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The dairy market of Ukraine in the context of integration into global value chains

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Abstract. The Ukrainian dairy market holds a leading position in the agri-food complex, accounting for a significant share of domestic consumption and forming an important segment of the country's export potential. The study aimed to identify the specific features of the dairy industry's functioning under wartime challenges and its integration into global value chains. The dynamics of milk production in 2020-2025 were analysed, revealing a decline in raw milk output due to a reduction in household cattle, while the growing share of industrial farms was seen as a positive trend. Foreign trade indicators showed that dairy exports decreased in the early years of the war but are gradually recovering, driven by an orientation toward EU and Middle Eastern markets. Regional disparities in enterprise productivity and technological equipment were identified, which limit integration into global value chains. Development barriers were summarised, including high production costs, limited access to investment resources, and uneven raw material quality. At the same time, prospects for shifting from a raw-materials model to the production of high-value-added goods (cheese, butter, milk powders, innovative products) were analysed. The role of European integration processes was studied, as they contribute to harmonising quality, safety, and traceability standards. Based on the conducted analysis, strategic directions for industry development were outlined: modernisation of production capacities, expansion of the processing sector, implementation of innovative technologies, intensification of export activities, and adaptation to global market requirements. Integration into international value chains is defined as a key instrument for enhancing competitiveness and ensuring the long-term resilience of Ukraine's dairy industry

Keywords: dairy processing industry; export; import; competitiveness; international markets

Introduction

Ukraine's dairy industry is a strategically important component of the agri-food sector, as it ensures food security, employment, and the country's export potential. Its significance extends beyond agriculture, influencing the socio-economic development of regions and the income of rural populations. In the context of globalisation and wartime challenges, market development requires modernisation and integration into global value chains, which involve producing high-value-added products, implementing modern technologies, and complying with international standards. The relevance of this study is driven by European integration processes, structural changes in agriculture, and wartime logistical constraints that affect the industry's competitiveness. The market demonstrates uneven development: in some regions, low-efficiency household farms dominate, while certain enterprises are export-oriented and employ advanced technologies. Such disparities create risks for integration into global value chains but also open up opportunities for modernisation and investment attraction.

Studies by Ukrainian scholars, namely V. Antoshchenkova (2020), S. Stakhurska (2023), and I. Tsvihun & A. Tsvihun (2023), have shown that Ukraine's dairy farming sector is in a prolonged structural crisis, manifested in a reduction in cattle numbers, declining productivity, and the dominance of low-efficiency household farms. M. Hladii & O. Prosovych (2022) and K. Prytula *et al.* (2025)

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emphasised that price instability, seasonal fluctuations, and a high dependence on logistical conditions characterise the milk market. These factors have been further exacerbated by the Russia-Ukraine war, which has led to infrastructure destruction, complicated export operations, and increased production costs. Ukraine's participation in global value chains remains limited due to inconsistent raw material quality, insufficient modernisation of production capacities, and the lack of systematic support for innovative technologies. As noted by O. Liakhovska (2020) and N. Kuzio *et al.* (2023), key barriers include technological disparities among enterprises, regional imbalances, and limited access to investment resources. This reduces the competitiveness of Ukrainian dairy products in global markets and complicates their integration into international production networks. O. Shpychak (2021) and L. Stepasiuk & V. Starominskyi (2024) analysed the Ukrainian milk market, which remains in a crisis state, as evidenced by declining livestock numbers, reduced production, and falling consumption. The main challenges include high production costs, reduced production capacity due to the war, and the dominance of small-scale farms with low productivity. At the same time, the authors highlighted prospects for industry development through state support, cooperation among small producers, and technological modernisation, emphasising that only a comprehensive approach can ensure stabilisation and national food security.

The Ukrainian dairy products market demonstrates uneven development, manifested in varying regional productivity, disparities in technological equipment of enterprises, and differences in the level of raw material processing. In many agricultural regions, low-efficiency household farms prevail, while certain enterprises are already implementing advanced technologies and focusing on export markets. Such unevenness creates both risks and opportunities: on the one hand, it limits integration into global value chains; on the other, it offers potential for modernisation, investment attraction, and the creation of new competitive advantages. This study aimed to conduct a comprehensive analysis of the functioning of Ukraine's dairy products market amid wartime challenges and structural transformations, and to identify opportunities and barriers to the industry's integration into global value chains.

Materials and Methods

In studying the functioning of Ukraine's dairy products market, a set of complementary scientific methods was applied, ensuring a deep, systematic, and multifaceted analysis of the industry under conditions of economic instability, wartime challenges, and integration processes. The use of various approaches enabled a comprehensive understanding of the prospects for the dairy sector's development. The method of generalisation was used to systematise scientific approaches to the development of the dairy industry, identify key concepts, and form the theoretical basis of the research. The critical literature review method was applied to analyse academic publications, strategic documents, and industry reports. Scientific articles were sourced from international databases such as Scopus and Web of Science for the period 2018-2025, enabling coverage of the most recent studies on the development of the dairy sector and its integration into global value chains. The selection criteria included key terms such as "dairy industry", "value chains", "Ukraine", and "milk production", relevance to agri-food markets, and the presence of empirical data or analytical models. The method of systematisation was used to logically structure information into thematic blocks, namely: production, processing, consumption, trade, and the regulatory environment. This enabled the identification of contradictions in scientific approaches, the outlining of research gaps, and the determination of promising directions for further study.

To assess indicator dynamics, a set of statistical methods was applied. In particular, annual growth rates and dynamic indices of milk production and cattle numbers were calculated, allowing the speed and intensity of changes in the industry to be determined. The structural shares method was used to analyse transformations in the production structure, particularly changes in the proportion of industrial farms in total milk output. Trend analysis enabled the identification of potential development scenarios up to 2025. Descriptive statistics (mean values, coefficients of variation, and dynamic indicators) provided a general overview of key trends. At the same time, comparative analysis with EU countries enabled an assessment of competitiveness and the identification of structural differences. The analytical method was used to evaluate the impact of wartime conditions, disruptions in logistics chains, changes in consumer preferences, and integration processes on market functioning. This enabled modeling development scenarios under conditions of limited access to resources and sales markets. Elements of institutional analysis were applied to assess the regulatory environment, quality standards, product safety requirements, and compliance with global value chains. Legislative acts of Ukraine, directives of the European Commission (2025), and the requirements of the Food and Agriculture Organization of the United Nations, & the World Health Organization (n.d.), as well as data from the Global Agenda for Sustainable Livestock (2024), were examined.

The research process consisted of six stages. At the first stage, statistical data, official documents, academic publications, and electronic resources related to Ukraine's dairy industry were collected, forming the basis for further analysis. At the second stage, the collected data were processed using descriptive statistical methods. Key trends in milk production, cattle numbers, and the dynamics of imports and exports were identified, allowing for an overall assessment of the market situation and key changes over time. The third stage involved comparing Ukrainian indicators with those of European Union countries and global leaders in dairy production, enabling an assessment of Ukraine's competitiveness, identification of strengths and weaknesses, and evaluation of its level of integration into global

processes. At the fourth stage, logical modeling was applied to analyse the impact of wartime conditions, logistical constraints, changes in consumer preferences, and integration processes. Several development scenarios were developed, accounting for different conditions of access to resources and markets, which helped identify potential risks and opportunities. The fifth stage focused on analysing legislative acts, quality standards, and international market requirements. Particular attention was given to harmonising Ukrainian regulations with the directives of the European Commission (2025), the Food and Agriculture Organization of the United Nations (2024), and the requirements of the Food and Agriculture Organization of the United Nations & World Health Organization (n.d.). This enabled assessment of the extent to which the regulatory environment supports or constrains the development of the dairy sector. The final stage involved synthesising the obtained results, generalising key trends, and developing recommendations for promising directions of industry development. The conclusions were based on a comprehensive analysis combining statistical, comparative, structural-dynamic, and institutional approaches.

Results and Discussion

The dairy products market occupies a key position within the agri-food market, as it encompasses the entire value chain – from raw material production to processing, logistics, and the sale of finished products. Within the typology of agricultural markets, competitive, oligopolistic, and mixed models are distinguished; thus, the oligopolistic features are most characteristic of the Ukrainian dairy market. The dominance of several large processing enterprises, combined with a broad base of small- and medium-sized raw material producers, creates an asymmetric interdependency structure. Such a configuration creates development potential but also generates challenges related to unequal access to modern technologies, financial resources, and distribution channels.

Value added in the dairy industry is generated at every stage of the production process – from raw milk production to deep processing and the export of high-value-added products. The greatest economic effect is achieved in segments such as cheese, butter, milk powders, and innovative products, including high-protein and lactose-free items. For Ukraine, the key task is to shift from exporting raw materials to high-value-added products, in line with global trends and market requirements. This requires modernising production, implementing EU standards, developing logistics, and increasing competitiveness. Participation in global value chains provides access to technologies such as automated quality and safety control systems, robotic milking systems and "smart" farms, advanced milk processing technologies including biotechnology and fermentation processes, digital solutions for logistics and supply chain traceability, energy-efficient technologies and "green" production modernisation, as well as investment resources and new sales markets, thereby enhancing production efficiency. For Ukraine's dairy industry, integration into such chains means expanding its presence in the European Union and Middle Eastern markets, developing higher-level processing, complying with international quality and safety standards, improving export infrastructure, and strengthening resilience amid global economic and logistical challenges.

The Ukrainian dairy products market is undergoing a major structural shift. From 2020 to 2025, a decline in raw milk production has been observed, primarily due to a reduction in livestock numbers in household farms and the gradual transition of the industry towards a more industrialised model. At the same time, the share of milk produced by industrial farms is increasing, thereby improving raw material quality, stabilising supply, and expanding opportunities for processing enterprises (Association of Milk Producers of Ukraine, 2025). Data in Table 1 demonstrate a steady decline in the number of cows in Ukraine during 2020-2025. The decrease from approximately 1.789 million head in 2020 to 1.154 million in 2025 indicates a deep structural transformation of the industry. The main reasons include a reduction in livestock numbers in household farms, declining profitability of small-scale production, and a shift towards a more industrial model of animal husbandry. At the same time, industrial farms are demonstrating growth, partially offsetting the overall decline.

Table 1. Number of cows and milk production in Ukraine, 2020-2025

Year	Number of cows, million head	Milk production, million tonnes
2020	1.789	9.264
2021	1.673	8.714
2022	1.544	7.768
2023	1.353	7.430
2024	1.263	7.246
2025	1.154	~6.900

Source: compiled by the author based on data from the State Statistics Service of Ukraine (n.d.)

Milk production is also declining, from over 9.264 million tonnes in 2020 to a projected 6.9 million tonnes in 2025. This decrease correlates with the reduction in livestock numbers and changes in the production structure. At the same time, the quality of milk produced by industrial enterprises is improving, creating the preconditions for the development of processing and the export of high-value-added products. Importantly, in 2025, despite the overall decline in volumes, there is an increase in the share of milk produced by industrial

farms, as well as an improvement in the technological level of processing enterprises. This indicates a gradual adaptation of the industry to the requirements of global value chains and European integration standards. Thus, Ukraine's dairy industry is moving from an extensive to an intensive model, focused on quality, technological advancement, and export orientation. Despite reduced production volumes, the industry retains growth potential through modernisation, collaboration, and integration into international markets.

Based on the data in Table 2, it can be concluded that, during 2020-2024, production of key dairy products in Ukraine was characterised by significant fluctuations, driven by a combination of economic challenges and wartime conditions. In 2020-2022, there was a sharp decline in production across almost all categories, associated with a reduction in the raw material base and livestock numbers, as well as disruptions to logistics chains. In 2023, a partial recovery in production occurred, with nearly all product categories showing growth compared to 2022, indicating enterprises' adaptation to new conditions, a reorientation of production, and stabilisation of domestic demand. In 2024, according to consolidated estimates, growth rates slowed, but the overall trend towards stabilisation persisted. Production of milk, butter, cheese, and fermented dairy products remains below 2020 levels but significantly exceeds the figures recorded in 2022, the crisis year. The most resilient segment throughout the entire period has been yogurt and fermented products, which can be explained by stable demand and high production flexibility.

Table 2. Production of dairy products in Ukraine, 2020-2024, in thousands of tonnes

Product type	2020	2021	2022	2023	2024
Milk	947.1	826.0	522.1	741.2	720.0
Butter	87.5	71.0	52.3	63.1	61.0
Fat cheeses	112.0	98.2	80.0	89.4	87.0
Fresh cheeses	81.2	85.3	62.9	76.0	74.0
Yogurt and fermented products	445.3	440.0	398.5	415.7	410.0

Source: compiled by the author based on data from the State Statistics Service of Ukraine (n.d.)

Consumption of dairy products in Ukraine remains below recommended levels, driven by changing dietary habits, rising prices, and declining household purchasing power. The most stable demand is observed for cheese, yogurt, and fermented dairy products, while drinking milk consumption is gradually decreasing. The full-scale war has significantly altered the geography of production and logistical chains. Some enterprises in central and eastern regions have been destroyed or have temporarily ceased operations, leading to a redistribution of production towards the western part of the country, where new processing centers have emerged. At the same time, the war has spurred modernisation, as enterprises that have continued operating are actively investing in energy efficiency, automation, and standardisation to meet international market requirements. According to the analytical review Enhancing Energy Efficiency (2024), modernising Ukraine's dairy industry has become a priority due to high energy costs and the need to comply with international standards. More than 200 large and nearly 600 medium-sized farms are actively implementing modern technologies, including automated milking systems, energy-efficient equipment, and digital production management solutions. This enables reduced energy consumption and improved product quality, facilitating access to EU and MENA markets. The UNIDO (2024) report, Roadmap for the Green Recovery and Transformation of the Ukrainian Food Industries, notes that food industry enterprises, including dairy producers, are investing in standardising production and adopting energy-efficient technologies to support recovery and integration into global value chains.

The technological base of Ukrainian dairy processing enterprises remains heterogeneous. Some companies operate with modern equipment, possess Hazard Analysis and Critical Control Points (HACCP) and International Organization for Standardization (ISO) certification, and are authorised to export to the EU. Others – particularly smaller processors – use outdated technologies, which limit their competitiveness. Improving product quality is a key prerequisite for integration into global value chains. Ukrainian producers are gradually adopting EU standards, opening up opportunities for the export of cheese, butter, milk powders, and innovative products. In September 2025, a new trade agreement between Ukraine and the EU was concluded, increasing duty-free quotas for key dairy products. In particular, the export quota for butter increased by 233.3% (to 10 thousand tonnes per year), for skimmed milk powder by 308% (to 20 thousand tonnes per year), and for condensed milk by 150%. This became possible through the gradual harmonisation of Ukrainian production standards with EU requirements, including those for animal welfare, veterinary regulation, and environmental protection. This example clearly illustrates how alignment with EU standards creates new export opportunities for Ukrainian dairy products, particularly cheese, butter, and milk powders (European Commission, 2025).

Ukraine has traditionally exported butter, milk powders, and cheese; however, the export structure is gradually changing. The share of high-value-added products is increasing, indicating progressive integration into global value chains. Imports of dairy products into Ukraine exhibit clear commodity specialisation, dominated by cheese and

other high-value-added products, while basic dairy raw materials are imported in significantly smaller volumes. In December 2024, Ukraine imported dairy products (HS codes 0401-0406: milk, cream, fermented products, whey, butter, cheese) worth USD 38.5 million, marking a record level for 2022-2024. The largest share of imports consisted of cheese and other high-value-added products, whereas basic raw dairy materials (non-condensed milk and cream) accounted for much smaller volumes. Compared to May-June 2024, when Ukraine recorded a positive trade balance in dairy products, imports in December increased by more than 2.1 times (State Customs Service of Ukraine, 2025). Such a structure indicates an imbalance in domestic production and a consumer preference for imported premium-segment products.

Since 2021, exports to the EU have grown steadily. In the first five months of 2025, it reached approximately 45%, indicating a strengthening integration of Ukrainian dairy products into the European market and producers' adaptation to the EU regulatory environment (Eurostat, n.d.). The share of exports to Eastern Europe and Central Asia has gradually declined throughout the period, driven by geopolitical factors, changing trade priorities, and the reorientation of logistics routes. The MENA region (Middle East and North Africa) and Asia (North and Southeast Asia) remain important export destinations; however, their shares exhibit uneven dynamics, reflecting both fluctuations in demand and logistical constraints that emerged at different times. For the first five months of 2025, two aggregated indicators – 45% and 34% – highlight the concentration of exports within the most significant regional groups, indicating further diversification and the strengthening of positions in markets with higher purchasing power. This dynamic reflects the gradual reorientation of Ukrainian dairy exports from traditional markets in Eastern Europe and Central Asia towards the EU and MENA markets. Such a transformation aligns with the broader trend of Ukraine's integration into global value chains and increasing compliance with international standards. The growing share of the EU in Ukraine's export structure can be seen as an indicator of the rising competitiveness of Ukraine's dairy industry in regulated markets.

In 2022-2024, export of Ukrainian value-added dairy products to European Union countries demonstrated stable positive growth, as evidenced by the data presented in Figure 1. The total export volume increased from USD 8 million in 2022 to a projected USD 29 million in 2024, representing a 262% increase. The main drivers of this increase were exports of ice cream, preserved dairy products, and fresh cheese, indicating a gradual shift from a raw-material-based model towards the production of higher-value-added goods. The expansion of the export product range, particularly the introduction of fresh cheese into the export structure in 2024, confirms the enhancement of processing enterprises' technological capabilities and their adaptation to the requirements of European markets. This trend demonstrates the growing competitiveness of Ukraine's dairy industry, its capacity to integrate into global value chains, and its ability to establish stable export positions despite wartime and economic challenges.

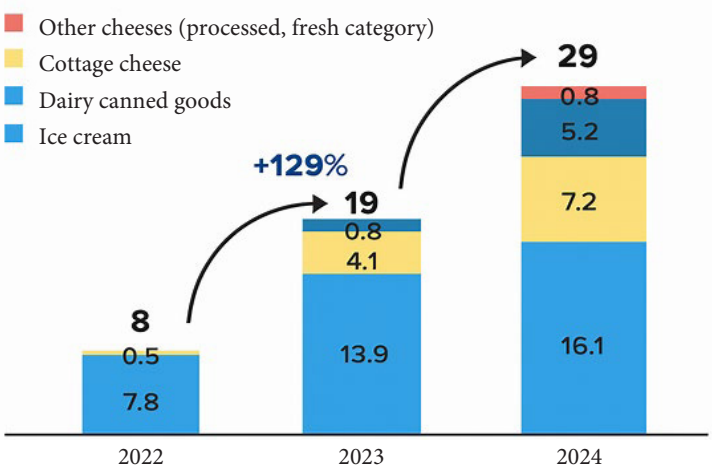

Figure 1. Trends in exports of value-added dairy products to the EU, in millions of US dollars
Source: INFAGRO Analytical Agency (2024)

An analysis of the trends in Ukraine's foreign trade in dairy products between 2020 and 2025 reveals significant structural fluctuations, driven by both internal transformations within the agricultural sector and changes in global market conditions (Fig. 2). In 2020-2021, import consistently exceeded export, reflecting a decline in the competitiveness of domestic products and an increased dependence of the domestic market on external suppliers. In 2022, amid a full-scale Russian-Ukrainian war and amid producers adapting to crisis challenges and the reorientation of trade flows, export volumes rose to USD 251 million, exceeding imports (USD 225 million) for the first time. This indicates a temporary recovery of the sector's export potential and an increase in its ability to

integrate into global value chains. In 2023-2024, imports once again exceeded exports, which may be linked to price competition from imported goods, a decline in domestic production, and a shift in consumer demand structure. In 2025, a significant increase in exports was recorded (to USD 295 million), indicating a recovery in production capacity and a gradual strengthening of Ukrainian producers' positions in foreign markets.

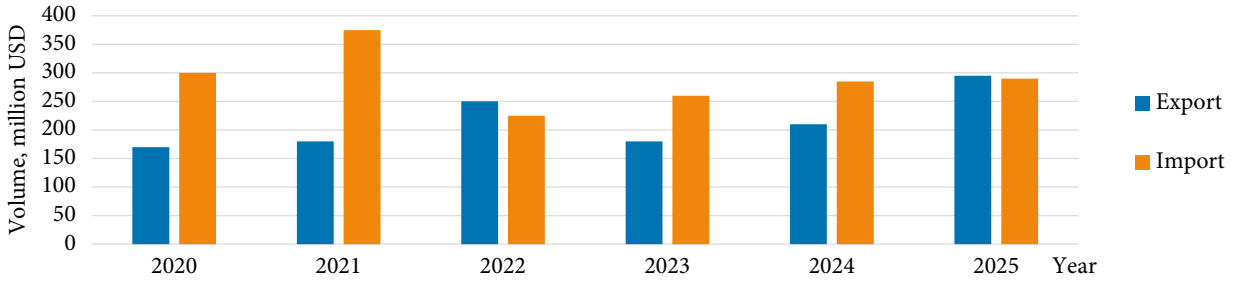

Figure 2. Export and import of dairy products in Ukraine, 2020-2025
Source: compiled by the author based on data from the State Statistics Service of Ukraine (n.d.)

The trends for 2020-2025 demonstrate the cyclical nature of the dairy sector's development and its high sensitivity to external shocks. The positive trend in 2025 can be seen as a prerequisite for the transition to a more sustainable model of export-oriented growth. The structure of external markets for Ukrainian dairy products in 2025, shown in Figure 3, allows us to identify the countries that constitute the main source of demand for Ukrainian dairy products.

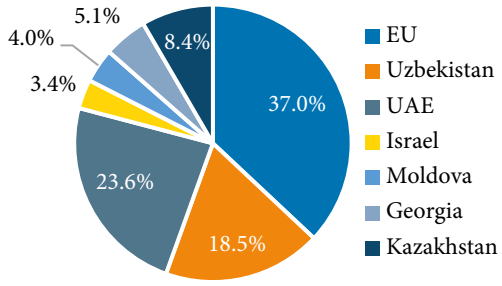

Figure 3. The largest importers of Ukrainian dairy products in 2025
Source: compiled by the author based on data from INFAGRO Analytical Agency (2024)

The largest share is held by the European Union, which accounts for more than one-third of total exports. This is explained by geographical proximity, facilitated access to the EU market, and high-quality requirements that Ukrainian producers have successfully met. The EU remains the key destination for exports of cheese, butter, and milk powders. The second most important importer is the United Arab Emirates (UAE), which demonstrates consistently high demand for dairy ingredients and value-added products. The growth of exports to the UAE indicates successful diversification of Ukrainian companies into Middle Eastern markets, where there is a shortage of domestic dairy raw materials and a high level of consumption of imported products. Uzbekistan ranks third, driven by the active development of its domestic food industry and the need for stable dairy raw material supplies. Ukrainian products are competitive in both price and quality, ensuring steady demand in this market. Kazakhstan, Georgia, Moldova, and Israel also play a significant role, collectively forming an important regional export segment.

These countries primarily import butter, cheese, and milk powders, and their demand remains stable due to historically established trade links and high trust in Ukrainian products. Overall, the export structure in 2025 demonstrates successful market diversification, strengthening of Ukraine's position in the Middle Eastern and Central Asian markets, and the continued strategic importance of the European direction. This indicates the competitiveness of Ukraine's dairy industry and its ability to adapt to global market conditions. The study has shown that innovative processes in Ukraine's dairy industry have a direct impact on its economic performance and competitiveness. It has been established that a key mechanism for integration is the implementation of digital technologies and traceability systems. The use of electronic platforms for product quality monitoring and certification enables Ukrainian producers to meet the requirements of international markets. This opens access to global value chains, where transparency and control are decisive factors. The introduction of automated milking systems and sensor technologies for monitoring animal health has led to productivity growth of 12-15% compared to traditional methods.

Digital farm management systems have enabled optimisation of feed and energy costs, reducing production costs by 8-10%. The use of blockchain solutions and QR codes for product labeling has increased consumer trust and expanded export opportunities. According to industry associations, enterprises that have implemented international certification standards (ISO, HACCP) have increased export volumes by 10-12% over the past two years. The modernisation of production capacities and technological upgrading have contributed to an increase in product value added. For example, the transition from raw milk production to the manufacture of high-quality dairy products (cheese, yogurt, milk powders) has resulted in export revenue growth of 15-18%. Innovative tools

such as digitalisation, automation, traceability, and certification have become key drivers of the competitiveness of Ukrainian dairy products. They have enabled producers not only to meet EU and global market requirements but also to position Ukraine as a reliable supplier within global value chains. The study's results confirm that innovation is a decisive factor in the economic efficiency and export potential of the dairy industry. Table 3 summarises these findings and clearly demonstrates that innovation is not merely technological upgrading, but also a strategic instrument for integration into global markets and for improving economic performance.

Table 3. Impact of innovative processes on the economic performance of Ukraine's dairy industry

Innovative tool	Example of implementation	Economic effect	Impact on competitiveness
Digitalisation	Electronic platforms for quality monitoring	Increased transparency and consumer trust	Access to global value chains
Production automation	Automated milking systems, sensors	Productivity growth of 12-15%; cost reduction of 8-10%	Cost optimisation, improved efficiency
Traceability systems	QR codes, blockchain solutions	Increase in export potential by 10-12%	Compliance with EU and global market requirements
Certification	ISO, HACCP	Expansion of sales markets; export growth	Increased trust of international partners
Production modernisation	Transition to the production of high-quality products (cheese, yogurt, milk powder)	Increase in export revenue by 15-18%	Increase in product value added

Source: compiled by the author based on ISO (n.d.), Food and Agriculture Organization of the United Nations & World Health Organization (n.d.), Eurostat (n.d.)

When analysing the state of Ukraine's dairy sector, it is important not only to assess trends in production, exports, and imports, but also to identify the key factors influencing its future development. The sector operates in a highly turbulent environment, combining systemic problems with new opportunities arising from transformational processes across domestic and international markets. It is therefore advisable to identify the main challenges hindering the sector's development, as well as the opportunities that create potential for its growth in the medium term. Key challenges include: uneven regional development; a lack of investment in production modernisation; a decline in livestock numbers and instability in the raw material base; and logistical constraints due to the Russia-Ukraine war. Opportunities include growing demand for high-value-added products; the opening of EU markets to Ukrainian dairy products; modernisation and digitalisation of production; and the development of cooperation between farmers and processors.

Research into the economic development of agri-food markets is increasingly focusing on countries' integration into global value chains and the impact of innovative technologies on competitiveness. Thus, S. Barrett *et al.* (2022) analysed the transformation of agricultural markets under the influence of globalisation and emphasised that quality standards and efficient logistics are key factors for growth. Their conclusions are consistent with this study's findings, which show that it is precisely the implementation of international standards that opens access to new markets. M. Alrhmoun *et al.* (2025) investigated the modernisation processes in the dairy sector in Central and Eastern European countries, demonstrating that investments in processing and cooperation with international companies contributed to increased productivity. A similar trend is observed in this study: the Ukrainian dairy sector has the potential to follow this path, provided that innovation, investment, and technology are introduced.

G. Kemitare *et al.* (2021) emphasised the role of small and medium-sized enterprises in ensuring sustainable economic growth in the agricultural sector in Africa. They argued that cooperation and access to finance determine success. These findings are relevant for Ukraine, as small-scale producers account for a significant share of the market, and their integration into cooperative structures could drive development. S. Nenci *et al.* (2022) investigated countries' participation in global production networks, highlighting the importance of innovation and digitalisation for enhancing competitiveness. The results of this study confirm this thesis, as digital platforms for trade and supply chain management are becoming essential for accessing foreign markets. M. Scoppola (2022) analysed the impact of EU trade policy on agri-food markets and demonstrated that trade liberalisation opens up new opportunities for exporters, but at the same time creates competitive risks. This study found that entering the markets of the Middle East and Central Asia requires adaptation to local standards and the competitive environment.

In the Ukrainian context, the work of A. Velychko *et al.* (2021) is significant, as it outlines the prospects for the sector's development through investment and cooperation. They emphasised the need to adopt global technologies and innovations to ensure economic growth. I. Suprun *et al.* (2020) highlighted the importance of focusing on external markets, particularly those with high demand growth. The authors' findings confirm this position, as it is precisely this export orientation that determines the dairy sector's potential. Research by P. Mariel & L. Arata (2022) showed that investment in research and development in China's

agricultural sector has become a key driver of increased productivity and competitiveness. This experience is instructive for Ukraine, where innovation activity remains insufficient. The authors' study confirms their conclusion that long-term growth cannot be sustained without investment in R&D. B. Biswas & K.K. Sharma (2025) analysed the role of infrastructure in promoting economic growth in India's agricultural markets. They demonstrated that the development of transport and logistics systems is crucial for integration into global supply chains. The results of this study confirm this thesis, as logistics is precisely the weak point of the Ukrainian agricultural sector, which requires modernisation. A. Muska *et al.* (2025) investigated the impact of environmental standards on the competitiveness of agri-food companies in Europe. They showed that compliance with environmental requirements is not only a barrier but also an opportunity for market positioning. It was noted that environmental certification could become an additional advantage for Ukrainian producers.

An analysis of academic sources demonstrates that the key factors for economic growth in the agri-food sector are investment, cooperation, innovation, logistics, and a focus on external markets. Most authors confirm the findings of this study; however, M. Scoppola (2022) highlights the risks of trade liberalisation, which require additional attention in policy-making. There is reason to believe that integration into global value chains is a necessary condition for development. Still, it is also worth noting that support for small producers and investment in infrastructure are essential for Ukraine. Thus, this study is consistent with most academic literature, confirming that economic growth in the agri-food sector is possible only through a comprehensive approach that includes investment, innovation, cooperation, and export orientation. At the same time, the study emphasised that the Ukrainian context has its own specific features, in particular the need to modernise logistics and support small producers, which distinguishes it from the experience of other countries.

Conclusions

Ukraine's dairy industry is undergoing a profound structural transformation. Despite existing challenges, the sector has significant development potential, particularly in the production of high-value-added products. Integration into global value chains is viewed not only as a promising direction but also as a strategic necessity that can enhance competitiveness, attract investment, and lay the foundations for sustainable industry development. The results of the study indicate the high adaptability of Ukraine's dairy industry, its ability to respond effectively to external challenges, and its utilisation of emerging opportunities. In particular, over 2020-2025, the number of cows declined from 1.789 million to 1.154 million, while milk production decreased from 9.264 million tonnes to approximately 6.9 million tonnes. At the same time, the share of industrial farms in the production structure increased, thereby improving raw material quality and supply stability. Export deliveries, which sharply declined in the early years of the war, are gradually recovering due to reorientation towards the EU and Middle Eastern markets. The recovery of export activity, expansion of export geography, and stabilisation of the domestic market create favourable conditions for further growth, increased investment attractiveness, and strengthening Ukraine's position in the global dairy market. At the same time, the war has acted as a catalyst for modernisation, as enterprises that have continued operations are actively investing in energy efficiency, automation, and standardisation to meet international market requirements. This is confirmed by examples of modernisation among large producers, including the implementation of ISO and HACCP standards, automated production lines, and energy-efficient technologies. It can be concluded that Ukraine's dairy industry is gradually transitioning from a survival to a development model, in which innovation, integration into global markets, and compliance with international standards are key. This forms the basis for sustainable growth and positions Ukraine as a reliable supplier of high-value-added dairy products on the global market.

Further research should focus on assessing the impact of international standards, digitalisation, automation, and traceability systems on production efficiency, as well as analysing state support mechanisms and investment instruments that facilitate the modernisation of the processing sector. A promising direction is the study of changes in consumer preferences, particularly the growing demand for organic, functional, and alternative dairy products, as well as the examination of logistical solutions to integrate Ukrainian producers into global supply chains. Future scientific research should model development scenarios for the industry, accounting for wartime risks, climate change, and global competition, to establish strategic guidelines for the sustainable development of the dairy industry.

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Ринок молочної продукції України в контексті інтеграції у глобальні ланцюги доданої вартості

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Анотація. Ринок молочної продукції України займає провідні позиції в агропродовольчому комплексі, забезпечуючи значну частку внутрішнього споживання та формуючи вагомий сегмент експортного потенціалу країни. Метою дослідження було визначення особливостей функціонування молочної галузі в умовах воєнних викликів та інтеграції у глобальні ланцюги доданої вартості. Було проаналізовано динаміку виробництва молока у 2020-2025 рр., де виявлено скорочення обсягів сирого молока через зменшення поголів'я у домогосподарствах, водночас узагальнено тенденцію зростання частки промислових ферм. Досліджено показники зовнішньої торгівлі, які показали, що експорт молочної продукції знизився у перші роки війни, проте поступово відновлюється завдяки орієнтації на ринки ЄС та Близького Сходу. Було виявлено регіональні диспропорції у продуктивності та технологічному оснащенні підприємств, що обмежують інтеграцію у глобальні ланцюги доданої вартості. Узагальнено бар'єри розвитку, а саме: висока собівартість продукції, обмежений доступ до інвестиційних ресурсів, нерівномірна якість сировини. Водночас проаналізовано перспективи переходу від сировинної моделі до виробництва продукції з високою доданою вартістю (сир, масло, сухі інгредієнти, інноваційні продукти). Досліджено роль євроінтеграційних процесів, які сприяють гармонізації стандартів якості, безпеки та простежуваності. На основі проведеного аналізу окреслено стратегічні напрями розвитку галузі, такі як модернізація виробничих потужностей, розширення переробного сектору, впровадження інноваційних технологій, активізація експортної діяльності та адаптація до вимог глобального ринку. Інтеграція у міжнародні ланцюги доданої вартості визначена як ключовий інструмент підвищення конкурентоспроможності та довгострокової стійкості молочної індустрії України

Ключові слова: молокопереробна галузь; експорт; імпорт; конкурентоспроможність; міжнародні ринки