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Formation of a strategy to increase the efficiency of agricultural enterprises

Abstract. The article was aimed at developing scientifically sound recommendations for improving the strategic management of agrarian enterprises to increase the efficiency and competitiveness. The article used the methods of system analysis, SWOT analysis, and statistical and economic methods to assess the status and prospects of development of agricultural enterprises. It examined the dynamics of changes in the structure of agricultural production by

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categories of producers in 2019-2023, analysed the impact of military operations on the exports of major crops, and summarised the main losses of the agro-industrial complex. It was established that despite significant infrastructure destruction and disruption of supply chains, the Ukrainian agricultural sector demonstrated high resilience and adaptability. Particular attention was paid to the role of various forms of management, in particular large agricultural enterprises and farms, in ensuring the stability of production. Data on the share of exports of grain crops and industrial crops were provided, and changes in the structure of sown areas reflecting the transformational processes in the agricultural sector during the war were considered. It was determined that the low level of digitalisation, the shortage of qualified personnel, and insufficient state support were the main factors limiting the efficiency of agricultural production. The analysis confirmed that these problems led to a decrease in productivity, limited adaptation to modern technologies, and low competitiveness of agricultural enterprises. It was found that the creation of a comprehensive agricultural hub, which combined educational, technological, and practical components, could significantly improve the level of staffing. A model of personnel management through the introduction of a system of continuous learning, the use of digital technologies, and personalised development plans was proposed. The necessity of close cooperation of agricultural enterprises with the Ministry of Digital Transformation and the Ministry of Agrarian Policy to provide state support and create a regulatory framework for the operation of such a hub was substantiated. The obtained scientific and practical results could be used as a basis for developing strategic decisions aimed at developing the agricultural sector in the context of post-war reconstruction and adaptation to modern economic challenges

Keywords: productivity; competitiveness; use of digital technologies; state support; development of human resources

INTRODUCTION

The relevance of the study is due to the important role of the agricultural sector in Ukraine's economy and the need to increase its efficiency in the context of globalisation and integration into the world market. The agricultural sector is strategically important for the country and is one of the main sources of foreign exchange earnings through the export of agricultural products. Despite its considerable potential, the efficiency of agricultural enterprises remains insufficient due to numerous economic, technological and social problems, which requires a comprehensive approach to the solution.

The scientific literature actively discusses the issue of increasing the efficiency of agricultural production, in particular through the prism of human resources, the level of digitalisation and state support. These factors are crucial for ensuring the competitiveness of the agricultural sector at both the national and international levels. Ukraine's agricultural sector, with its significant potential, needs to be modernised, which involves not only technological improvements but also changes in approaches

to education, training, and the integration of the latest technologies.

One of the areas that is gaining popularity is the strategic formation of agricultural clusters. The study by M.W. Sitnicki *et al.* (2024) focused on agrarian clusters as an important tool for increasing Ukraine's global competitiveness in the world market. The creation of such clusters allows optimising production processes, reducing costs and strengthening cooperation between different stages of agricultural production. It is important to note, however, that while the role of agricultural clusters in strategic development is undeniable, the issue of forming integrated educational and technological hubs for training in Ukraine remains under-researched. This issue requires special attention, since it is through such hubs that the educational process can be combined with modern technological advances, which is necessary for the professional development of agricultural workers.

Another important aspect that needs to be studied is the synergy between educational, research and production structures. L. Simkiv *et*

al. (2021) analysed the dynamics of structural changes in the agricultural sector in the context of sustainable development. The authors emphasised the importance of integrating these structures to ensure the sustainable development of the agricultural sector. However, the work did not pay enough attention to the practical aspects of integrating new technologies into the training system. Technological innovations, such as automation, data management systems and robotics, should become an integral part of the educational process in order to ensure that agricultural workers are qualified in the context of digital transformation.

Authors V. Baidala & A. Solop (2023) studied in detail the employment problems in the agricultural sector of Ukraine, focusing on the low level of labour force qualifications as a major barrier to productivity growth. The researchers note that most agricultural workers do not have up-to-date professional skills, which affects production efficiency and the ability of agricultural enterprises to compete on international markets. Low staff qualifications, in particular in the context of the latest technologies, mean that agricultural enterprises often do not use all the opportunities to optimise production processes and reduce costs. This underscores the need for a systematic approach to training and professional development, which should become an important component of agricultural policy.

In the research, O. Zakharchuk *et al.* (2021) focused on the modernisation of the material and technical base of agricultural enterprises, emphasising that without updating technical equipment, production will not be able to move to a new level of efficiency. However, the work does not sufficiently address the issue of digitalisation as a tool for increasing the efficiency of agricultural production. Digital technologies, such as yield monitoring systems, automation of production processes and the use of big data for forecasting, can significantly improve the efficiency of agricultural enterprises. The use of such technologies can not only optimise production processes, but also provide access to global markets and increase the competitiveness of products. Therefore, digitalisation should become an important component of the agricultural sector's modernisation strategy.

Researchers H. Zapsha & V. Sedov (2024) focused on the training of highly qualified personnel in the context of modern transformations, emphasising the need to adapt educational programmes to the rapidly changing needs of the labour market. The authors note that modern educational programmes for farmers should be flexible and focused on the current requirements of employers. However, the work does not contain a comprehensive approach to creating learning platforms that use the latest technologies, such as Virtual Reality (VR) simulators, to model real-life situations in the agricultural sector. The use of VR simulators allows creating interactive learning environments where students can practise the skills required to work in the agricultural sector without the need to directly participate in real production processes. These innovative teaching methods allow personalising the educational process by creating individual development plans for each student that meet the needs and interests. M. Nehrey *et al.* (2022) analysed the impact of the hostilities on the agricultural sector of Ukraine, drawing attention to the shortage of human resources and the destruction of supply chains, but the research does not offer specific mechanisms to overcome these problems. V. Sapych (2024) analysed the problems of financial support for agricultural business, while the issues of investment in human resources and educational infrastructure remain insufficiently covered.

The purpose of the article was to substantiate scientific and methodological approaches and develop practical recommendations for the formation of an effective strategy to improve the performance of agricultural enterprises in Ukraine in the context of current economic and social challenges. To achieve this goal, the article sets the following objectives: to analyse the current state and main problems of functioning of agricultural enterprises; to study the impact of state support, technological development and the level of staffing on the efficiency of agricultural production; to develop recommendations for improving the strategic management of agricultural enterprises in order to increase the productivity and competitiveness.

MATERIALS AND METHODS

The study analysed data for the period from 2019 to May 2024. The main sources of information used were official statistics from the State Statistics Service of Ukraine (Crop production 2023, n.d.; Area, gross harvest..., n.d.), reports from the National Institute for Strategic Studies (Ukraine's agricultural sector in 2023..., 2024), reports from the Ministry of Agrarian Policy and Food (Report on recipients..., 2021), a report by the NGO Ecodia (Rykovska *et al.*, 2024), as well as regulatory acts, in particular Law of Ukraine No. 1877-IV (2004), and the Tax Code of Ukraine No. 2755 (2010).

In the course of the study, the economic and statistical method was applied, which provided an opportunity to conduct a comprehensive analysis of the agricultural sector based on a quantitative assessment of key indicators. In particular, the volume of gross production of major crops was studied, which allowed the researchers to trace the dynamics of changes in production processes. A structural analysis of the distribution of agricultural products by different groups of producers was carried out, which made it possible to assess the contribution of each category (large enterprises, small farms, private households) to total production. An important part of the study was an assessment of the level of compliance with the statutory rate of state support for the agricultural sector, which was 1% of GDP. To increase the visibility and informativeness of the results, a graphical method was used. The construction of charts, graphs, and diagrams made it possible to visualise trends in the key performance indicators of agricultural enterprises, which, in turn, contributed to a better understanding of the effectiveness of various strategic approaches to the development of the agricultural sector.

One of the key methods was SWOT analysis, which was used to study the impact of digitalisation on the transformation of labour processes in agricultural enterprises. This method helped identify the strengths and weaknesses of digital technologies, including automated management systems, electronic document management, production process monitoring systems, and the use of digital platforms for coordination. In addition, the SWOT analysis helped identify

opportunities offered by digitalisation, including increased labour productivity, reduced operating costs, optimisation of production processes through the introduction of innovative solutions, and expansion of sales markets through digital platforms and marketplaces. At the same time, the study identified threats related to the insufficient level of digital literacy of staff, high costs of implementing new technologies, cybersecurity risks, and instability of technological solutions due to the rapid development of the digital tools market, which required regular updates and adaptation. The study used modern information technologies, in particular, Microsoft Excel (n.d.) statistical analysis software, which ensured high accuracy and visibility of data processing.

RESULTS

Analysis of the current state of the Ukrainian agricultural sector

Ukraine's agricultural sector plays a key role in supplying both the domestic market with food and building the country's active position on international agri-food markets. Thanks to its well-developed infrastructure and traditionally strong food exports, Ukraine was one of the five largest grain exporters in the world before the full-scale war, accounting for around 10% of global wheat exports, over 14% of corn and over 47% of sunflower oil. More than three-quarters of the production was exported, while domestic consumption of grain was only 20-25% (Karmadonova, 2023). Despite the hostilities that began in February 2022, Ukraine, thanks to the support of its international partners, remains a significant player in the global agricultural market. In 2023, the country exported 16.7 million tonnes of wheat to 67 countries, 28.1 million tonnes of corn to 78 countries, and 6.3 million tonnes of sunflower oil to 126 countries (Crop production 2023, n.d.). These indicators demonstrate the resilience and adaptability of the Ukrainian agricultural sector, despite significant losses and difficult operating conditions.

However, the large-scale aggression of the Russian Federation has caused a serious deterioration in Ukraine's food security. Disrupted supply chains, destroyed infrastructure, reduced planted areas and reduced production at operating enterprises have resulted in

significant direct and indirect losses. Rural households in Ukraine have also suffered serious losses. The losses amount to about USD 2.25 billion. Of this, USD 1.26 billion was lost in crop production and USD 0.98 billion in livestock production. Due to the war, 25% of agricultural households have stopped or significantly reduced

production, and in the frontline regions this figure reached 38% (Solop, 2024). The structure of Ukraine's agricultural sector includes a variety of business forms. Based on the data presented in Figure 1, it is possible to trace the dynamics of changes in the structure of agricultural production by producer category in 2019-2023.

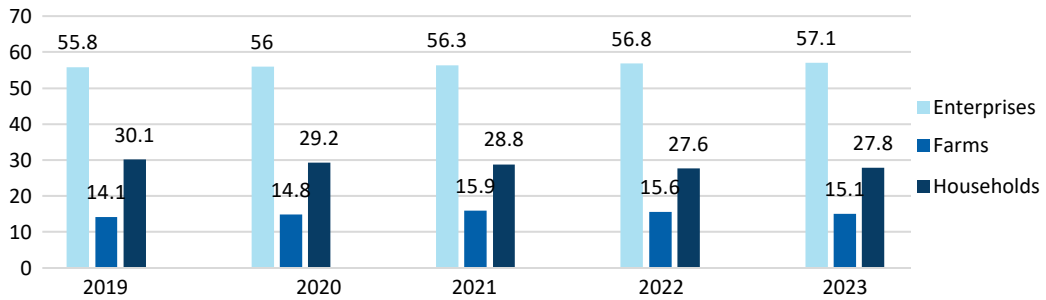


Figure 1. Structural distribution of agricultural production by producer groups, %

Source: compiled by the author based on Area, gross harvest... (n.d.), O. Rykovska et al. (2024)

Enterprises have consistently remained the main producers of agricultural products, demonstrating a gradual increase in the share of total production: from 55.8% in 2019 to 57.1% in 2023. This is evidence of the increased efficiency of large agricultural enterprises, the technological equipment and the ability to ensure stable production volumes even in a difficult economic environment. It is important to note that the growth rate, although slow, is stable, indicating positive trends in the development of this segment. Farms also play an important role in agricultural production, although the share is subject to some fluctuations. While in 2019, the share was 14.1%, in 2021 it reached 15.9%, and in 2023 it declined to 15.1%. This may indicate that farms are adapting to market conditions and gradually increasing the production capacity, despite the challenges of limited resources and access to finance.

The share of households in the production structure shows a steady downward trend: from 30.1% in 2019 to 27.8% in 2023. This indicates a gradual transformation of the agricultural sector, where small private farms are losing ground to larger producers. The decline in the share of household farms may be due to both a decline in production and labour migration to other areas

of activity. The polarisation of small and large producers is the result of state agricultural policy. Small farms are oriented towards self-sufficiency and local markets, using labour-intensive production methods and low levels of mechanisation. These farms account for a significant share of milk (78.3%), vegetables (89.3%) and potatoes (99.1%). In contrast, large agricultural enterprises specialise in the production of commercially attractive crops and industrial products, such as chicken (70.3%) and pork (25.1%) (Rykovska, 2024).

Agricultural enterprises are crucial for the crop sector, producing the main export-oriented crops – wheat, corn, sunflower, rapeseed, and soybeans. The high level of ploughed land (over 90%) and the emphasis on monoculture cultivation have led to a reduction in crop diversity and soil depletion. In the pre-war period, the sown areas of agricultural enterprises were focused on cereals and legumes (58.2 per cent) and industrial crops (39.1 per cent), while households focused on growing vegetables (21.4 per cent) and fodder crops (13.3 per cent) (Rykovska, 2024). The dynamics of gross production of major crops in 2020-2023 clearly demonstrates the impact of hostilities and economic conditions on the crop sector (Table 1).

Table 1. Changes in gross production volumes of major agricultural crops in Ukraine

| | | 2019 | 2020 | 2021 | 2022 | 2023 | Deviation of 2023 to 2019 | |
|--|------------|----------|----------|----------|----------|----------|---------------------------|-------|
| | | | | | | | +/- | % |
| Gross production of main agricultural crops, thousand tons | | | | | | | | |
| Grain and legume crops | wheat | 24,234.1 | 24,877.4 | 22,654.2 | 20,729.2 | 21,625.2 | -2,608.9 | -10.8 |
| | barley | 6,276.5 | 7,636.3 | 6,396.2 | 5,608.2 | 5,507.2 | -769.3 | -12.3 |
| | corn | 29,590.1 | 30,290.3 | 29,523.1 | 26,186.9 | 31,030.4 | +1,440.3 | +4.9 |
| Technical crops | soy | 29,467.8 | 2,797.7 | 3,178.6 | 3,443.8 | 4,742.6 | -24,725.2 | -83.9 |
| | rapeseed | 2,867.1 | 2,492.0 | 2,867.0 | 3,250.3 | 4,183.7 | +1,316.6 | +45.9 |
| | sunflower | 13,649.1 | 13,110.4 | 12,671.1 | 11,328.7 | 12,759.7 | -889.4 | -6.5 |
| | sugar beet | 9,126.9 | 9,150.2 | 9,734.9 | 9,941.5 | 9,873.2 | +746.3 | +8.2 |

Source: compiled by the authors based on Crop production 2023 (n.d.), O. Rykovska *et al.* (2024)

In the grain and pulses segment, there was a general decline in production of the main types of grain. In particular, gross wheat production in 2023 decreased by 10.8% compared to 2019, which is a decrease of 2,608.9 thousand tonnes. A similar trend is typical for barley – its production decreased by 12.3% (-769.3 thousand tonnes). At the same time, corn is showing steady growth: in 2023, its gross production increased by 4.9% (+1,440.3 thousand tonnes) compared to 2019. This may indicate that this crop is more adaptable to changing climatic and economic conditions. As for industrial crops, the situation is more ambiguous. Soybeans showed the sharpest decline, with its production down 83.9% in 2023 (-24,725.2 thousand tonnes), which may indicate significant difficulties in growing or lower demand. Rapeseed in 2023 showed an increase in production volumes compared to 2019 (from 2,867.1 to 4,183.7 thousand tonnes), which is an increase of 1,316.6 thousand tonnes or almost +46%. This may indicate an increase in demand for rapeseed from the European market or more favourable price conditions. At the same time, sunflower production decreased by 6.5% (-889.4 thousand tonnes), this crop remains an important component of agricultural exports. A positive trend is the increase in sugar beet production: in 2023, its gross harvest increased by 8.2% (+746.3 thousand tonnes) compared to 2019. This may indicate an increase in the efficiency of growing this crop and improvement of technological processes.

The full-scale invasion of Russia in 2022 had a significant impact on Ukraine's agricultural sector, causing a number of negative

consequences for both crop production and foreign trade. The reduction in crop acreage was one of the most significant consequences: in 2022, the area of agricultural land decreased by 21%. In 2022-2023, about 5.4% of the areas previously used for crop production were returned to Ukrainian control, but in 2024, about 15% remain under temporary occupation, which significantly limits production capacity (Bogonos *et al.*, 2024). In addition to the reduction in acreage, the war has led to serious logistical and resource problems. In particular, the difficult access to fertilisers and fuel has led to a decline in yields of the main export-oriented crops – wheat, corn, sunflower, rapeseed, and soybeans. Ongoing hostilities, shelling, and the destruction of infrastructure created additional challenges for agricultural operations. Production also continued to decline due to labour shortages caused by mobilisation and forced migration (Ukraine's agricultural sector in 2023..., 2024).

A significant share of Ukraine's grain and oilseed harvest has traditionally been exported, accounting for more than two-thirds of foreign trade revenues. The war has significantly hampered export operations: the blockade of seaports has led to a sharp decline in the volume of agricultural exports. Although the signing of the Grain Agreement and the creation of a private 'grain corridor' have partially restored export flows, high logistics costs continue to have a negative impact on domestic prices. This prevents farmers from fully benefiting from existing export routes and threatens the financial stability of agricultural enterprises.

The international sanctions imposed on Russia due to the geopolitical situation have led to significant changes in the geography of Ukrainian agricultural exports. During the war, there were changes in the directions of supply of food and other agricultural products. In particular, against the backdrop of a decline in the value of exports, the European Union became the largest market for Ukrainian products. The EU's share of total agricultural exports increased from 28% in 2021 to 57% in 2024. This opens up new opportunities for Ukrainian farmers, who were able to occupy the vacant niches left by countries that used to supply finished products to Russia (Bobrovtskyi *et al.*, 2024). At the same time, Ukraine did not stay away from the search for alternative markets. China, which was one of the main partners, reduced its share in Ukrainian exports from 15% in 2021 to 10% in 2024. On the other hand, the Turkish market increased its share from 5% to 9%. At the same time, the share of Ukrainian products in the markets of Asia (excluding China and Turkey) and Africa has significantly decreased (Karmadonova, 2023).

Ensuring food security under martial law requires comprehensive state support for the agricultural sector, which is especially important in the context of preparing and conducting the 2025 sowing campaign. In this regard, the key role is played by effective management of sown areas, provision of necessary resources and adaptation to the current challenges of the global and domestic markets. According to the official forecasts of the Ministry of Agrarian Policy and Food of Ukraine, in 2025 the total area under crops in Ukraine will exceed 23 million hectares (Sown area in 2025..., 2024). Of these, 11,067 thousand hectares are allocated for grain crops, which is 48.1% of the total sown area. Spring crops occupy a significant part of the area – 5,825.5 thousand hectares, with the largest areas allocated for corn (4,145.5 thousand hectares), spring barley (790.2 thousand hectares), spring wheat (222.7 thousand hectares), peas (216.5 thousand hectares), oats (161.6 thousand hectares), buckwheat (86.8 thousand hectares) and millet (85.5 thousand hectares). Winter crops cover an area of 5,241.5 thousand hectares.

On the other hand, the area under corn is expected to increase, driven by increased trade

in this crop and improved logistics capabilities due to the stable operation of Odesa ports. High corn yields and expanding export opportunities will help to improve the economic efficiency of this area of agricultural production. In summary, the current state of Ukraine's agricultural sector is characterised by a significant dependence on export-oriented crops, polarisation between small and large producers, and serious challenges posed by the ongoing hostilities and the destruction of infrastructure. Nevertheless, the sector has demonstrated resilience and the ability to adapt to new conditions thanks to international support and a commitment to maintaining its position in the global agri-food market.

The impact of state support on the efficiency of agricultural production

In the modern environment of economic transformation and growing globalisation, which is guided by the principles of sustainable development, one of the key areas of Ukraine's economic policy is the modernisation of the agricultural sector. This approach ensures an effective transition to an innovative business model based on high-tech solutions and improved human resources. One of the main obstacles to improving the efficiency of agricultural enterprises in Ukraine is the insufficient level of technological support. Only 30% of these enterprises implement modern digital tools, including precision farming systems, drones, and analytical platforms (How to start implementing precision farming..., n.d.). This limits the possibilities for optimising production processes and increasing productivity. In addition, limited access to financial resources is becoming a serious obstacle for many small and medium-sized agricultural enterprises, which face difficulties in attracting investment and credit due to high interest rates and insufficient state support (Assessment of the impact of war..., 2024).

Long-term extensive use of land resources in Ukraine has led to soil depletion, reduced productivity of agricultural land and a growing need for intensive production methods. The introduction of modern technologies, such as precision farming, automated crop monitoring systems, drones and Global Positioning System (GPS), is a prerequisite for increasing the efficiency of

agricultural production. It also helps to minimise the negative impact on the environment and ensure food security (Herrero *et al.*, 2020).

An important aspect of modernisation is the adaptation of the agricultural sector to climate change and global trends in the sustainable use of natural resources (Gras & Cáceres, 2020). The intensive use of land resources without proper restoration measures leads to a decrease in soil fertility and deterioration of the ecological state of agricultural landscapes. The situation has been greatly complicated by the effects of hostilities and landmines: in 2022, about 30% of agricultural land, or approximately 5 million hectares, became unsuitable for sowing. In 2023, this figure decreased, but still remained significant, with up to 25% of the area inaccessible for cultivation (Karmadonova, 2023). An additional blow to land resources and the agricultural sector was the destruction of the Kakhovka hydroelectric power station, which caused large-scale environmental impacts and made it difficult to irrigate large areas critical for agriculture.

The war caused significant economic losses to Ukraine's agricultural sector, resulting in the destruction of infrastructure and a significant decline in production. The total value of destroyed assets is estimated at USD 10.3 billion, with the largest losses recorded in the agricultural machinery segment, with damage and destruction of USD 5.8 billion, accounting for 56.7% of the total losses. In addition to material losses,

a significant economic impact was caused by lost revenues of agricultural producers and increased production costs, which are estimated at USD 69.8 billion. In particular, the decline in crop production resulted in losses of USD 35.1 billion, and in livestock production – USD 5.6 billion. The impact on market prices was also significant: the decline in domestic prices resulted in additional losses of USD 24.1 billion, while the increase in production costs the agricultural sector USD 4.4 billion (Neyter *et al.*, 2024).

To ensure the effective development of the agricultural sector, active state support for innovation is needed. This involves stimulating research, creating favourable conditions for attracting investment in technological upgrades, and developing mechanisms for financing training and retraining programmes. Financial support for the agricultural sector is an important instrument of state protectionism aimed at stimulating innovation, increasing the competitiveness of agricultural products and ensuring food security. In Ukraine, the level of this support depends largely on the legislative framework and the financial capacity of the state. According to the Law of Ukraine No. 1877-IV (2004), the annual amount of funds allocated to support agricultural producers should have been at least 1% of agricultural output. However, the actual amount of funding remained below the established norms, which hindered the development of the sector (Fig. 2).

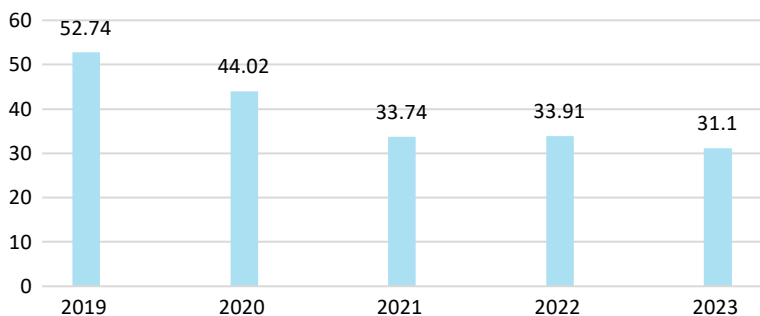


Figure 2. Implementation of the legally established support rate (1%) for the agricultural sector, 2019–2023, %

Source: compiled by the authors based on Report on recipients ... (2021), O. Rykovska *et al.* (2024)

The analysis of the data in Figure 2 shows a change in the trend in the level of compliance

with the legislatively established norm of support for the agricultural sector in Ukraine in

2019-2023. In 2019, the level of support was 52.7%, but in 2020 it dropped to 44.0%, which indicates a decrease of 8.7 percentage points. In 2021-2023, further negative dynamics were observed: 33.74% in 2021, 33.9% in 2022, and a low of 31.1% in 2023. Nevertheless, the 2023 figure remains lower than in 2019, indicating a still insufficient level of financial support for the industry. In general, the level of compliance with the state support norms has experienced significant fluctuations over the analysed period, with a general downward trend (Rykovska, 2024).

One of the unimplemented legislative initiatives concerned amendments to the Law of Ukraine No. 1877-IV (2004), which were supposed to introduce new principles for the distribution of state aid. These changes were expected to help preserve the diversity of the agricultural sector and strengthen the country's food security. In particular, it was proposed to introduce the principles of equitable distribution of funding and its targeting. The principle of equity stipulated that state support should be distributed proportionally, with a limit on the maximum amount of support per recipient, which was supposed to prevent monopolisation of budget funds by large agricultural holdings. The principle of targeting was intended to provide priority funding to small producers, primarily family farms that own or use land plots of up to 100 hectares. However, the actual implementation of these provisions in the funding allocation mechanisms remained fragmented, and the declared support for small farms was not properly enshrined in the relevant regulations.

This approach has resulted in a significant imbalance in the distribution of state aid, which has had a negative impact on small and medium-sized agricultural enterprises. A large share of budgetary funds is traditionally allocated to large agricultural corporations and enterprises with expanded land holdings and significant financial turnover. According to the Report on Recipients of State Support in the Agricultural Sector (Report on recipients..., 2021), in 2019-2021, the total amount of state aid amounted to UAH 13.3 billion, which was distributed among almost 19 thousand agricultural producers. It is projected that in 2024, the agricultural sector will receive UAH 4.2 billion from the state budget

(Budget 2024..., 2023). The main recipients of these funds are large agricultural enterprises with a land bank of more than 1.000 hectares, as well as companies included in the register of large taxpayers. According to the Tax Code of Ukraine (Tax Code of Ukraine No. 2755, 2010), these are companies with annual revenues of more than EUR 50 million or total annual tax payments of more than EUR 1.5 million.

At the same time, small farms that cultivate land of up to 50 hectares remain outside the scope of effective support. The share in the total number of farms is 47.3%, but the amount of budgetary funds the farms receive is minimal. In 2019, the main form of support was the provision of subsidies for raising young cattle, which were used by almost 100,000 households. In 2020-2021, funding was refocused on the development of beekeeping, which allowed about 5,000 beekeepers to receive special subsidies for bee colonies annually. In 2024, these trends continued, as well as the expansion of support programmes for the cooperative movement aimed at uniting small farmers to increase the competitiveness (Rykovska, 2024).

However, these measures do not take into account the real needs of small producers, as there is virtually no differentiation of farms by the size of land holdings when distributing financial assistance. As a result, the main recipients of high-cost state funds are farmers specialising in the cultivation of high-margin grains, oilseeds and chicken production. At the same time, small farms engaged in labour-intensive types of agriculture, such as growing vegetables, fruits, berries and livestock products, remain virtually deprived of state support. This situation reinforces market monopolisation, reduces competition and hinders the sustainable development of the agricultural sector, which requires an immediate review of the mechanisms for allocating budget funds and ensuring that small and medium-sized producers are given real priority in the state support system.

State support for Ukraine's agricultural sector underwent significant changes in 2022 due to the outbreak of a full-scale war. Under martial law, there was an urgent need to adapt funding programmes to the new realities and challenges faced by agricultural producers. One of the

significant innovations was the introduction of mandatory registration of recipients in the State Agrarian Register (SAR) in August 2022, which made the process of distributing public funds more transparent and streamlined (Rykovska, 2024). The main financial instruments available to farmers in 2022-2024 include the “Affordable Loans 5-7-9%” programme. Under this programme, agricultural producers attracted UAH 33.8 billion, which was 15% of all loan agreements concluded. This programme enabled farmers to receive loans at preferential rates of 5%, 7% or 9% per annum depending on the size of the business, the number of jobs created and other criteria. Under this programme, farmers could receive a loan of up to UAH 60 million with a zero interest rate for six months, which later dropped to just 5%. In 2022-2024, the programme was expanded to include state compensation of the interest rate for enterprises engaged in growing crops, food production, and processing of agricultural products. For farmers, the “Affordable Loans 5-7-9%” programme has become a key tool for financing the sowing campaign, purchasing machinery, modernising production and providing liquidity. Thanks to the programme, farmers were able to attract cheaper credit resources, which is especially important in times of economic instability and rising production costs (Affordable loans 5-7-9% available, n.d.).

An important initiative was the government’s eRobota programme, launched in 2022, which provided grants for the establishment or development of horticulture, berry growing, viticulture and greenhouse farming. This programme was available to both legal entities, including farms, and individual entrepreneurs. One of the key conditions for receiving a grant was the creation of new jobs or the recruitment of new farm members, as well as 30% co-financing of projects. To receive a grant, applicants had to submit a business plan, pass a screening process to ensure compliance with the programme’s criteria, and ensure that the funds were used for the intended purpose. Since 2023, the programme has simplified the application procedure and expanded the areas of funding, including support for food production, agricultural processing, and the creation of

cooperatives (isWork, n.d.). The support programmes introduced in 2022-2024 have been highly effective in ensuring the financial stability of the agricultural sector. At the same time, there is still a need to improve the mechanisms for allocating funds so that small and medium-sized producers have equal access to finance alongside large agricultural holdings. An important step in this direction is the further development of the State Agrarian Register, which could become the basis for establishing fair and transparent conditions for the distribution of state aid in the Ukrainian agricultural sector.

Digitalisation processes open up new opportunities to improve the efficiency of agricultural business, but at the same time place high demands on the sector’s human resources. In the context of the Fourth Industrial Revolution, traditional approaches to human resources management and workforce development need to be significantly revised. Innovative technologies, such as precision farming systems, automated processes, drones and IoT devices, are changing not only the technological aspects of production but also creating new requirements for the professional competencies of agricultural workers. A modern specialist is expected not only to possess classical agronomic knowledge, but also to develop digital skills, the ability to work with big data, use specialised software, and make decisions based on analytics (Baidala & Solop, 2023).

In view of this, the problem of human resources readiness for digital transformation is becoming particularly relevant. The effective implementation of innovative technologies largely depends on the ability of staff to quickly adapt to changes and master new tools. In this context, studying the processes of transformation of the agricultural sector’s human resources potential becomes key to ensuring the competitiveness and sustainable development of agricultural production. The absence of systematic training and retraining of specialists in modern agricultural technologies significantly complicates the effective use of the latest equipment and innovative management methods. This problem is exacerbated by an acute shortage of labour in the agricultural sector. As a result of the armed conflict, a significant number of agricultural workers and farmers were forced

not only to cease the activities but also to leave the places of residence. According to the Food and Agriculture Organisation of the United Nations, more than 150,000 people employed in the food system have suffered direct losses or been forced to migrate (Ukraine's agricultural sector in 2023..., 2024).

Thus, there is a need to formulate strategies for the development of agricultural enterprises that take into account both technological changes and increased requirements for

professional training. An integrated approach to human resource development in the context of digitalisation will help to improve the efficiency of production processes and ensure sustainable growth of the agricultural sector in the long term. The SWOT analysis shows that digitalisation has significant potential to transform labour processes at agricultural enterprises, but its successful implementation requires careful planning, financial investment and technological readiness (Table 2)

Table 2. SWOT analysis of the impact of digitalisation on the transformation of labour processes in agricultural enterprises

| Strengths | Weaknesses |
|--|---|
| Increasing productivity by automating production processes and using precision farming. | The high cost of implementing digital technologies and the need for significant investment. |
| Improving product quality by monitoring the health of crops and animals using IoT sensors and drones. | Insufficient level of digital literacy of staff and the need for specialised training. |
| Cost optimisation through accurate forecasting of crops and resources based on Big Data and artificial intelligence. | Dependence on a stable internet connection and technical support. |
| Increasing competitiveness through rapid adaptation to market changes. | Risk of technical failures and the need for regular software updates. |
| Opportunities | Threats |
| Opening up new markets through the use of online platforms to sell products. | Cyber threats related to the use of digital platforms and data management systems. |
| Improving logistics processes through digital supply tracking solutions. | Technological dependence and possible disruptions due to lack of technical support. |
| Implementation of smart contracts based on blockchain technologies for transparent and secure transactions. | Instability of legislative regulation on the digitalisation of the agricultural sector. |
| Developing precision farming to reduce costs and increase yields. | Staff resistance to change due to fear of job loss or the need for retraining. |

Source: compiled by the authors based on D. Krasovskiy (2024)

To achieve maximum results, it is necessary to develop a strategy to minimise risks and take advantage of opportunities, building on the strengths of the enterprise. It is important to invest in staff training, cybersecurity and infrastructure development to create an efficient and sustainable digital ecosystem at agricultural enterprises. An analysis of the impact of state support, technological development, and the level of human resources on agricultural production efficiency shows that these points are closely interdependent and have a complex impact. State support, in particular through subsidies, tax privileges and grant programmes, creates the necessary conditions for modernising production processes and increasing the competitiveness of agricultural enterprises. At the same time, technological development, including the

introduction of digital solutions, automation and innovative agricultural technologies, contributes to increased productivity, cost optimisation and improved product quality.

Environmental challenges also have a significant impact, as intensive use of land resources without proper restoration measures leads to a decline in soil fertility and deterioration of the ecological state of agricultural landscapes. The situation has been significantly complicated by the effects of hostilities and landmines: in 2022, about 30% of agricultural land, or approximately 5 million hectares, became unsuitable for sowing. In 2023, this figure decreased, but still remained significant, with up to 25% of the area inaccessible for cultivation (Karmadonova, 2023). An additional blow to land resources and the agricultural sector was the destruction

of the Kakhovka hydroelectric power station, which caused large-scale environmental impacts and made it difficult to irrigate large areas critical to agriculture.

However, the realisation of these opportunities largely depends on the level of human resources. Highly skilled professionals capable of effectively using modern technologies and adapting innovations to specific production conditions are key to the success of the agricultural sector transformation. At the same time, the shortage of qualified personnel can be a significant barrier to the implementation of technological solutions and a decrease in production efficiency.

Thus, in order to achieve high efficiency in agricultural production, it is necessary to ensure a balanced and coordinated interaction between government initiatives, technological development and human resources policy. Only a comprehensive approach based on a long-term strategy and investments in human capital can guarantee the sustainable development and competitiveness of the agricultural sector in the face of global challenges.

Recommendations for improving the efficiency of strategic management of agricultural enterprises

Effective management of agricultural enterprises is a key factor in ensuring the productivity and competitiveness in the context of modern economic challenges and digitalisation. Given the problems identified in the previous section, including insufficient state support, slow technological development, and a shortage of qualified personnel, it is necessary to formulate comprehensive recommendations for improving management approaches. In this context, it is important to take into account not only the internal problems of agricultural enterprises, but also the impact of global trends and changes in international markets.

Firstly, digitalisation should be seen as one of the key tools for improving the efficiency of agricultural enterprises. The introduction of innovative technologies helps to optimise production processes, reduce costs and improve product quality. An example of successful implementation of digital solutions in the agricultural sector is AgroGloryTime. Its business

model is based on environmental principles and a commitment to sustainable development. The use of digital technologies in production allows the company to minimise the use of chemicals, increase the share of green mass and meet strict European environmental safety standards. By combining environmental, economic, and social approaches, AgroGloryTime creates a balanced agro-industrial system that serves as an example of effective innovation in the industry (AgroGloryTime, n.d.).

Secondly, for the effective recovery and development of Ukraine's agricultural sector in the post-war period, it is necessary to create effective mechanisms of interaction between agricultural enterprises and state institutions. A key aspect of the reforms should be to support small producers, who play an important socio-economic role in ensuring food security, rural employment and spatial development of the regions. The experience of EU countries shows that small farms require the most attention, as such farms often face difficulties in accessing financial resources. The introduction of simplified procedures for obtaining state support, subsidising modernisation and encouraging cooperation between small producers can be effective tools for increasing the productivity and competitiveness.

Third, the European experience of implementing the Common Agricultural Policy (CAP), which was introduced after the Treaty of Rome in 1959, should be taken into account. During 2000-2021, the CAP underwent numerous reforms due to both external pressure from trading partners and internal challenges, in particular the problem of excessive agricultural hoarding, which distorted the market and trade. As a result of these changes, the scale of such distortions has significantly decreased (Nivievskiy et al., 2021).

The current CAP structure consists of two main pillars, often referred to as 'pillars'. The first pillar comprises market, trade and income support policies, focusing mainly on direct payments to farmers. These measures are funded exclusively at the EU level and are applied uniformly across all Member States. The main form of support is the basic payment, which is complemented by additional payments, such

as for the use of sustainable farming practices ('greening'), support for young farmers and special voluntary schemes that can be implemented at the national level. Many of these payments are independent of production volumes and are based on the area of land under cultivation or the number of livestock. Recipients of such support are required to comply with environmental, plant health and animal welfare standards, which ensures the sustainable development of the agricultural sector.

The second pillar of the CAP is aimed at rural development and is a joint responsibility of the EU and national governments. Within this pillar, each country chooses specific measures in line with the EU's overall policy framework, partially financed from its own budget. As a result, the nature and content of structural policies vary considerably between member states. The main measures of the second pillar are aimed at supporting small and medium-sized farming, including advisory services, producer group development programmes, financial assistance for business start-ups, product promotion, professional skills development and the development of rural cultural heritage. It also supports small farmers' markets, diversification of agricultural activities, and the development of rural tourism (Nivievskiy *et al.*, 2021).

Thus, the experience of EU countries in supporting small agricultural enterprises demonstrates the effectiveness of a comprehensive approach that combines financial incentives, advice, infrastructure development and compliance with environmental standards. This model can serve as a useful example for other countries seeking to create a sustainable and competitive agricultural system. In addition, it is necessary to take into account the specifics of the Ukrainian agricultural sector, where a significant part of production is provided by private farms. Given adequate financial support and assistance in formalising the activities, these producers could significantly increase the output, which would have a positive impact on the country's food security and export potential. Thus, a comprehensive approach to improving financial support and development of small producers will be an important step towards sustainable development of Ukraine's agricultural sector.

Fourth, it is necessary to provide state assistance to agricultural enterprises in passing international certification. This will help to increase the competitiveness of products, enter new markets and increase exports. The main functions of such institutions should be to coordinate the activities of enterprises, provide legal protection, and develop and implement policies aimed at developing modern agricultural infrastructure and supporting innovation.

Fifth, to address the problem of human resources in the agricultural sector, it is advisable to create a comprehensive agricultural hub that would transform approaches to human resources management. Such an innovative mechanism not only accumulates modern educational technologies, but also promotes the systemic development of professional qualities of agricultural specialists (Krasovskiy, 2024). In the modern environment of economic instability and constant external challenges, it is important to create a flexible human resource management system. The main goal of the agrarian hub is to create a dynamic ecosystem of continuous learning and professional development that combines educational, technological and practical components. This approach will not only eliminate the shortage of qualified personnel but also ensure rapid adaptation to technological transformations.

Implementation of the project requires close cooperation between government agencies, including the Ministry of Digital Transformation of Ukraine and the Ministry of Agrarian Policy and Food. This will help ensure state support and legitimacy of the educational platform, as well as attract methodological support and partial funding. The functional structure of the hub includes several modules: a competency assessment unit, an educational platform, and a mentoring support system. Innovative diagnostic techniques, digital testing and VR simulators will enable a comprehensive assessment of theoretical knowledge and practical skills of specialists. Special attention is paid to the development of soft skills through case studies and situational tasks.

The learning platform is based on the principles of personalisation, accessibility and advanced development. It offers a wide range of online courses on precision farming, smart greenhouse management, digital systems and

innovative agricultural technologies. Interactive materials, video tutorials and practical cases facilitate in-depth learning. Individual development plans based on gap analysis are created for employees' professional growth, integrating a personal progress tracker and a mentoring support system. An important advantage is the hub's seamless integration with leading enterprise management systems, which allows for automatic updating of competency requirements when new technologies are introduced. Thus, the creation of a comprehensive agricultural hub is a strategic initiative that can systematically address the problems of human resources in the agricultural sector. It ensures flexibility, innovation, and a high level of training, meeting the current needs of the modern agricultural market.

DISCUSSION

The results of the study indicate a significant impact of three main factors on increasing production efficiency in the agricultural sector: state support, human resources and technological innovations. The analysis confirmed that the introduction of digital solutions and adaptation strategies not only helps to optimise the use of resources, but also directly correlates with increased productivity in agriculture. These findings were confirmed in the works of S. Auci & N. Barbieri (2020), who drew attention to the importance of innovation in the processes of climate change adaptation and improving the technical efficiency of agriculture in Europe. The authors note that innovative technologies allow not only to maintain but also to increase productivity in the face of climate change, which is consistent with the findings of this study on the importance of technological innovation for the agricultural sector.

In turn, the comparison of the results obtained with the works of A. Hajiyeva *et al.* (2024) revealed similar trends in the impact of technological innovation on productivity, in particular in post-Soviet countries. The study also examined numerous opportunities for the introduction of digital and technological solutions that could have a positive impact on the agricultural sector, but the authors note that the introduction of innovations does not always go smoothly due to socio-economic and infrastructural

problems, especially in countries undergoing transformation. At the same time, some aspects of the study by C. Gras & D. Cáceres (2020), which focused on the problems of capitalising natural resources, partially contradict the positive dynamics of innovation in this study. The authors point out that even with technological advances, there are limitations on the use of natural resources, which can reduce production efficiency, especially in countries where natural resources cannot be properly monetised or used efficiently.

The importance of adaptation strategies in the context of global challenges, in particular climate change, is also emphasised in the works of A. Getahun & D. Milkias (2021), who analysed the efficiency of agricultural systems in Ethiopia. These authors emphasised that in order to support the sustainable development of the agricultural sector, it is necessary to constantly adapt farming practices to new climatic conditions. The researchers emphasised that success in agriculture depends on networking and close cooperation between different stakeholders. In turn, the study results showed that while cluster approaches may be appropriate in some cases, it is the integration of digital technologies that is more important for increasing efficiency, as these technologies reduce production costs, facilitate management processes and increase productivity at all stages of the agricultural cycle.

Similar approaches to increasing the resilience of the agricultural sector were also proposed in the study by M. Lacoste *et al.* (2022), which focused on the implementation of experimental practices at the farm level, which can significantly increase resilience to adverse climatic conditions. This approach is based on the principles of adaptive management and includes a set of measures that may vary depending on regional characteristics, type of agricultural activity and available resources. An important aspect considered in the study by M. Lacoste *et al.* is the role of local farmers' initiatives in increasing the adaptability of the agricultural sector. The involvement of farmers in the development and testing of new approaches allows not only to take into account the specifics of particular farms, but also promotes the effective dissemination of successful practices among other producers. Thus, a kind of adaptive knowledge exchange

network is formed, which increases the overall capacity of the agricultural sector to respond to the challenges of climate change.

The study by B.A. Magesa *et al.* (2023) emphasised the importance of choosing adaptation strategies in response to climate change, which is fully consistent with the results of this study, which emphasises the need for a flexible approach to managing production processes. In response to changes in the environment, farmers should be able to quickly adapt the strategies to minimise the negative impact of climate factors on yields and productivity. On the other hand, the experience of P. Priyadarshini & P.C. Abhilash (2021) demonstrated the effectiveness of policy recommendations aimed at strengthening the resilience of agri-food systems. This study confirmed that support from governments in the form of policy measures, funding for innovation and infrastructure development can significantly enhance the effectiveness of adaptation strategies and ensure the resilience of the agricultural sector to global challenges.

The findings of this study correlate with the conclusions of international experts on the need to introduce innovations for an accelerated transition to sustainable food systems. In particular, M. Herrero *et al.* (2020) emphasised that innovative solutions in the agricultural sector are a key tool for transforming traditional production methods into more efficient and environmentally responsible models. The study focused on a comprehensive analysis of the factors that affect the sustainability of food systems on a global scale, including the impact of technological development, government policies, and changes in consumer behaviour. Comparison with the study by M. Herrero *et al.* (2020) allowed concluding that the global trend towards accelerating the transition to sustainable food systems through innovation is not only theoretically sound but also supported by empirical data. Innovative technologies, digitalisation, adaptive governance models, and changes in policy and consumer behaviour form a comprehensive approach that can ensure the long-term stability and efficiency of the agricultural sector.

The impact of digitalisation on agriculture has also been considered in S. Rolandi *et al.* (2021) and X. Zhang & D. Fan (2024), which

emphasise the importance of digital transformation for increasing farmers' incomes. The study showed that in the context of the digitalisation of the agricultural sector, there is an increase in adaptability to changes in the market environment. In the context of the digitalisation of the agricultural sector, the study by A. Tandon *et al.* (2020), which focused on the introduction of innovative technologies to optimise processes in agriculture. The authors emphasise that digital solutions, such as the use of sensors, unmanned aerial vehicles (drones), and big data analysis, can significantly increase the efficiency of agricultural production, reduce costs, and ensure sustainable development. Most importantly, technology can improve water management, which is critical in regions with limited access to water. A. Tandon *et al.* also noted that the full implementation of digital technologies requires a change in approaches to training and skills development among farmers, which is a barrier to widespread adoption of technologies at the local level. However, overall, the study demonstrates how digitalisation can stimulate economic development and increase the competitiveness of the agricultural sector.

The results of the study are comparable to the findings of M. Kernecker *et al.* (2021), who emphasised the importance of the role of stakeholders in the implementation of digital agricultural innovations. The study emphasised the need to involve all participants in the agricultural chain, from farmers to government agencies, to ensure the successful integration of digital technologies. However, the results show that, along with stakeholder engagement, the most important factor is the effective integration of digital technologies into agricultural production. This ensures more significant and rapid changes in efficiency and productivity than traditional methods of cooperation based on cluster approaches.

A comparative analysis of studies conducted in other countries demonstrates the importance of a comprehensive approach to modernising the agricultural sector. For example, M. Schmink (2020) describes the Brazilian experience of transforming the country into a modern agrarian economy, focusing on the active introduction of innovative technologies that

have become the basis for increasing competitiveness in international markets. On the other hand, J.-H. Zhou *et al.* (2020) investigated the sustainability of vegetable production in China in the context of the COVID-19 pandemic, highlighting the importance of rapidly adapting technological processes to new conditions. This emphasises the need for rapid adaptation and readiness for change to ensure the sustainable development of the agricultural sector, which is fully consistent with the findings of this study.

No less important is the study by V. Câmpeanu (2022), which focused on the global food crisis caused by the war in Ukraine. The author emphasised that technological solutions can be an important factor in ensuring food security, as these solutions can significantly increase production efficiency and ensure the sustainability of the agricultural sector even in crisis conditions. This also correlates with the results that indicate that innovative technologies can significantly improve the economic sustainability of agricultural enterprises in the context of global challenges.

The study by A. Raihan *et al.* (2022) examined the relationship between technological innovation, economic growth, and environmental sustainability. This is an important aspect for the modernisation of the agricultural sector, as increased technological efficiency must be combined with the pursuit of environmental sustainability to avoid negative environmental impacts. The use of the latest technologies to optimise irrigation, pesticide and herbicide use, as noted by T. Talaviya *et al.* (2020), also confirms the effectiveness of innovation in reducing costs and increasing productivity. In addition, the study by D. Rose *et al.* (2021) emphasised the importance of taking into account social, economic and environmental aspects when implementing the Agriculture 4.0 concept. This approach is promising for agricultural development, as it allows taking into account all levels of impact, including not only technological innovations, but also social and environmental requirements, which creates a more balanced strategy for the development of the agricultural sector.

The research findings confirm that increasing production efficiency in the agricultural sector depends on the interaction of three main

factors: government support, human resources and technological innovation. The introduction of digital solutions and adaptation strategies is an important factor in optimising the use of resources, which directly affects productivity in agriculture.

CONCLUSIONS

In the course of the study, a comprehensive analysis of the current state and main problems of the functioning of agricultural enterprises in Ukraine was carried out. It was found that the key challenges for the agricultural sector remain insufficient technological development, limited access to financial resources, low level of staffing and uneven state support. This leads to lower productivity of enterprises, reduced production volumes and limited competitiveness in domestic and foreign markets.

The study found that the level of state support for the agricultural sector in Ukraine fluctuates significantly. In 2019-2021, the total amount of state support for the agricultural sector was UAH 13.3 billion, which was received by almost 19 thousand agricultural producers. In 2024, budget support decreased to UAH 4.2 billion, with the main beneficiaries being large agricultural enterprises with a land bank of more than 1,000 hectares. In 2022-2024, the 'Affordable Loans 5-7-9%' programme played a significant role in financing farmers, under which agricultural producers received UAH 33.8 billion, which is 15% of all loan agreements. This allowed farmers to obtain loans at favourable rates, which helped in modernising the production and secure liquidity. The eRobota programme, launched in 2022, has become an important tool to support farmers, particularly in the horticulture, berry growing and viticulture sectors. It provided farmers with grants to set up new businesses in these sectors.

The study of the impact of state support on the efficiency of agricultural production found that the current financing system needs to be improved. In particular, it is necessary to increase the transparency and accessibility of state subsidy programmes, and to create mechanisms for concessional lending to modernise production and introduce innovative technologies. It is important to focus on supporting small

and medium-sized farms, which play a significant role in ensuring the country's food security. Adopting the EU's experience in supporting small producers will help to increase the competitiveness and financial stability.

An analysis of the level of technological development has shown that the introduction of modern agricultural technologies, digitalisation of production processes and automation significantly increases the efficiency of agricultural enterprises. According to the data obtained, only 30% of agricultural enterprises in Ukraine implement modern digital tools, which significantly limits the possibilities of optimising production processes and increasing productivity. In addition, limited access to financial resources and high interest rates make it difficult for small and medium-sized enterprises to attract investment, which reduces the potential for development and modernisation. At the same time, the importance of providing enterprises with qualified personnel was noted. The lack of specialists in agricultural management, technology, and marketing limits the development potential of enterprises, so it is necessary to implement programmes of professional training and professional development of personnel.

Based on the study, recommendations for improving the strategic management of agricultural enterprises have been developed. It is proposed to create an effective system of partnership between agrarian enterprises and state

institutions, which will help to attract investments, develop and implement targeted programmes for modernisation of production. An important step is the formation of a favourable institutional environment that will ensure administrative capacity and transparency of the agricultural sector regulation.

Limitations of the study include the lack of sufficient statistical data, in particular on the technical support of agricultural enterprises, which makes it difficult to assess the impact of technological factors on productivity. The diversity of information sources and data collection methodologies creates difficulties in generalising the results. In addition, the lack of an obligation for enterprises to provide data on the technical equipment limits the possibilities for a comprehensive analysis. Future research includes a detailed analysis of the effectiveness of state support, an assessment of the impact of innovations on the economic performance of agricultural enterprises, and a study of mechanisms for attracting investment to modernise the sector. It is also important to explore opportunities to expand exports through international certification and integration into global markets.

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CONFLICT OF INTEREST

None.

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Формування стратегії підвищення ефективності діяльності аграрних підприємств

Анотація. Метою статті була розробка науково обґрунтованих рекомендацій щодо вдосконалення стратегічного управління аграрними підприємствами для підвищення їхньої ефективності та конкурентоспроможності. У роботі використано методи системного аналізу, SWOT-аналізу, а також статистико-економічні методи для оцінки стану та перспектив розвитку аграрних підприємств. У статті досліджено динаміку змін у структурі виробництва сільськогосподарської продукції за категоріями виробників у 2019-2023 роках, проаналізовано вплив військових дій на обсяги експорту основних агрокультур і узагальнено основні втрати агропромислового комплексу. Встановлено, що попри значні руйнування інфраструктури та порушення логістичних ланцюгів, український аграрний сектор демонструє високу стійкість і адаптивність. Особливу увагу приділено ролі різних форм господарювання, зокрема великих агропідприємств і фермерських господарств, у забезпеченні стабільності виробництва. Наведено дані щодо частки експорту зернових культур і технічних культур, а також розглянуто зміни у структурі посівних площ, що

відображають трансформаційні процеси в аграрному секторі в умовах війни. Визначено, що низький рівень діджиталізації, дефіцит кваліфікованих кадрів і недостатня державна підтримка є основними чинниками, що обмежують ефективність аграрного виробництва. Аналіз підтвердив, що ці проблеми призводять до зниження продуктивності, обмеженої адаптації до сучасних технологій та низької конкурентоспроможності аграрних підприємств. Виявлено, що створення комплексного аграрного хабу, який поєднує освітню, технологічну та практичну складові, здатне суттєво підвищити рівень кадрового забезпечення. Запропоновано модель управління персоналом через впровадження системи безперервного навчання, використання цифрових технологій і персоналізованих планів розвитку. Обґрунтовано необхідність тісної співпраці аграрних підприємств із Міністерством цифрової трансформації та Міністерством аграрної політики для забезпечення державної підтримки і створення нормативної бази для роботи такого хабу. Отримані наукові та практичні результати можуть бути використані як основа для розробки стратегічних рішень, спрямованих на розвиток аграрного сектору в умовах післявоєнної відбудови та адаптації до сучасних економічних викликів

Ключові слова: продуктивність; конкурентоспроможність; використання цифрових технологій; державна підтримка; розвиток кадрового забезпечення