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MODELING OF INNOVATION AND INVESTMENT DEVELOPMENT OF AGRICULTURAL ENTERPRISES IN THE CONTEXT OF ENSURING THEIR FINANCIAL SECURITY

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ABSTRACT: The purpose of the article is to study the impact of investment and innovation development of agricultural enterprises on the financial security level. In today's economy, one of the most common causes of a financial crisis at an enterprise is the lack of an effective mechanism for managing financial security. Especially in the context of neutralising the risks of doing business, it is important to ensure the investment and innovation development of agricultural enterprises. The study used scientific methods: abstract and logical – for theoretical generalisations and conclusions, tabular and graphical – for visualisation of the study results; analysis and synthesis – to find out the reasons that determine the change in the financial security level of the studied enterprises. The study results presented in this paper are important for formulating offers for investment and innovation development in the context of ensuring an adequate level of agricultural enterprises' financial security.

KEYWORDS: innovation and investment development, financial security, enterprises

Introduction

The situation in Ukraine in recent years due to the military conflict and the pandemic has had negative consequences for the development of the country's economy in general and individual industries in particular. Improving the financial security of agricultural enterprises is important, as the agricultural sector is a budget-forming industry. It should be understood that one of the important factors in addressing this issue is to attract additional financial resources for the use of innovative technologies. However, the unstable economic and political situation in the country has a negative impact on the attractiveness of innovation and investment in agricultural enterprises. Therefore, attracting additional investments and increasing the level of innovation activity should be important and considered in the complex as a component of their financial security.

The development of the agricultural sector of the economy requires priority changes related to the efficient use of the resource base and its constant renewal, and introduction of resource-saving innovative technologies into the production process, which will help to improve the quality of products and increase their competitive advantages in the market. The most efficient use of resources in the agricultural production process is one of the conditions for stimulating the development of Ukraine's economy to ensure food security and increase export potential. Balancing the social, environmental and economic components of agricultural enterprises' development requires the introduction of an innovative component in this process as well.

An overview of the literature

A considerable number of scientific publications are devoted to the issues of innovation and investment development of enterprises, which confirms the importance of studying this economic category (Piątkowski, 2020; Angowski et al., 2015). In particular, there is a point of view that in order to achieve sustainable agricultural development, constant investment and implementation of innovative approaches are necessary if the goal of such development is to achieve higher agricultural productivity and reduce the negative impact on the environment (Coca et al., 2017).

The same opinion in their studies was shared by Knierim et al. (2014) argued that in order to achieve higher volumes of agricultural production, it is necessary to direct stable investment flows and increase the level of innovative technologies in agriculture (Spielman & Birner, 2008).

Zakharin (2010) in his research also emphasizes that it is advisable to study not innovation and investment activity, but the impact of investment support on the innovative activity development or to consider the attraction of investment sources as the basis for the implementation of innovative processes.

Mykhailovska (2009) holds a completely opposite view, substantiating the systematic nature of innovation and investment activities. The unity of innovation and investment activities can be explained by the investor's motives. For an individual investor, this may include the amount of equity capital, social status, etc.; for a company, certain competitive positions, profit margin and other planned parameters. The investor seeks to invest in the modernisation of technologies in order to maintain or increase the market share, to finance scientific research in order to create new technologies on their basis that will provide an advantage over competitors.

Melnyk (2018) considers the innovation and investment development of an enterprise as a process of improving the technical and economic indicators of its activities, the purpose of which is to increase the capitalized market value of the enterprise, to ensure the welfare of owners and main consumers of products, taking into account the environmental component on an innovative basis.

According to Semchuk (2015), innovation and investment development of an enterprise is a systematic improvement of technical and economic indicators of its production activities, improvement of the conditions of its functioning in a competitive market as a result of the introduction of innovations supported by investment financing.

Some studies have been conducted on the impact of the level of innovation use in agriculture on the costs incurred. In particular, in their studies, Schut et al. (2016) as well as Krozer (2008) noted that innovation processes provide for a reduction in production costs in agriculture.

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It is also worth noting that innovations have a positive impact on the growth of a company's environmental efficiency by promoting the practice of preserving natural resources and the environment (Kingwell & Fuchsbichler, 2011).

When developing the Common Agricultural Policy (CAP), EU member states consider that an important element of it is the assessment of the potential contribution that scientific research and innovation can make to agriculture. Numerous studies in this area consider scientific agricultural research to play a major role in developing new solutions aimed at increasing productivity in this sector (Padgette, 2013; Zhou et al., 2010), increasing the degree of natural resource exploitation (Pannell et al., 2014), and reducing the negative impact of natural factors on the volume of agricultural production (Sivertsson & Tell, 2015; Srbinovska et al., 2015; Włodarczyk & Domańska, 2008).

The strategy for agricultural development and the introduction of innovative approaches in this area raises many other issues. One of the most important factors affecting the level of use innovation in agriculture is generational change. A study on the pace of innovation in the agricultural sector in EU member states found that farm owners who were younger were generally more likely to adopt innovations. At the same time, older farmers were less interested in using innovative approaches in their own activities. The decision-making of older farmers can be justified, among other things, by their lower level of education and more negative attitude to changes in production processes (Mceldowney, 2019).

The above mentioned issues indicate the need for further research on issues related to the investment and innovation model of agricultural enterprises' development in order to increase their financial security.

Results of the research

A study of the problems of organising innovation activities at Ukrainian enterprises has revealed that, along with the absence of effective state programs to support and finance innovation projects lack of own working capital at enterprises, the introduction of innovations often requires much higher costs than expected when making a decision to innovate; potentially effective innovations are not implemented or are implemented with a long delay in time (due to errors in estimating the timing of implementation, resistance to innovation, imperfect organisation of innovation processes, and lack of a developed innovation infrastructure). The importance of bringing a company's innovation to market (e.g., a new product or service) as quickly as possible relates to the problem of reducing the innovation cycle duration. After all, any innovation is systemic in nature and spreads in all areas of the enterprise's activity. It is the main factor in economic growth (Halushchak & Zharovska, 2012).

The importance of studying the innovation and investment component of enterprise development in the complex is related to the fact that the provision and implementation of innovative technologies and programs directly depend on the possibility of their financing. Since enterprises have limited financial resources that can be directed to innovative development, it is important to attract external resources, including investment resources. Attracting investment resources to finance innovative technologies is of primary importance and requires investors' interest in their implementation.

With regard to the factors that influence the level of innovation and investment activity of enterprises, different scholars distinguish their own set of factors depending on various features. The study found that the factors of influence are considered separately in terms of investment attractiveness and innovation activity. The main factors that determine the level of investment attractiveness of enterprises include the state of development of the country's economy, the level of economic and financial security, the state of the shadow economy, the environmental situation in the country, the level of inflation, risk insurance, and others. In particular, it is worth noting the methodology of grouping investment attractiveness factors offered by Butko et al. (2005) which is based on the structural criterion, i.e., they distinguish groups of factors that change the level of investment potential, investment risk and investment activity.

The main components of the enterprise's investment attractiveness should include a certain set of components, in our opinion, the primary importance is given to natural, labor, production, innovation, institutional, infrastructure and other sets. That is, a number of researchers consider the innovation component as an element that determines the investment attractiveness of enterprises.

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When considering the innovation activity of enterprises, scholars propose to classify direct influence factors on internal and external ones. That is, to identify factors that enterprises can affect and increase the level of their innovation activity and factors that directly depend on the situation in the country and in the world as a whole.

If we consider the innovation and investment component of an enterprise's activity, the set of influence factors does not change significantly since the main ones leave an impact on both innovation activity and investment attractiveness. Most scholars in their studies offer to group these factors by territory. However, it should be understood that this division is rather complicated, as there are factors that have the same impact at different levels, in particular, at the state and regional levels. Such factors include inflation, natural and climatic conditions, stability of the financial and credit system, etc.

The author's interpretation of the factors of influence on the innovation and investment component of enterprises' activities is based on the fact that their grouping takes place at the macro level (does not directly depend on the activities of an individual enterprise) and at the micro level (determined by the main financial and economic indicators of activity and the available resource potential) (Fig. 1). One of the important characteristics of these factors is the possibility of their quantitative characterisation using mathematical models.

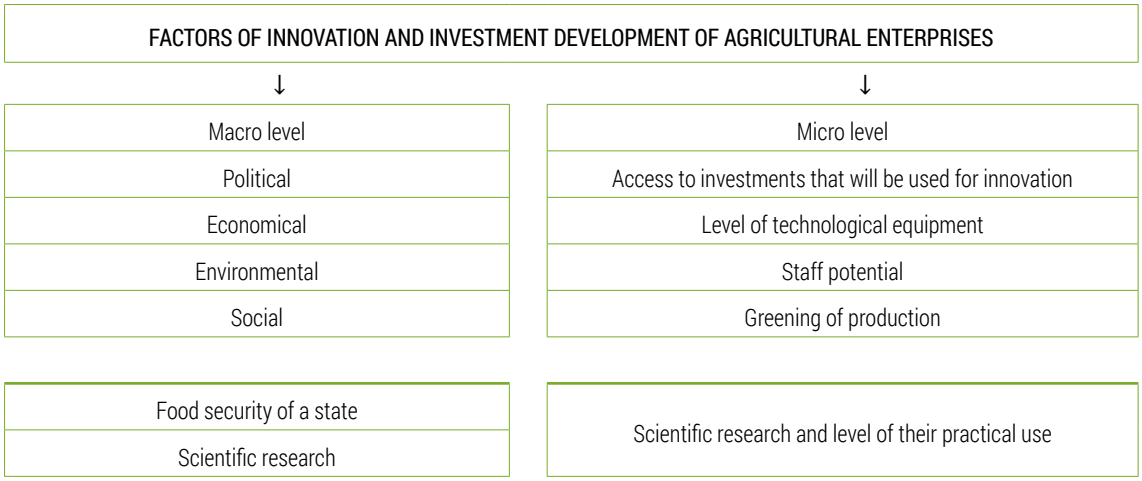


Figure 1. Factors of innovation and investment development of agricultural enterprises

If we look at macro-level factors, it is worth noting that they are quite important because attracting additional investment, especially foreign investment, is important for enterprises. Foreign investors primarily assess the situation in the country. In particular, there was a significant decrease in attracted investment resources in 2014-2015. This situation was primarily due to the military conflict in the east of Ukraine and the economic and political crisis that was observed in early 2014.

Legislative stability in the country is a rather important factor, as potential investors seek to protect their interests, in particular through the adoption of relevant regulations. The issue of tax legislation stability is quite important, but we see constant changes to the Tax Code of Ukraine, which discourages potential investors. The issue of privileges for agricultural enterprises that use innovative production technologies, especially in terms of environmental innovations, is quite important.

Environmental factors are equally important due to the introduction of product quality standards in line with European ones. A significant part of the natural and climatic zones is quite polluted due to the development of industrial enterprises, which is a limiting factor for potential investors (Davydenko et al., 2021).

A study of the country's innovation activity in the international market is quite important when assessing the innovation and investment attractiveness of enterprises. One of the important factors of economic growth in general and of each individual entity in particular is the level of innovation activity and constant innovation and technological renewal of the industry. An important sign of

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increasing innovation potential is the constant increase in scientific knowledge, technological modernisation of production activities, introduction of information technologies and accumulation of intangible assets.

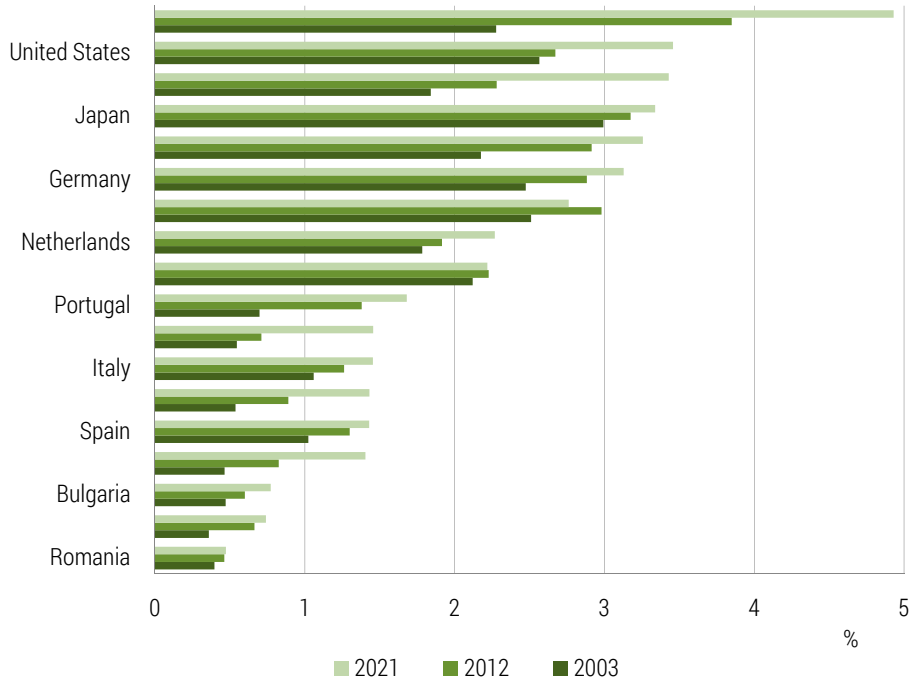


Figure 2. Total government budget allocations for R&D, % of gross domestic product (GDP)
Source: authors' work based on Eurostat (2023) and OECD (2023).

Figure 2 shows the amount of investment in R&D in the period from 2003 to 2021 by different countries of the world. When considering the EU's long-term strategy for scientific research in agriculture, the links between the CAP and the EU's scientific research and innovation policy are identified. The analysis of studies on the actual or potential impact of funding scientific research aimed at increasing the level of innovation in the field of technical and technological support for agricultural production indicates a link between such investments and productivity growth in agriculture (Mceldowney, 2019).

The Final Report Summary – IMPRESA (Impact of Research on EU Agriculture) analysed the difference between publicly funded research and directly funded research by agricultural enterprises (private investment), focusing on the objectives and results obtained from such investments.

The study found that private R&D was mainly aimed at consolidating production in order to improve the financial performance of the enterprise, while public research had more complex ways of making an impact and was primarily aimed at food security and increasing competitiveness, as well as improving the quality of life. It was also noted that public R&D focused more on the sustainability of farming systems and food quality. The situation is quite different when we analyse private R&D. The primary goal is to increase agricultural productivity and strengthen the company's position in the market.

It is worth noting that there are differences not only in terms of the funding source of such research (public or private R&D) but also in terms of the geography of the funding objects. It was found that investments in research are disproportionately distributed geographically. In the East, the EU member states were characterised by high land cultivation, relatively low productivity, and low levels of scientific research funding (about 6% of total state budget allocations were directed to research in the sector). At the same time, more economically developed EU member states allocate a significant portion of their cash flows to scientific research aimed at improving the efficiency of agricultural products. The above is confirmed by studies on the correlation between innovation and

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agricultural performance in EU member states, which found that in countries such as Finland, Denmark, the Netherlands, and Belgium, R&D expenditures account for more than 10% of gross agricultural value-added (Coca et al., 2017). The lowest levels of investment in scientific research were recorded in Romania (0.6%), Bulgaria (1%), and Slovakia (1.1%).

A number of studies have confirmed the close correlation between investment in agricultural enterprises and productivity growth in agriculture (Figure 3).

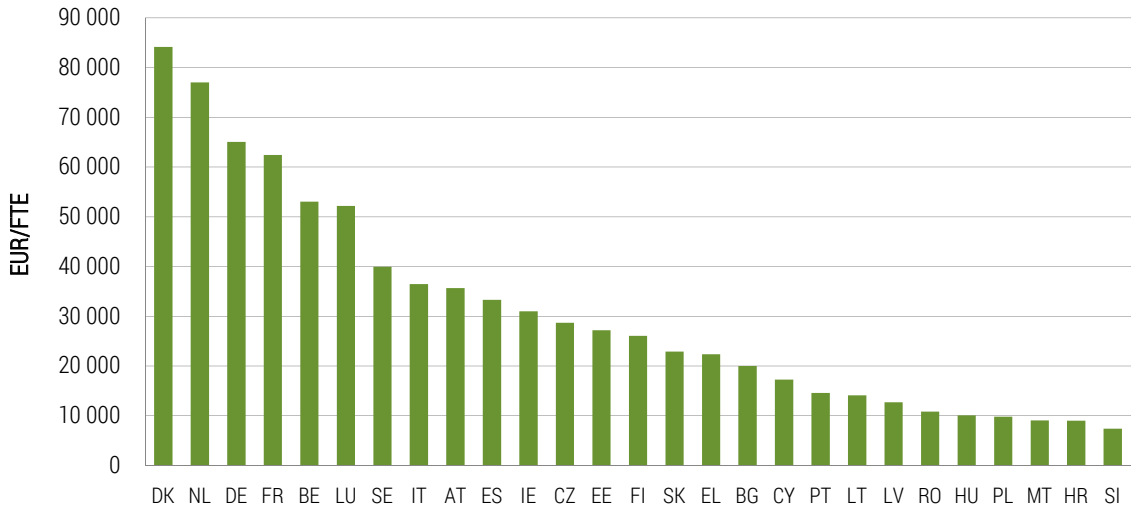


Figure 3. Labour productivity in agriculture (EUR/FTE)

Source: authors' work based on Eurostat (2023).

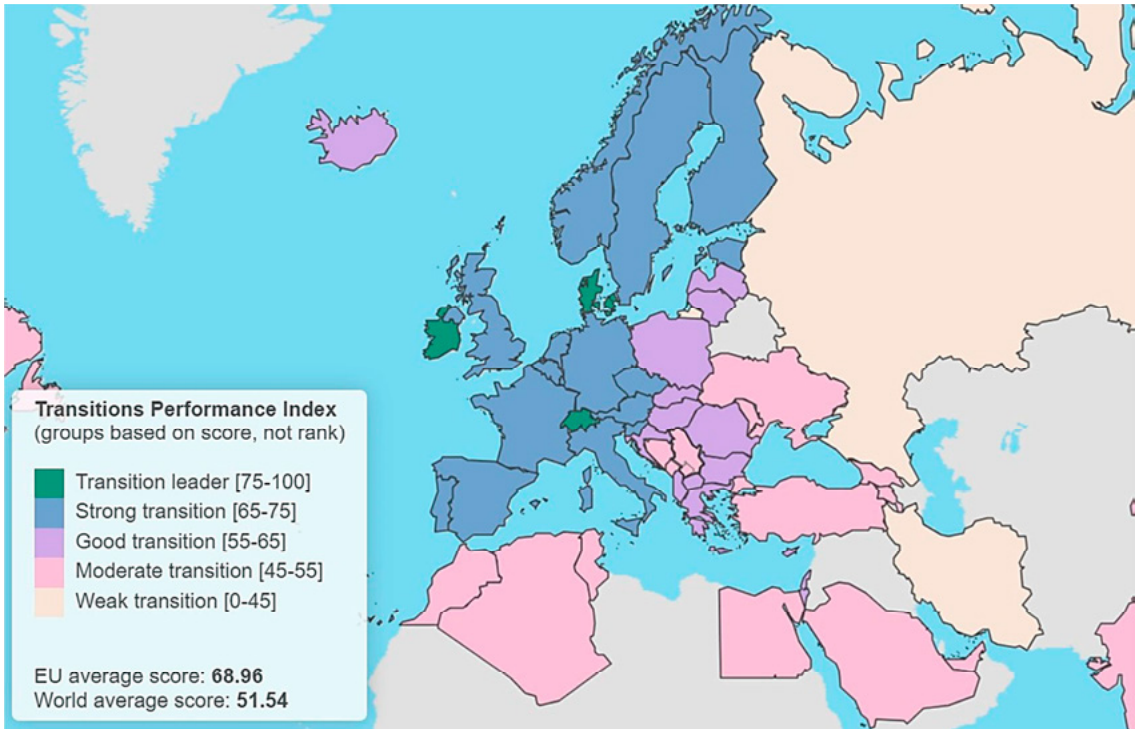


Figure 4. Transitions Performance Index

Source: authors' work based on European Commission (2023).

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Research conducted by Coca et al. (2017) on the correlation between innovation and agricultural performance at the level of all EU member states confirmed that agricultural productivity is significantly higher, especially in countries where farmers have special education and have high rates of investment in research and development. These countries include, in particular, the USA, China, the Netherlands, Sweden, Belgium, and Luxembourg.

An important indicator of innovation activity is the Global Innovation Index, which provides a multidimensional assessment of the national innovation sphere, which involves determining the position of each individual country in terms of innovation development in the global context.

Figure 4 shows the Transitions Performance Index (TPI), an index that measures progress towards sustainable development. This index makes it possible to rank countries based on four components that contribute to sustainable development, namely:

- economic component (education, population welfare, labour productivity, scientific research intensity),
- social component (healthy lifestyle, additional job opportunities, etc.),
- environmental component (reduction of greenhouse gas emissions, biodiversity, alternative energy sources),
- governance component (legal support, security, transparency, transparent public finances).

These indicators are the basis for a new model of prosperity of Europe and the world. All EU countries and 45 other countries are included in the TPI.

In addition to comparative analysis, this indicator, based on a comprehensive and unique data set, makes it possible to identify the relative strengths and weaknesses of national innovation systems and becomes an important tool for assessing the effectiveness of the state's innovation policy. The rating covers more than 120 countries at different levels of innovation development (Yerina, 2016).

An analysis of the dynamics of the Global Innovation Index (Figure 5) shows that Ukraine has significantly increased its position in the international market. In particular, during 2013-2021, Ukraine rose from 71st position in the ranking to 49th position in 2021, with an index value of 35.6, and entered the TOP 3 Lower Middle Income Group.

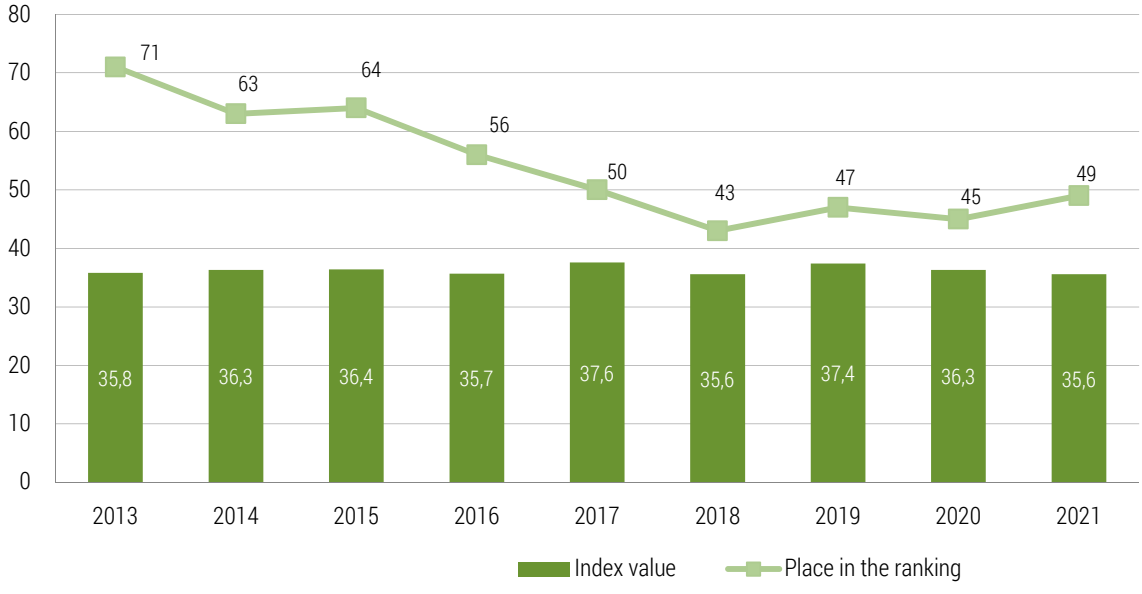


Figure 5. Positioning of Ukraine in the Global Innovation Index ranking in 2013-2021

Source: authors' work based on Dutta et al. (2020).

However, there is a loss of positions compared to 2020, which is due to a significant loss of Ukraine's position in terms of the indicator of the results of the use of knowledge and technology (in 2020, the country ranked 25th according to this indicator, then in 2021 it dropped to 33rd place in the ranking).

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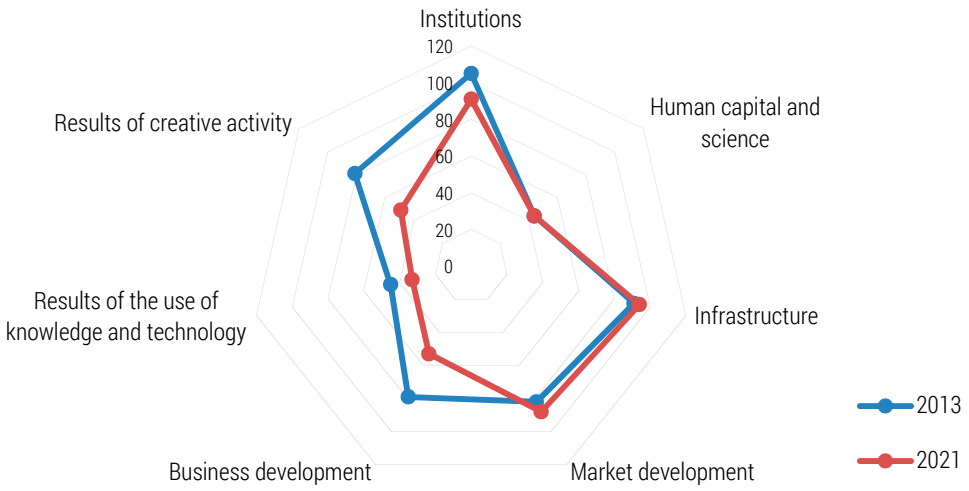


Figure 6. Key components of the Global Innovation Index in 2013 and 2021

Source: authors' work based on Dutta et al. (2020).

The analysis shows (Figure 6) that Ukraine's position is increasing in almost all components of the Global Innovation Index. In particular, the greatest strengthening of Ukraine's position can be seen in the results of creative activity, where the country has risen in the ranking from 81st place in 2013 to 44th in 2021. Improvement of the position in the business development ranking is also important. In 2013, Ukraine was ranked 79th, and in 2021, the country moved up to 53rd position in the ranking. There has been a significant increase in positions during the study period in terms of the results of the use of knowledge and technology, but compared to 2020, it is worth noting a slight decrease in this indicator.

As for the negative factors, we can see rather low positions during the study period for such indicators as institutions and infrastructure – 91st and 94th place, respectively, in 2021. Ukraine lost its position only in market development – the country fell 6 places in this ranking and took 88th place in 2021.

The study of Ukraine's position in the international market clearly shows that its potential for innovation activity is increasing, which is a positive dynamic. However, the use of innovative technologies in the context of Ukraine's sectoral activities is uneven and requires significant improvement. To intensify innovation and investment activity, the relevant preconditions should be developed at the state level, which should be based mainly on financial and economic methods of regulating economic activity and stimulating the development of enterprises.

The agrarian sector of the economy is important in the development of the national economy as a whole. It is connected, first of all, with ensuring the food security of the state. Despite the rather difficult situation in the country, the agricultural sector has a production potential that significantly exceeds the needs of the domestic market. This industry, on the one hand, plays a significant role in the development of the national economy and promotes integration into the world economic space, and on the other hand, it ensures the development of rural areas and increases the income of the rural population.

The share of the agricultural sector of Ukraine's economy in the total volume of the gross domestic product has rather heterogeneous dynamics. Thus, the highest indicated indicator was in 2015 and amounted to 12.1%; starting from 2016, the indicated indicator tended to decrease and in 2021 amounted to 10.6%. It is worth noting the slight positive changes, in particular, the increase in the share of the agricultural sector in the total volume of GDP in 2021 compared to 2020 by 1.3%. As for the share of the agricultural sector in the total amount of gross added value, there is a fluctuation of the specified indicator in the range of 10.0-14.2%. Thus, the lowest value of this indicator was 10.0% in 2013; in the next few years, its growth to 14.2% in 2015 is followed. From 2016 to 2021, the heterogeneous dynamics of the studied indicator will be followed. It is noted that in 2021, its growth compared to 2020 is noted, which is due to obtaining significant financial results due to favourable natural and climatic conditions in the specified year (Figure 7).

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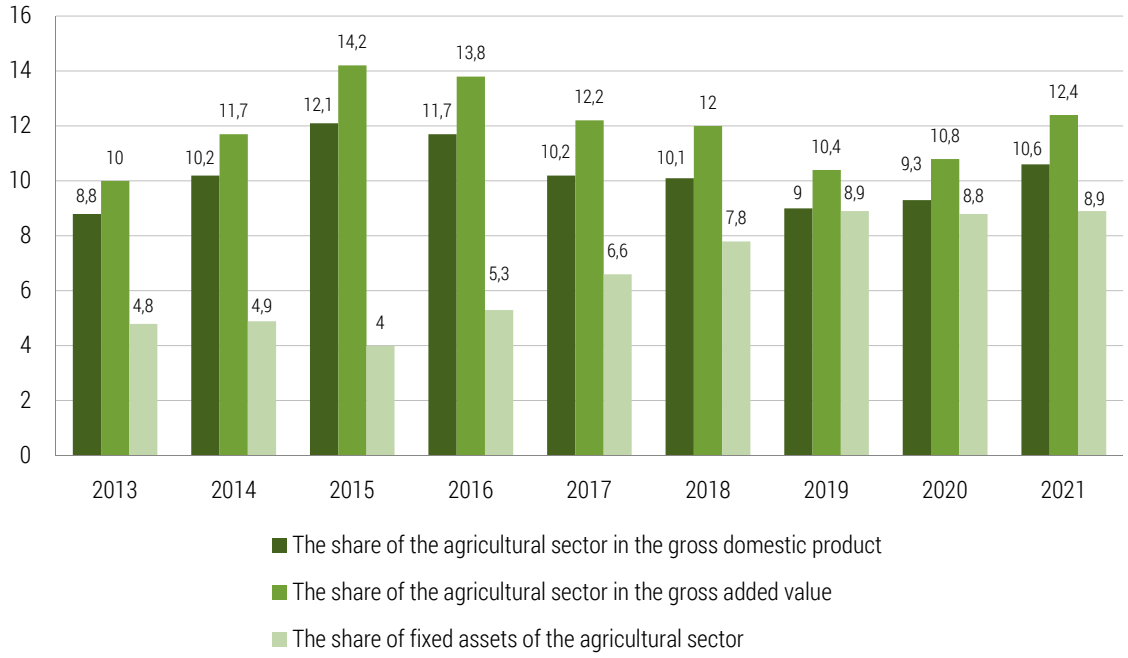


Figure 7. The specific weight of the agricultural sector in the economy of Ukraine, 2013-2022 [%]
Source: authors' work based on State Statistics Service of Ukraine (2023).

The internal environment factors that directly affect the investment and innovation development of agricultural enterprises characterise the main indicators of the enterprise's performance. These factors are more controllable, and the enterprise can directly influence them. The main ones are resource and staffing, as well as economic performance, which can be used to introduce innovations into the production process (Table 1).

Table 1. Key performance indicators of agricultural enterprises that indicate the possibility of innovation and investment development in 2013-2021

Indicators	Years								
	2013	2014	2015	2016	2017	2018	2019	2020	2021
Financial results before tax, EUR million	1429.0	1380.7	4261.9	3219.4	2319.2	2283.6	3134.7	2669.8	7429.8
Net profit, EUR million	1408.1	1363.9	4211.2	3156.6	2283.5	2251.2	3096.4	2630.9	7393.4
Net profit per 1 employee, EUR thousand	2.1	2.2	7.0	5.1	3.9	3.9	5.5	4.9	13.8
Number of employees, thousand people	669.9	628.9	597.6	614.3	593	581.1	566.7	534.7	535.7
Number of employees involved in R&D, thousand people	9.8	8.9	8	7.3	7.4	7.5	6.5	6.2	6.3
Percentage of employees involved in R&D in the total number of employees, %	1.46	1.42	1.34	1.19	1.25	1.29	1.15	1.16	1.18
Fixed assets value, EUR million	14718.2	10916.7	8684.7	5171.9	6158.5	7420.9	9651.2	10079.7	11057.2
Capitalization	22.0	17.4	14.5	8.4	10.4	12.8	17.0	18.9	29.4

Source: authors' work based on State Statistics Service of Ukraine (2023).

The research conducted on the performance of agricultural enterprises shows relatively stable results, which is a precondition for attracting additional investments and increasing their innovation activity. Analysis of the net profit indicator shows that during the study period, it fluctuated, although there was a significant increase compared to 2013. The highest indicator was in 2021, and accordingly, the amount of net profit per employee amounted to 13.8 euros, as noted earlier, this trend is due

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to the high yield of agricultural crops in the said year. As for the negative dynamics, it is worth noting that there has been a decrease in the number of employees involved in research and development in agriculture. Thus, in 2013, their number was 9.8 thousand people, and by 2021, it decreased to 6.3 thousand people. This trend clearly indicates a decrease in scientific research in agricultural enterprises (Table 1).

Therefore, the primary task is to stimulate the development of innovation activities in agricultural enterprises in order to introduce resource-saving and environmentally friendly production technologies into operational processes. Stimulating the development of innovation and investment activities will increase the level of enterprise financial security.

The studies that were conducted clearly demonstrate the significant impact of both microenvironmental and macroenvironmental factors on the innovation and investment development of agricultural enterprises. However, an important task of our study is to assess the impact of the innovation and investment component on the financial security of agricultural enterprises.

The development of an innovation and investment model for the development of agricultural enterprises requires taking into account a whole range of factors and the creation of an innovation infrastructure. In the agricultural sector, this issue is particularly relevant because natural factors, including the use of living organisms in the production process, play an important role. The use of new plant varieties that are more resistant to negative environmental phenomena, including a significant increase in arid regions and the possibility of obtaining double harvests during the year, increases the efficiency of economic activity. In the livestock sector, the issue of increasing animal productivity in order to reduce production costs is quite important, and one of the ways to address this issue is to use new breeds. The rather low attractiveness of the agricultural sector, in particular for investors, is due to the long payback period, especially in livestock farming, and the high degree of risk in the crop sector, in particular the risk of crop failures. The disproportionality of intersectoral economic relations and the price disparity between agricultural and industrial products are also important (Aleskerova et al., 2020).

Having analyzed previous studies, it can be concluded that the innovation and investment development of agricultural enterprises involves the creation of long-term programs to implement innovative projects by attracting long-term investment resources.

The development of a strategy for innovation and investment development has a direct impact on improving financial performance, strengthening competitive positions in the market, and increasing the level of agricultural enterprises' financial security as a component of their economic security. However, it should be understood that the innovation and investment development of agricultural enterprises is a long-term process that determines the direction of further development of the agricultural sector. However, there are a number of problems that need to be addressed as a matter of priority, in particular:

- the current environmental situation in the agricultural sector, including significant soil depletion due to non-compliance with crop rotations, high levels of pollution due to non-compliance with environmental legislation, and the growing demand for organic food, requires an increased regulatory role of the state, including in the innovation sector,
- lack of tax incentives for innovation, especially in the agricultural sector. The introduction of innovative technologies requires significant financial resources, which are not always available to agricultural enterprises, particularly small and medium-sized ones, which account for a significant share of the total number of enterprises. The provision of additional benefits is quite important,
- the growth of innovation-oriented development of the state as a whole will contribute to the growth of innovation activity of certain sectors, in particular agriculture.

Taking into account the above studies, we offer a model for assessing the impact of the investment and innovation component on the financial security of agricultural enterprises (Fig. 8).

This model is based on an algorithm that provides for the identification of sequential actions in order to develop measures for their effective implementation in the activities of enterprises.

It is important to identify indicators of the innovation and investment component of enterprise development that directly affect performance. These indicators differ significantly at the state and enterprise levels, and industry specifics should also be taken into account.

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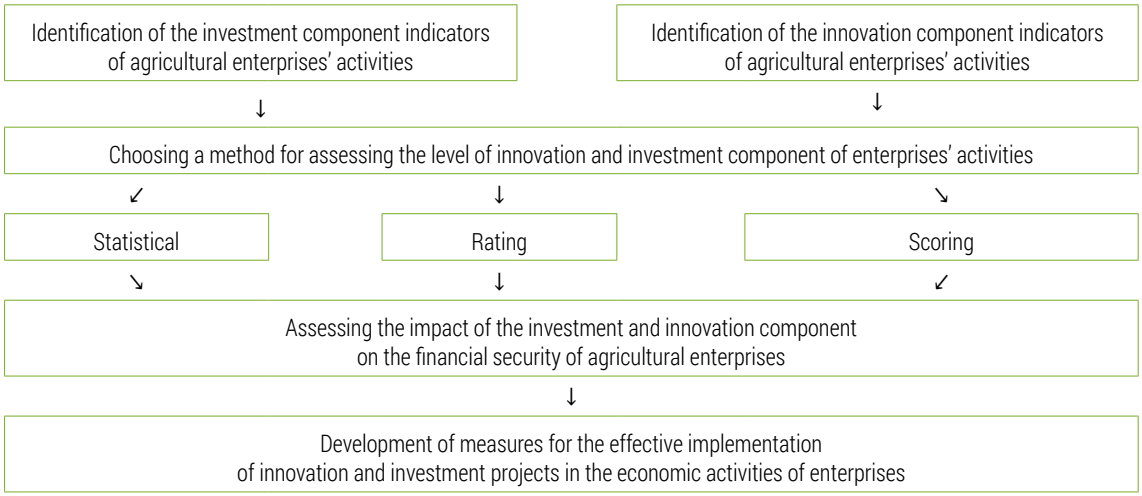


Figure 8. Model for assessing the impact of the innovation and investment component on the financial security of agricultural enterprises

When determining these indicators, it is necessary to take into account their limit values, which directly depend on the economic situation in the country and may change, but they are taken into account when forecasting the development of these enterprises. Determining the indicators of the innovation and investment component of enterprises' activities makes it possible to assess the level of their financial security in general (Table 2).

Table 2. Indicators of the innovation and investment component of agricultural enterprises' activities

Innovative	Investment
The level of modernization of fixed assets and the use of the latest technologies. The level of introduction of new plant varieties. Number of new breeds of animals. The level of influence of innovations on the enterprise's performance. Costs incurred for innovations in the industry. Development of innovative product markets.	Index of capital investment in agriculture. The share of foreign direct investment in the total amount. The share of investments in agriculture in their total amount. Share of investments in intangible assets. Financing of R&D.

The main measures to ensure effective investment and innovation development of agricultural enterprises are: elaboration of an effective mechanism for the use of innovative technologies; identification of ways to minimise the risks of losing investment funds; promotion of priority areas for the use of environmental innovations; intensification of the introduction of resource-saving technologies; and increase of the investment attractiveness of agricultural enterprises.

It is quite important at the state level to introduce a number of measures that will have a positive impact on the innovation and investment potential of agricultural enterprises, namely: reducing the level of shadow economy through tax reform and reducing cash turnover, implementing a balanced policy of domestic and foreign borrowing; organizing protection of the domestic market from low-quality imports (Davydenko et al., 2019).

The final stage of the study is an assessment of the weaknesses and strengths of the innovation and investment development of agricultural enterprises by conducting a SWOT analysis (Table 3).

Despite favourable natural and climatic conditions and significant resource potential, including fertile soils, Ukraine's agricultural sector remains insufficiently attractive to bring in external investment resources. The main constraints are corrupt business practices, an unstable economic situation, and an unsatisfactory tax system. The current business model in Ukraine is not favourable to attracting foreign investment. However, despite this situation, if a transparent and open economy is built, the agricultural sector can become one of the leading areas for attracting investment.

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Table 3. SWOT-analysis of innovation and investment activities of agricultural enterprises

Strengths	Weaknesses
• Significant natural and resource potential. • Significant innovation potential as evidenced by the Global Innovation Index. • Implementation of EU regulations in the field of intellectual property. • An effective system of protection of foreign investors is established.	• Unstable political situation. • Unfavorable investment climate. • Underdeveloped financial markets. • Insufficient level of financing of innovation activities. • High level of shadow economy. • Imperfection of the existing legislative framework, including the Tax and Customs Codes of Ukraine. • High level of corruption. • Unstable economic situation in the country. • High level of riskiness of economic activity implementation. • Lack of stability of the banking system. • High level of plowed agricultural land.
Opportunities	**Threats**
• Development of new varieties and hybrids. • Increasing the manufacture of high quality products. • Increasing the level of financial security of agricultural enterprises. • Increasing the productivity of agricultural sector.	• Increasing inflation rates. • Decrease in the number of highly skilled workers in rural areas. • Decrease in foreign investment due to the war in the country. • Worsening of the environmental situation in the country. • Degradation of land resources. • Changes in legislation. • Fluctuations in the global agricultural market.

Conclusions

The level of agricultural enterprises' financial security depends on many factors, but their innovation and investment development are of great importance. However, the research shows that Ukraine pays insufficient attention to innovations, there is a constant reduction in funding for research and development, and the outflow of highly skilled workers hinders the introduction of innovative technologies in the industry. This is evidenced by the loss of positions in the Global Innovation Index in recent years: in 2018, Ukraine was ranked 43rd in the ranking, but in 2021 it lost progress and ranked only 49th, due to a significant loss of Ukraine's position in the use of knowledge and technology. Another equally important factor is the lack of financial resources, and the solution to this problem is to attract investment. Therefore, it is necessary to stimulate innovation and investment development of agricultural enterprises by creating appropriate development programs at the state level. In addition, a number of reforms are needed to form a favourable investment climate in the country by overcoming negative political and economic factors.

In summary, it is determined that the innovation and investment development of agricultural enterprises will contribute to increasing their financial security by improving the quality of soil, creating new high-yielding and disease-resistant plant varieties, highly productive animal breeds, introducing the latest technologies, etc.

On the basis of the study, a generalized model for assessing the impact of the innovation and investment component on the financial security of agricultural enterprises is offered. The factors of the macro and micro environment that directly affect the innovation and investment development are identified and their impact on the activities of agricultural enterprises is assessed. It is offered to carry out an assessment using the integral indicator of innovation and investment development.

The contribution of the authors

Conceptualization, N.D., N.N., Z.T. and M.W.; literature review, N.D., N.N. and M.W.; methodology, N.D. and Z.T.; formal analysis, N.D., N.N. and M.W.; writing, N.D., N.N., Z.T. and M.W.; conclusions and discussion, N.D. and Z.T.

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MODELOWANIE INNOWACYJNO-INWESTYCYJNEGO ROZWOJU PRZEDSIĘBIORSTW W KONTEKŚCIE ZAPEWNIENIA ICH BEZPIECZEŃSTWA FINANSOWEGO

STRESZCZENIE: W opracowaniu określono wpływ działalności innowacyjnej i inwestycyjnej przedsiębiorstw rolniczych na poziom bezpieczeństwa finansowego. We współczesnej gospodarce jedną z najczęstszych przyczyn kryzysu finansowego w przedsiębiorstwie jest brak skutecznego mechanizmu zarządzania bezpieczeństwem finansowym. Szczególnie w kontekście neutralizacji ryzyka prowadzenia działalności gospodarczej, ważne jest zapewnienie innowacyjno-inwestycyjnego rozwoju przedsiębiorstw rolniczych. W badaniach wykorzystano metody naukowe, tj. abstrakcyjną i logiczną – do uogólnień teoretycznych i wniosków, tabelaryczną i graficzną – do wizualizacji wyników badań oraz analizę i syntezę – do ustalenia przyczyn determinujących zmianę bezpieczeństwa finansowego przedsiębiorstw. Uzyskane wyniki badań mają znaczenie dla określenia kierunków działalności innowacyjnej i inwestycyjnej w przedsiębiorstwach rolniczych, w aspekcie zapewnienia odpowiedniego poziomu ich bezpieczeństwa finansowego.

SŁOWA KLUCZOWE: innowacyjny i inwestycyjny rozwój, bezpieczeństwo finansowe, przedsiębiorstwo