.p. în mărime relativă.

În continuare este prezentat graficul suprafețelor de pomușoare, nuci și struguri de masă.

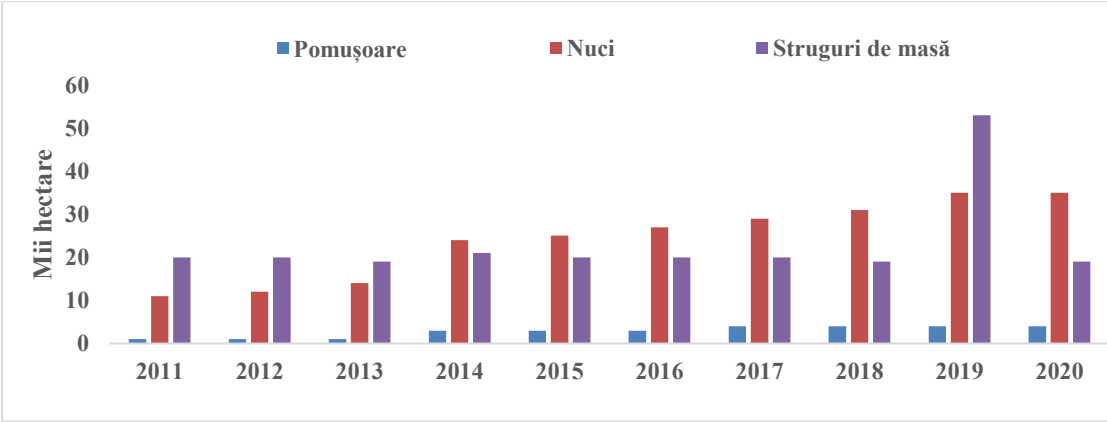

Figura 2. **Suprafața de pomușoare, nuci și struguri de masă în toate categoriile de gospodării, mii ha**

Sursa: elaborată de autor în baza [3]

Suprafața de pomușoare a înregistrat o tendință de majorare, astfel aceasta a crescut în anul 2020 față de anii 2011, 2012 și 2013 respectiv cu 3; 3 și 3 mii ha în mărime absolută sau de 4 ori; 4 ori și 4 ori în mărime relativă, iar în comparație cu anii 2014, 2015 și 2016 aceasta își păstrează aceeași tendință, majorându-se respectiv cu 1; 1 și 1 mii ha în mărime absolută sau cu 33,33; 33,33 și 33,33 p.p. în mărime relativă. Cele mai cultivate pomușoare în Republica Moldova sunt căpșunile, zmeura și coacăza neagră. Unii fermieri autohtoni cultivă pomușoare mai puțin tradiționale, cum sunt: cătina albă, afinul, goji, cornul sau ioșta.

Suprafața de nuci indică un trend pozitiv, sporind în anul 2020 comparativ cu anii 2011, 2012 și 2013 respectiv cu 24; 23 și 21 mii ha în mărime absolută sau de 3,18 ori; 2,92 ori și 2,50 ori în mărime relativă, iar față de anii 2014, 2015, 2016, 2017 și 2018 aceasta își menține tendința, crescând respectiv cu 11; 10; 8; 6 și 4 mii ha în mărime absolută sau cu 45,83; 40,00; 29,63; 20,69 și 12,90 p.p. în mărime relativă. În anul 2020 au fost multe livezi tinere de 5-7 ani care au dat prima roadă.

Seceta din anul 2020 indică necesitatea stringentă de a dota plantațiile de nuci cu sisteme de irigare, fapt care implică costuri enorme. O altă problemă cu care se confruntă producătorii este numărul mic al surselor de apă pentru conectare. Soiurile

vechi de nuci astăzi sunt înlocuite cu soiuri noi, care sunt mult mai productive, având o productivitate de până la 3 tone la hectar.

Suprafața de struguri înregistrează o tendință negativă, astfel aceasta s-a redus în anul 2020 față de anii 2011, 2012, 2014 și 2015 respectiv cu 1; 1; 2 și 1 mii ha în mărime absolută sau cu 5,00; 5,00; 9,52 și 5,00 p.p. în mărime relativă, iar față de anii 2016, 2017 și 2019 tendința este aceeași, aceasta s-a diminuat respectiv cu 1; 1 și 34 mii ha în mărime absolută sau cu 5,00; 5,00 și 64,15 p.p. în mărime relativă. Însă această tendință de diminuare nu e valabilă și în cazul plantațiilor de struguri de masă, cererea pentru struguri de masă pe pieţele regionale fiind în creștere. Este necesar ca producătorii moldoveni să cultive soiuri de struguri apirene, fără semințe, deoarece sunt cerute pe pieţele externe, având un preț avantajos.

Roada medie la hectar a fructelor sâmburoase în toate categoriile de gospodării este prezentată în graficul ce urmează.

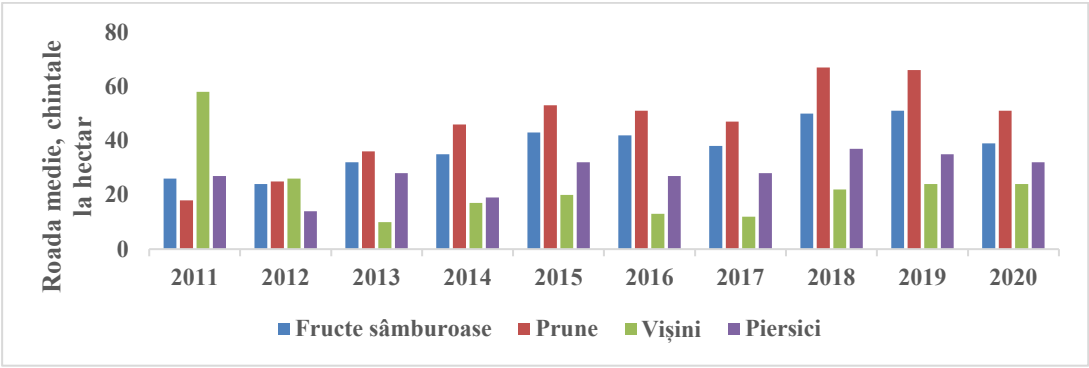

Figura 3. **Roada medie la hectar a fructelor sâmburoase în toate categoriile de gospodării, q la ha**

Sursa: elaborată de autor în baza [3]

Analizând datele graficului de mai sus observăm faptul că roada medie la hectar de sâmburoase, a înregistrat o tendință de creștere, astfel aceasta a crescut în anul 2020 față de anii 2011, 2012, 2013, 2014 și 2017 respectiv cu 13; 15; 7; 4 și 1 chintale la hectar în mărime absolută sau cu 50,00; 62,50; 21,88; 11,43 și 2,63 p.p. în mărime relativă, iar comparativ cu anii 2015, 2016, 2018 și 2019 se observă un trend negativ al dinamicii productivității, astfel aceasta s-a redus respectiv cu 4; 3; 11 și 12 chintale la hectar în mărime absolută sau cu 9,30; 7,14; 22,00 și 23,53 p.p. în mărime relativă.

Roada medie la hectar de prune s-a majorat în anul 2020 în comparație cu anii 2011, 2012, 2013, 2014 și 2017 respectiv cu 33; 26; 15; 5 și 4 chintale la hectar în mărime absolută sau de 2,83 ori, de 2,04 ori și cu 41,67; 10,87 și 8,51 p.p. în mărime relativă, iar față de anii 2015, 2018 și 2019 aceasta a înregistrat o tendință de diminuare, astfel aceasta s-a redus respectiv cu 2; 16 și 15 chintale la hectar în mărime absolută sau cu 3,77; 23,88 și 22,73 p.p. în mărime relativă, cauza fiind înghețurile târzii de primăvară, seceta și grindina.

De asemenea s-a redus și roada medie la hectar de vișine în anul 2020 față de anii 2011 și 2012 respectiv cu 34 și 2 chintale la hectar în mărime absolută sau cu 58,62 și 7,69 p.p. în mărime relativă, iar comparativ cu anii 2013, 2014, 2015, 2016,

2017 și 2018 aceasta a crescut respectiv cu 14; 7; 4; 11; 12 și 2 chintale la hectar în mărime absolută sau de 2,40 ori și cu 41,18; 20,00; 84,62 p.p.; de 2,00 ori și cu 9,09 p.p. în mărime relativă. Problemele cu care se confruntă producătorii țin de protecția contra înghețurilor, prevenirea crăpării fructelor, dar și combaterea bolilor și dăunătorilor.

Roada medie la hectar de piersici a înregistrat o tendință de creștere în anul 2020 față de anii 2011, 2012, 2013, 2014, 2016 și 2017 respectiv cu 5; 18; 4; 13; 5 și 4 chintale la hectar în mărime absolută sau cu 18,52 p.p.; de 2,29 ori; cu 14,29; 68,42; 18,52 și 14,29 p.p. în mărime relativă, iar față de anii 2018 și 2019 aceasta indică un trend negativ, astfel productivitatea s-a redus respectiv cu 5 și 3 chintale la hectar în mărime absolută sau cu 13,51 și 8,57 p.p. în mărime relativă. Înghețurile au afectat în special soiurile timpurii de piersic care erau în faza de înflorire. O altă problemă cu care se confruntă producătorii locali este lipsa posibilității de a iriga. Seceta a afectat calitatea fructelor în anul 2020.

În graficul următor este prezentată producția de sâmburoase.

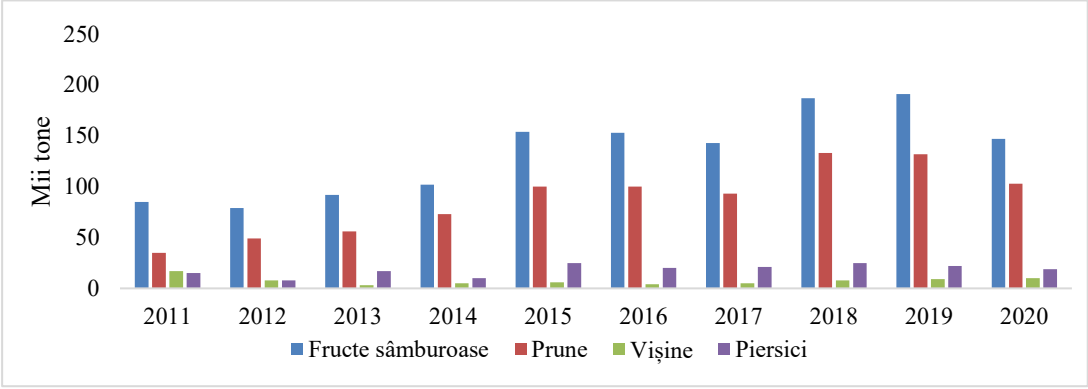

Figura 4. **Producția de sâmburoase în toate categoriile de gospodării, mii tone**
Sursa: elaborată de autor în baza [3]

Din datele graficului de mai sus reiese faptul că producția de sâmburoase a înregistrat o tendință de creștere, astfel aceasta s-a majorat în anul 2020 față de anii 2011, 2012, 2013, 2014 și 2017 respectiv cu 62; 68; 55; 45 și 4 mii tone în mărime absolută sau cu 72,94; 86,08; 59,78; 44,12 și 2,80 p.p. în mărime relativă, motivul fiind creșterea suprafeței și a roadei medii la hectar în această perioadă, iar față de anii 2015, 2016, 2018 și 2019 cantitatea obținută înregistrează un trend negativ, astfel aceasta s-a diminuat respectiv cu 7; 6; 40 și 44 mii tone în mărime absolută sau cu 4,55; 3,92; 21,39 și 23,04 p.p. în mărime relativă, cauza fiind reducerea suprafeței cultivate și a roadei medii la hectar. Seceta a cauzat reducerea cantității obținute. Producătorii care irigau din lacuri, acestea au secat, iar cei care irigau din râurile Nistru și Prut au dus lipsă de apă, deoarece era necesară irigarea neîntreruptă.

Producția de prune a înregistrat o tendință de creștere în anul 2020 față de anii 2011, 2012, 2013, 2014, 2015, 2016 și 2017 respectiv cu 68; 54; 47; 30; 3; 3 și 10 mii tone în mărime absolută sau de 2,94 ori; de 2,10 ori; cu 83,93; 41,10; 3,00; 3,00 și 10,75 p.p. în mărime relativă, motivul fiind creșterea roadei medii la hectar, iar față de anii 2018 și 2019 aceasta indică un trend negativ, adică s-a redus respectiv cu 30 și 29

mii tone în mărime absolută sau cu 22,56 și 21,97 p.p. în mărime relativă, cauza fiind reducerea atât a suprafeței cultivate, cât și a roadei medii la hectar. Din cauza pandemiei unii producători au fost nevoiți să pună fructele la frigider. Înghețurile (în luna aprilie temperaturile au ajuns până la minus 13 grade), urmate de secetă au redus recolta de prune în anul 2020. Ca rezultat prunele au avut o dimensiune mai mică.

Cantitatea de vișine obținută înregistrează o tendință de creștere, astfel aceasta s-a majorat în anul 2020 comparativ cu anii 2012, 2013, 2014 și 2015 respectiv cu 2; 7; 5 și 4 mii tone în mărime absolută sau cu 25,00 p.p.; de 3,33 ori; de 2,00 ori; cu 66,67 p.p. în mărime relativă, motivul fiind creșterea roadei medii la hectar în această perioadă, iar față de anii 2016, 2017, 2018 și 2019 aceasta își menține trendul pozitiv, sporind respectiv cu 6; 5; 2 și 1 mii tone în mărime absolută sau de 2,50 ori; de 2,00 ori; cu 25,00 și 11,11 p.p. în mărime relativă, această majorare se datorează creșterii roadei medii la hectar. Recolte mai bune au fost obținute în livezile dotate cu sisteme de irigare și sisteme antigrindină, totuși o parte din acestea au fost afectate de înghețurile de primăvară în anul 2020.

Producția de piersici obținută indică o tendință pozitivă, astfel aceasta s-a majorat în anul 2020 față de anii 2011, 2012, 2013 și 2014 respectiv cu 4; 11; 2 și 9 mii tone în mărime absolută sau cu 26,67 p.p.; de 2,38 ori; cu 11,76 și 90,00 p.p. în mărime relativă, motivul fiind creșterea roadei medii la hectar în această perioadă, iar față de anii 2015, 2016, 2017, 2018 și 2019 aceasta demonstrează un trend negativ, indicând faptul că s-a diminuat respectiv cu 6; 1; 2; 6 și 3 mii tone în mărime absolută sau cu 24,00; 5,00; 9,52; 24,00 și 13,64 p.p. în mărime relativă, cauza fiind reducerea roadei medii la hectar ca urmare a lipsei de precipitații în luna august.

În continuare este prezentat graficul producției de pomușoare, nuci și struguri.

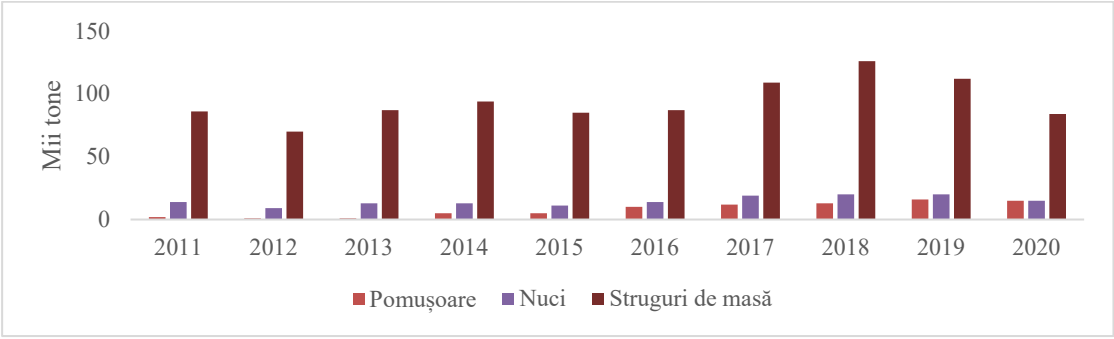

Figura 5. **Producția de pomușoare, nuci și struguri de masă în toate categoriile de gospodării, mii t**

Sursa: elaborată de autor în baza [3]

Din datele graficului de mai sus reiese faptul că producția de pomușoare înregistrează o creștere în anul 2020 față de anii 2011, 2012, 2013, 2014 și 2015 respectiv cu 13; 14; 14; 10 și 10 mii tone în mărime absolută sau de 7,5; 15,00; 15,00; 3,00 și 3,00 ori în mărime relativă, motivul fiind creșterea suprafeței și a roadei medii la hectar în această perioadă, iar față de anii 2016, 2017 și 2018 trendul pozitiv se menține, astfel aceasta a sporit respectiv cu 5; 3 și 2 mii tone în mărime absolută sau cu 50,00; 25,00 și 15,38 p.p. în mărime relativă datorită creșterii suprafeței cultivate.

Înghețurile târzii de primăvară și seceta din anul 2020 a determinat creșterea importului de mure din Ucraina și a căpșunilor din Grecia.

Unele dintre problemele cu care se confruntă producătorii locali de pomușoare sunt: lipsa lucrătorilor sezonieri la recoltare, capacitatea redusă a depozitelor frigorifice, capacități reduse de congelare rapidă a pomușoarelor. Este necesar ca producătorii de bacifere să investească în spații protejate în scopul de a diminua riscurile cauzate de condiții climaterice, cum ar fi înghețurile de primăvară sau ploile în perioada de recoltare.

Producția de nuci indică o tendință de creștere, astfel aceasta s-a majorat în anul 2020 față de anii 2011, 2012, 2013, 2014, 2015 și 2016 respectiv cu 1; 6; 2; 2; 4 și 1 mii tone în mărime absolută sau cu 7,14; 66,67; 15,38; 15,38; 36,36 și 7,14 p.p. în mărime relativă, motivul fiind creșterea suprafeței cultivate, însă față de anii 2017, 2018 și 2019 se observă un trend negativ, aceasta diminuându-se respectiv cu 4; 5 și 5 mii tone în mărime absolută sau cu 21,05; 25,00 și 25,00 p.p. în mărime relativă, cauza fiind reducerea roadei medii la hectar de nuci ca urmare a înghețurilor de la sfârșitul lunii aprilie și secetei prelungite vara. La sfârșitul lunii iulie, începutul lunii august în unele plantații nucile au început să cadă.

Cantitatea de struguri de masă obținută înregistrează o tendință de scădere, astfel aceasta s-a redus în anul 2020 comparativ cu anii 2011, 2013, 2014, 2015, 2016, 2017, 2018 și 2019 respectiv cu 2; 3; 10; 1; 3; 25; 42 și 28 mii tone în mărime absolută sau cu 2,33; 3,45; 10,64; 1,18; 3,45; 22,94; 33,33 și 25,00 p.p. în mărime relativă, cauza fiind reducerea atât a suprafeței cultivate, cât și a roadei medii la hectar în această perioadă. Influență negativă asupra roadei medii la hectar a avut seceta severă, înghețul de primăvară, temperaturile joase din luna mai și grindina. Comparativ cu anul 2012 nivelul acestui indicator a sporit cu 14 mii tone în mărime absolută sau cu 20,00 p.p. în mărime relativă, această majorare se datorează creșterii roadei medii la hectar.

Importul de fructe comestibile și nuci; coji de citrice sau de pepeni este redat în graficul următor.

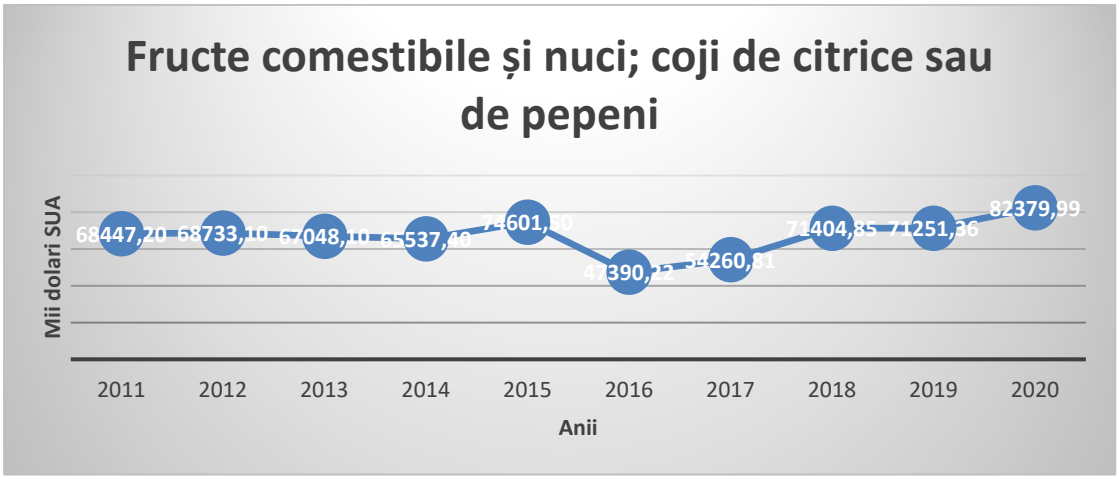

Figura 6. **Importul de fructe comestibile și nuci; coji de citrice sau de pepeni**
Sursa: elaborată de autor în baza [4]

Din datele graficului de mai sus reiese faptul că importul de fructe comestibile și nuci; coji de citrice sau de pepeni înregistrează o tendință de creștere, astfel acesta s-a majorat în anul 2020 față de anii 2011, 2012, 2013, 2014, 2015 respectiv cu 13932,79; 13646,89; 15331,89; 16842,59 și 7778,49 mii dolari SUA în mărime absolută sau cu 20,36; 19,85; 22,87; 25,70 și 10,43 p.p. în mărime relativă, iar față de anii 2016, 2017, 2018 și 2019 trendul se menține, astfel valoarea importului a crescut respectiv cu 34989,77; 28119,18; 10975,14 și 11128,63 mii dolari SUA sau cu 73,83; 51,82; 15,37 și 15,62 p.p. în mărime relativă.

"Deși ne place să credem că Republica Moldova este o țară agrară, iar agricultura este un sector economic strategic, continuăm activ să creștem importul de fructe și legume.

Astfel, Republica Moldova a importat legume și fructe din 26 de țări, acestea fiind: Turcia, Belarus, Germania, Olanda, Franța, Polonia, Federația Rusă, Ucraina, Egipt, Israel, România, Azerbaidjan, Lituania, Italia, Spania, Macedonia, Albania, Uzbechistan, China, Grecia, Pakistan, Ecuador, Iran, Africa de Sud, Serbia.

Cel mai activ partener de import pentru legume și fructe rămâne a fi Turcia. Din această țară am importat roșii, varză, vinete, dovleci, ardei dulci, conopidă, castraveți, țelină, mărar, pătrunjel, citrice, mere, fructe exotice, cireșe, vișine, gutui, afine, piersici și caise [5]".

"În timp ce produsele noastre cuceresc marile piețe ale lumii, din lipsă de alternativă, moldovenii sunt nevoiți să cumpere morcovi, mere şi cartofi din Polonia, Turcia sau Ucraina. Şi asta pentru că atât producătorii, cât şi reprezentanții rețelelor comerciale nu reușesc să stabilească contracte de colaborare. Agenţia Naţională pentru Siguranţa Alimentelor (ANSA) îşi propune să remedieze situaţia şi a decis să le vină în ajutor. Fructele noastre au cucerit piețele europene, însă în magazinele de la noi cu mare greu găseşti un măr moldovenesc. Şi asta pentru că majoritatea rețelelor comerciale nu au încheiat contracte cu producătorii. Din lipsă de alternativă, comercianții sunt nevoiți să importe fructe şi legume, iar producătorii noştri să le vândă departe de casă. Doar anul trecut, au fost exportate peste 170 de mii de tone de mere, în creştere cu 9 la sută faţă de 2016 [6] ".

„Pe o piaţă atât de mică, ne înghesuim și producătorii mici, şi mari, şi dacă vedem că nu avem posibilitate să vindem pe piaţa noastră, căutăm căi pentru export, acolo unde este solicitată marfa, uităm de magazinele noastre, de consumatorii noştri", a menționat președintele Asociației Producătorilor și Exportatorilor de Fructe „Moldova Fruct", Vitalie Gorincioi.

"Potrivit specialiștilor, în unele magazine, aproape 40 la sută din fructe şi legume sunt din import. Reprezentanţii rețelelor comerciale dau vina însă pe producători şi spun că majoritatea dintre ei nu s-au conformat standardelor [6]. "

„Produsele de import după calitate sunt mai bune. Ele nu-s mai ieftine, sunt la un preţ ca şi ale noastre. Anul trecut am adus mere din Polonia, după calitate cu mult mai bune, ei îndeplinesc toate cererile", a specificat reprezentanta unei rețele comerciale, Angela Stolbnicov. [6] "

„Pe de altă parte, producătorii spun că sunt deschiși spre colaborare. „Noi ne declarăm deschiderea pentru a colabora şi a aduce produse consumatorului local. Suntem dispuși să lucrăm la ridicarea standardelor de calitate a fructelor care se vând în unitățile de comerț", a punctat directorul executiv „Moldova Fruct", Iurie Fală [6].

Concluzii. Producția de sâmburoase a înregistrat o creștere în anul 2020 față de anii 2011, 2012, 2013, 2014 și 2017, motivul fiind creșterea suprafeței și a roadei medii la hectar în această perioadă, iar față de anii 2015, 2016, 2018 și 2019 acest indicator atestă un trend descrescător, cauza fiind reducerea suprafeței cultivate și a roadei medii la hectar ca urmare a secetei. Irigarea din lacuri a provocat secarea lor, dar și irigarea continuă din râurile Nistru și Prut nu a fost posibilă de realizat.

Trendul la producția de prune este unul în creștere, astfel aceasta s-a majorat în anul 2020 față de anii 2011, 2012, 2013, 2014, 2015, 2016 și 2017, motivul fiind creșterea roadei medii la hectar, iar față de anii 2018 și 2019 se atestă o tendință de diminuare a acestui indicator, cauza fiind reducerea atât a suprafeței cultivate, cât și a roadei medii la hectar de prune care a fost afectată de calamități în anul 2020. Multe livezi de prun au înghețat.

La cantitatea de vișine obținută se observă o tendință de majorare în anul 2020 comparativ cu anii 2012, 2013, 2014, 2015, 2016, 2017, 2018 și 2019, aceasta a fost posibil datorită creșterii roadei medii la hectar în livezile care dispun de sisteme de irigare și sisteme antigrindină.

Cât privește producția de piersici obținută, putem spune că aceasta atestă o majorare în anul 2020 față de anii 2011, 2012, 2013 și 2014, motivul fiind creșterea roadei medii la hectar în această perioadă, iar față de anii 2015, 2016, 2017, 2018 și 2019 mărimea acestei culturi s-a diminuat, motivul fiind reducerea roadei medii la hectar din cauza condițiilor climaterice nefavorabile în anul 2020.

La producția de pomușoare se înregistrează un trend pozitiv pe parcursul perioadei analizate, aceasta majorându-se în anul 2020 față de anii 2011, 2012, 2013, 2014 și 2015, motivul fiind creșterea suprafeței și a roadei medii la hectar în această perioadă, iar față de anii 2016, 2017 și 2018 aceasta a sporit datorită creșterii suprafeței cultivate.

Producția de nuci a înregistrat o creștere în anul 2020 față de anii 2011, 2012, 2013, 2014, 2015 și 2016, motivul fiind creșterea suprafeței cultivate, iar față de anii 2017, 2018 și 2019 tendința este de diminuare, motivul fiind reducerea roadei medii la hectar de nuci din cauza condițiilor climatice severe în perioada vegetației în anul 2020.

Cantitatea de struguri de masă obținută atestă o tendință de diminuare în anul 2020 comparativ cu anii 2011, 2013, 2014, 2015, 2016, 2017, 2018 și 2019, cauza fiind reducerea atât a suprafeței cultivate, cât și a roadei medii la hectar în această perioadă ca urmare a iernii secetoase și înghețurilor de primăvară în anul 2020, iar față de anul 2012 aceasta a sporit, această majorare se datorează creșterii roadei medii la hectar.

Importul de fructe comestibile și nuci; coji de citrice sau de pepeni a crescut în anul 2020 față de anii 2011, 2012, 2013, 2014, 2015, 2016, 2017, 2018 și 2019, acest fapt fiind cauzat de înghețurile de primăvara și seceta din anul 2020

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