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IMPROVING ORGANIZATIONAL AND ECONOMIC MECHANISMS FOR COMPETITIVE DEVELOPMENT OF THE CANNING INDUSTRY

УДОСКОНАЛЕННЯ ОРГАНІЗАЦІЙНО-ЕКОНОМІЧНИХ МЕХАНІЗМІВ КОНКУРЕНТОСПРОМОЖНОГО РОЗВИТКУ КОНСЕРВНОЇ ПРОМИСЛОВОСТІ

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The canning industry plays a key role in the agro-industrial complex by ensuring processing and long-term preservation of agricultural products. It converts perishable raw materials such as fruits, vegetables, and meat into products with extended shelf life, supporting food security and supply stability. It also reduces post-harvest losses and ensures year-round availability of nutritious food. Moreover, it increases the added value of agricultural output by enabling domestic processing instead of raw export, thus enhancing competitiveness in both domestic and international markets. The sector supports economic growth, rural employment, and related industries such as packaging, transport, and trade. Its sustainable development depends on effective organizational and economic mechanisms regulating production, management, and marketing processes.

Keywords: Canning industry, organizational and economic mechanism(s), competitiveness, agro-industrial complex, food processing.

Консервна промисловість відіграє важливу роль в агропромисловому комплексі, оскільки забезпечує переробку та довготривале зберігання сільськогосподарської продукції. Перетворюючи швидкопсувну сировину, таку як фрукти, овочі та м'ясо, на перероблені харчові продукти з тривалим терміном зберігання, ця галузь робить значний внесок у забезпечення продовольчої безпеки та стабільності системи постачання продовольства. Вона також сприяє зменшенню післязбиральних втрат, які й досі залишаються суттєвою проблемою в сільськогосподарському виробництві. Завдяки збереженню надлишкової сільськогосподарської продукції консервна промисловість забезпечує доступність продуктів протягом усього року, що підвищує рівень продовольчого забезпечення населення та дозволяє споживачам отримувати поживні продукти незалежно від сезону. Ще одним важливим внеском консервної промисловості є підвищення доданої вартості сільськогосподарської продукції. Замість експорту необробленої сировини країни можуть переробляти ці продукти всередині країни та створювати харчові товари з вищою доданою вартістю, які є більш конкурентоспроможними як на внутрішньому, так і на міжнародному ринках. Цей процес сприяє економічному зростанню, зайнятості в сільській місцевості та розвитку суміжних галузей, таких як пакування, транспорт і торгівля. Сталий розвиток консервної промисловості значною мірою залежить від ефективності організаційно-економічних механізмів, які регулюють виробництво, управління та маркетингові процеси. Ефективні організаційні структури дозволяють підприємствам раціонально організувати виробничу діяльність, краще управляти ресурсами та підтримувати стабільні виробничі ланцюги постачання. Водночас економічні механізми, такі як інвестиційне планування, управління витратами та цінова політика, дають змогу підприємствам забезпечувати фінансову стабільність і адаптуватися до змін ринку. Удосконалення цих механізмів сприяє підвищенню продуктивності підприємств, оптимальному використанню ресурсів та зростанню їх конкурентоспроможності. Технологічна модернізація, впровадження ефективних систем управління та посилення взаємодії між сільськогосподарськими виробниками і переробними підприємствами є ключовими чинниками розвитку галузі. У даному дослідженні оцінюється сучасний стан консервної промисловості та визначаються основні напрями удосконалення організаційно-економічних механізмів з метою формування конкурентної стратегії розвитку.

Ключові слова: консервна промисловість, організаційно-економічні механізми, конкурентоспроможність, агропромисловий комплекс, харчова переробка.



Statement of the problem: The canning industry has an important place within the agro-industrial complex, since it facilitates the conservation, processing and efficient utilization of agricultural products, as well as contributing to food security, employment and economic stability. By turning perishable agricultural raw materials into long-lasting food products, the canning industry helps to reduce the post-harvest losses in agricultural raw materials, stabilize demand on the market and raise the added value of agricultural production. In many countries, the development of this sector is an important factor for strengthening the national economy, supporting the development of rural areas and developing the export potential. At the same time, the industry generates excellent linkages between the agricultural, manufacturing, logistics and trade sectors, to form an integrated production and distribution system. In spite of its strategic importance, the canning industry had experienced many economic and organizational difficulties during the last few years. Globalization of food markets, changes of agricultural raw materials supply, growing competition, rising production costs and changing consumer preferences have resulted in new pressures on enterprises operating in this sector. In addition, such factors as obsolete technologies of production, inefficient management systems, insufficient access to resources of investment and insufficient integration of agricultural producers and processing enterprises often lower the efficiency of the industry as a whole. These problems indicate the necessity of improving organizational and economy controlling the functioning and development canning enterprises.

Another important challenge is the increasing demand for high-quality, safe, and environmentally-friendly food products. Modern consumers are more sensitive to the quality of products, packaging requirements, nutritional value, and sustainability practices. As a result, canning enterprises are required to update the production process, use innovative technologies, and implement effective quality control systems. At the same time, enterprises are obliged to keep up with the price of competitors in the market, with high production standards. The achievement of this balance can only be brought about through the development of efficient management structures, improved resource distribution, and the introduction of modern organizational and economic mechanisms. The development of competitive strategies

has thus become an important priority for the canning industry. In a highly competitive market environment, enterprises penalized to improve not only on increasing production volume but on its productivity, decreasing its cost, while also increasing the differentiation of products. Strategic planning and addressing supply chain, technological modernization, integration of innovative production methods are fundamental aspects of a sustainable model of development to the industry. In this regard, an improvement in the mechanisms of organizations and economics can strengthen competitiveness of canning enterprises to a big extent and increase their adaptability to prevailing market conditions. An important aspect of the enhancement of the efficiency of the canning industry is strengthening of the cooperation between agricultural producers and processing enterprises. Stable supply of quality raw material is necessary for the constant functioning of processing facilities. However, there is often poor coordination between the farmers and the industrial processors, which results in irregular supplies, volatility in prices and inefficiencies in production planning. The development of cooperative systems, contract farming systems and integrated agro-industrial clusters may help to ensure more stable and efficient supply chains. Such approaches enable producers and processors to optimally coordinate their activities and share out the economic benefits.

Technological modernization is also a very important factor in raising the competitiveness of the canning industry. The introduction of advanced processing technologies, automation in the production line, energy-efficient equipment, and modern packaging solutions can help improve productivity and cut operational costs significantly. In addition, the use of digital technologies in production management, quality control, and logistics can lead to the improvement of the efficiency of enterprises. Modern information systems are able to monitor production processes, inventory management, demand forecast and distribution channel optimization within the company. Furthermore, effective state support and institutional frameworks are important factors to promote the sustainable development of the canning industry. Government policies focused on stimulating investment, supporting innovation, enhancing infrastructure, facilitating export activities can provide the right conditions for the growth of the industry. Financial incentives, tax preferences and development programs aimed

at the agro-industrial enterprises can stimulate the modernization of the production facilities and the adoption of the modern technologies. At the same time, the establishment of clear regulatory systems and standards for quality can help to build greater consumer confidence and access to international markets.

Analysis of recent research and publications: In the conditions of the modern economy, the improvement of organizational and economic mechanisms in the canning industry is increasingly regarded as one of the key prerequisites for production efficiency, market orientation, and long-term competitiveness. In particular, M. E. Porter [1] emphasizes that the competitiveness of an *отрасль*/industry depends on the efficiency of internal organization, strategic positioning, and the ability of enterprises to adapt to changes in the external environment. At the same time, P. Kotler and K. L. Keller [2] underline that in modern market conditions, production efficiency must be closely linked with consumer needs, marketing orientation, and the formation of sustainable competitive advantages. In this context, the canning industry is no longer viewed merely as a branch of food processing responsible for preserving agricultural products, but rather as an important component of the agro-industrial system that integrates agricultural production, industrial processing, logistics, distribution, and the consumer market into a single value chain. A significant part of the scientific literature stresses that the sustainable development of food-processing industries depends on the extent to which their organizational and economic mechanisms correspond to changing market requirements. According to P. Kotler and K. L. Keller [2], enterprises operating in competitive markets must continuously improve management systems, optimize resource use, and modernize production and marketing approaches. This is especially relevant for the canning industry, where rising input costs, unstable raw material supply, stricter quality and safety standards, and stronger domestic and foreign competition increase pressure on enterprises. Under such conditions, firms must not only improve production capacities but also strengthen internal management systems, introduce strategic control tools, and ensure effective coordination between organizational and economic functions. Therefore, the competitiveness of canning enterprises increasingly depends on management quality, production flexibility, and the ability to respond rapidly to market fluctuations.

Another important area of research concerns the close relationship between the development of the canning industry and the development of agriculture. In this regard, T. Reardon and C. B. Barrett [3] show that the transformation of agro-industrial systems is closely associated with the establishment of stable links between agricultural producers and processing enterprises. Their study demonstrates that the effectiveness of food-processing enterprises largely depends on the stability, quality, and seasonality of agricultural raw materials. For this reason, recent studies emphasize the importance of vertical integration, cooperative partnerships, and contractual relations between agricultural producers and canning enterprises [3]. Such mechanisms reduce supply risks, improve production planning, and enhance the stability of industrial operations. At the same time, reports by the Food and Agriculture Organization of the United Nations (FAO) [4] indicate that the absence of stable raw material zones, insufficient coordination between agriculture and industry, and weak integration mechanisms remain among the major obstacles to the efficient functioning of many processing enterprises.

Highlighting Previously Unresolved Parts of the Overall Problem. Despite numerous studies on the food-processing sector, several issues related to the organizational and economic mechanisms of the canning industry remain insufficiently explored. Previous research has mainly focused on competitiveness and technological modernization, while limited attention has been given to the integrated improvement of management systems, investment mechanisms, and cooperation between agricultural producers and processing enterprises. In addition, the impact of state support, innovation policies, and digital transformation on the sustainable and competitive development of the canning industry has not been comprehensively analyzed. Moreover, insufficient attention has been paid to supply chain efficiency, resource optimization, and the implementation of modern strategic management approaches in canning enterprises. The role of technological innovation in increasing export potential and strengthening market adaptability also requires further investigation. Therefore, further research in this field remains scientifically relevant and necessary.

Formation of the Objectives of the Article (Task Statement). The main objective of this article is to analyze the current state of the canning industry and identify the key organizational

and economic factors affecting its competitive development. The study also aims to determine effective mechanisms for improving management efficiency, technological modernization, and cooperation between agricultural producers and processing enterprises in order to ensure sustainable industry growth. In addition, the article seeks to evaluate the role of innovation and strategic planning in strengthening the competitiveness of canning enterprises under modern market conditions.

Summary of the main research material.

The canning industry plays an important role in the process of the development of the agro-industrial complex, as it insures the processing, preservation, and long term storage of agriculture products. Through the processing of fruits, vegetables, meat and other agricultural raw materials, the canning industry helps in reducing post-harvest losses and provides consumers with safe and nutritious food products all year round. At the same time, this sector contributes significantly to the increase of national income, to the strengthening of food security, to the support of rural employment and to the enlargement of export potential. For many developing economies such as Azerbaijan, the development of food processing industries such as canning is seen as a possible strategic path for the diversification of the non-oil sector as well as consolidation of economic sustainability.

In recent years, however, the canning industry has been faced with a number of economic and organizational challenges. Globalization of food markets, fluctuations in agricultural raw material supply, rising costs of raw materials production, climate change and intensification of competition from other international producers have posed new challenges to enterprises operating in this sector. In addition, outdated production technologies, lack of investment resources and lack of coordination between agricultural producers and processing enterprises have had a negative impact on the efficiency of many canning enterprises. These factors emphasize the need to provide better organizational and economic mechanisms to control the working and development of the industry. Modern researches focus on the fact that successful organizational structures and well-designed economic mechanisms play an important role in the enhancement of the competitiveness level of food processing enterprises. Organizational mechanisms include: management structures, coordinating between production units, coordinating with suppliers and distributors, and

the implementation of modern management approaches. Economic mechanisms, on the other hand, these are financial planning, management of costs, pricing strategies and investment policies, which are intended to guarantee the efficient use of available resources. According to Porter the competitiveness of enterprises depends to a great extent on their ability to organize production processes efficiently and implement the effective forms of strategic management [15]. Another important aspect affecting the development of the industry of canning is the technological modernization level. The introduction of advanced processing equipment, automated production lines, modern packaging technologies, and quality control systems can help in increasing the productivity and lower down the production costs. Grant notes that enterprises participating in competitive markets need to continuously invest in technological innovation in order to obtain sustainable competitive benefits and adjust to the changing conditions in the competitive markets [16]. The stable supply of quality agricultural raw materials is also one of the important conditions for successful operation of canning enterprises. Since the majority of canning products are based on agricultural production, then the effectiveness of processing enterprises depends to some extent on the productivity and stability of the agricultural sector. FAO reports highlight the importance of strong linkages between agricultural producers and food processing industries in order to improve the efficiency of supply chains, reduce supply chain losses and increase overall value added within the complex formed by the agro-industry [17]. Besides the technological modernization and raw material supply also the innovation and growth of productivity are critical factors to improve the competitiveness of the canning industry. OECD research has suggested that innovation in food processing industries such as those involved in improvements in production technologies, logistics systems and product development play an important role in boosting industrial productivity and in opening up international markets [18]. When enterprises are viable in introducing innovative solutions are more able to respond to changes in demand from consumers and uphold their competitive positions. Furthermore, the setting up of food processing industries, including the canning industry, need effective institutional support and investment policies. According to the World Bank, one of the most important aspects in strengthening the competitiveness

of agro-industrial enterprises is the efforts of governments to provide financial incentives, technological modernization, infrastructure, and access to international markets [19]. Such policies can create good conditions for investment attraction, production capacity improvement and sustainable development of industries.

Organizational and economic mechanisms improvement in canning industry plays a vital role to ensure its potential long run competitive and sustainable existence. Effective management system, technical modernization, high level of integration with agricultural production and positive institutional frameworks can improve a lot the efficiency and the market performances of the canning enterprise. Therefore, the development of a systematic comprehensive competition development strategy on the basis of improved organization and economic mechanisms is one of the most important trends for the future development of the canning industry.

Figure 1 shows the distribution of applications of artificial intelligence in various sectors of agriculture from 2019 to 2024. The data revealed that field farming has the largest portion of AI applications in both years with the years being 61.1% in 2019 and slightly rising to 61.5% in 2024. This suggests that crop production is still the core of the implementation of advanced technologies, namely in monitoring crop growth, controlling irrigation systems, and maximizing yield using precision agriculture techniques.

The share of livestock farming during this period has also been added to the increase of meat of animal origin, having risen from 18.1% in 2019 to 19.1% in 2024. This is a reflection

of growth in business facilities that use digital technologies and artificial intelligence to monitor the health of animals, enhance the feeding systems, and the efficient management of the livestock production. These technologies help farmers reduce their costs, increase their productivity and have better animal welfare.

Indoor farming technologies include technologies for greenhouse production and controlled environment agriculture and this technology field represented 15.2% of AI applications in 2019, then tiny decrease to 15% in 2024. Despite the slight decrease, indoor farming is still an area in which digital monitoring systems, climate control and data-based crop management techniques are widely in use.

The category "others" is smaller agricultural activities that use AI technologies. This segment went down from 5.6% of 2019 to 4.4% of 2024, which suggests the use of advanced technologies has become more concentrated in the large agricultural sectors.

The data presented in Table 1 shows a steady and consistent growth in the global canned food market for a period between 2020 and 2024. The overall market size was valued at about 91.2 billion USD in 2020 and is expected to reach about 113 billion USD in 2024. This trend signals a steady growth of the food processing industry, and the rising significance of preserved food items in the food systems of the world. One of the most important aspects of this growth is the growing need for convenient and long-lasting food products, especially in urban centers where habits are moving towards ready-to-consume and easily stored food products.

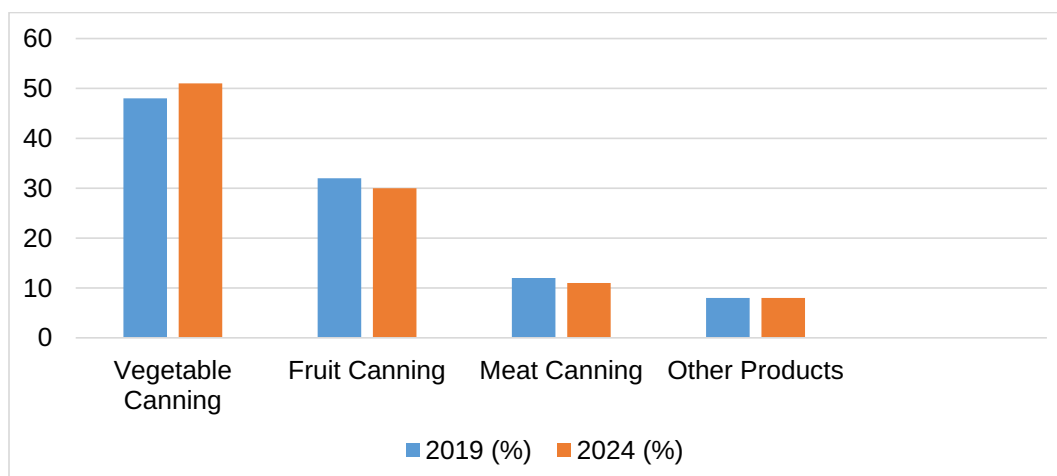


Figure 1. Structure of Canning Industry Production by Product Type (2019–2024)

Source: Food and Agriculture Organization of the United Nations [20]

Table 1

Global Canned Food Market Growth Indicators (2020–2024)

Year	Global Market Size (Billion USD)	Annual Growth Rate (%)	Export Share in Processed Food Trade (%)
2020	91.2	3.8	14.5
2021	95.6	4.8	15.1
2022	101.4	6.1	15.8
2023	107.3	5.8	16.2
2024	113.0	5.3	16.9

Source: compiled by the author based on references [21; 22]

Another important factor that affects the development of the market of canned food is the increase in population and rapid urbanization. As more and more people live in urban areas, consumers want their products to take the least amount of prep time, and to have the greatest shelf life. Canned products have met these requirements according to the convenience, reliability and extended storage capabilities. This trend has been especially apparent in developing and emerging economies where there has been a rapid rise in urbanization rates. As a result, the canning industry has become a significant part of the wider food processing industry, and has been a valuable contribution to food security and stability in the food supply chain.

The annual growth rates shown in the table also suggest a rather stable growth of the market. The growth rate of 2020 has come up to 3.8% whereas in 2022, it increased to 6.1% and then comes slightly more moderate growth rates of 5.8% in 2023 and 5.3% in 2024. The increase in the growth rate in 2022 may be attributed to several factors within the global economy including alterations in consumption patterns as well as increased demand for packaged food products during periods of supply chain disruption. The leveling of the growth rates in the following years indicates that the industry has reached a point of steady and sustainable growth rather than rapid short-term growth.

In addition to the size and growth rates of the market, the share of export of canned food products in the world trade of processed foods has also shown a gradual increase. According to the data, there was an increase in export share from 14.5 in the year 2020 to 16.9 in the year 2024. This increase reflects the reinforcement of the position of canned food products in international exchanges and the growing integration of the food processing industries in international value chains. Countries with developed food

processing sectors have been able to expand their capacities to export following investment in modern production technologies, product quality improvement and adherence to international standards for food safety.

The growing export proportion is also crucial to the competitiveness of the canning industry. Enterprises that operate in this sector have to constantly improve their efficiency in producing, lower their costs, and ensure high quality of products in order to stay competitive in international markets. In this regard, the role of organizational and economic mechanisms is very important to the development strategies of canning enterprises. Efficient management systems, strategic planning and the introduction of innovative technologies can substantially increase the competitiveness of enterprises and further improve their performance on the market. Furthermore, the expansion of the world market for canned food offers new opportunities to countries interested in diversifying their agricultural and industrial production. For countries with a good agriculture potential, the development of the canning industry can be an important mechanism for increasing the value added of agriculture products. Instead of exports of any raw agricultural goods, countries can domestically process these products and export higher-value canned products. This approach helps not only to increase economic growth, but also to generate employment and technological development in the agro-industrial sector.

Another important implication of the data in Tab. 1 is associated with the importance of investment and technological modernization of the canning industry. Enterprises, which invest in advanced processing technologies, automated production systems, and modern packaging solutions, are more capable of increasing productivity and cutting down the operational costs. These improvements enable enterprises

to react better to changing market demands and increase their competitiveness in the domestic and foreign markets as a result.

The analysis also indicates that the canning industry has a good potential for future growth, especially with respect to growing global food demand and expansion of international food trade. As the population of the world continues to grow, and the patterns of consumption change, the demand for preserved and processed food products will likely rise even more. This provides favorable conditions for the development of the canning industry, especially in countries that have abundant agricultural resources and favorable climatic conditions for crop development.

Conclusion. Based on the analysis that has been done in this study, it can be concluded that the canning industry plays an important role in the development of the agro-industrial complex and contributes significantly to economic growth, food security and also efficient use of agricultural resources. By converting perishable agricultural raw materials into processed products with extended shelf life, the industry not only eliminates the losses of agricultural production after harvest but also adds value to the production process. In addition, the canning industry is a source of rural employment, contributes to domestic food supply systems, and adds to the growth of export opportunities.

The research findings show that the competitiveness and sustainable development of the Canning industry are largely dependent on effectiveness of organizational and economic mechanism. Efficient management structures, an effective allocation of resources, and appropriate financial and investment policies are the key elements in enhancing the efficiency of production, as well as assuring the stability of the enterprise operating in this sector in the long run. At the same time, it is necessary to ensure strong integration between producers of agricultural products and enterprises of processing products, so as to implement the stable supply of raw material of high quality, which is directly influenced on productivity and profitability of canning enterprises.

The analysis of global market indicators, also shows that in recent years, the market of canned food was experiencing steady growth. The growth of the overall market size, continuous growth rates year by year, and the share of exporting

canned in the global trade indicate the further growth of the importance of the food processing industry sector in the structure of the international economy. These trends give favorable conditions for development of the canning industry, especially for countries that have good agricultural potential and growing agro-industrial industries. Technological modernization and introduction of innovative methods of production are among the determining factors for the competitiveness of the industry. Automated production line, digital monitoring system, and advanced packaging technology, modern processing equipment can help enterprises raise productivity, reduce production costs. These types of improvements help companies to better respond to changes in the market environment and consumer demands. Furthermore, in order to develop competitive strategies in the canning industry, not only should enterprises focus on the efficiency of their production but also ensure different aspects of products and brands, and to expand the market. In the face of modern food markets, in which consumer demands for safe, high-quality, and environmentally sustainable food products are typical, Therefore, enterprises are compelled to install modern quality management systems and pursue sustainable production in order not to lose their positions in the competition.

Another important factor that contributes to the sustainable development of the canning industry is the role of state policy and institutional support. Government programs aimed at stimulating investment, supporting technological modernization, improving infrastructure and promoting exports can have a considerable impact in order to strengthen the development potential of the sector. The development of positive regulatory environments and support mechanisms for agro-industrial enterprises can sized towards innovation and above all the general effectivity of the incomes. Overall, the results of this research show that improvement of organizational and economic mechanisms is a key condition to ensure the sustainable and competitive development of the canning industry. The combination of the various systems of effective management, technological innovation, investment support, and good cooperation between agriculture and industry can greatly improve the performance of canning enterprises and consolidate their position in the domestic and international market.

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