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PRIORITY AREAS FOR ENHANCING COMPETITIVENESS IN THE AGRICULTURAL SECTOR

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Summary. *In the modern era, the deepening of international economic integration, the improvement of the economic system of society, the limitation of economic resources, and rapid population growth make it necessary to meet the population's demand primarily through domestically produced agricultural products. For this reason, the article examines the key directions for enhancing competitiveness in agriculture in order to both protect the domestic market and expand export potential.*

The article explores the essence of competition and its role in economic development, the necessity of reducing production costs to increase the competitiveness of agricultural products, and the importance of efficient use of production factors in achieving cost reduction. It also analyzes the key conditions required to achieve this, including efficient use of resources, adoption of new and productive technologies, increasing domestic investment in fixed capital, improving labor productivity, increasing crop yields and livestock productivity, using high-quality seeds and hybrids, improving feed quality, and other related factors.

Furthermore, the article investigates the main directions for improving competitiveness in agriculture, such as the application of digital and innovative technologies, strategic management of water resources, climate-smart agriculture, financial mechanisms and state support, expansion of export potential, development of entrepreneurship, and cooperation. The significance of developing these areas for enhancing agricultural competitiveness in the future is also explained.

Key words: *competitive environment, export potential, digital technologies, artificial intelligence, Internet of Things (IoT), innovative technologies*

Research results. The necessity of producing competitive agricultural products in the Republic of Azerbaijan has been substantiated. The directions for improving the production of highly competitive agricultural products have been examined, and the importance of establishing a unified mechanism in this field has been emphasized.

Introduction. The security of the national economy is directly dependent on the competitiveness of the domestic food market. Ensuring national food security requires strengthening the competitiveness of the domestic market, expanding entrepreneurial activity, and identifying effective directions for improving competitiveness in agriculture. In countries developing within a market economy framework, particular attention should be paid to eliminating monopolistic practices, as monopolization has a serious negative impact on the stimulation of entrepreneurship and overall economic development in the agricultural sector. When agricultural entrepreneurs are unable to overcome the challenges they face, they either suspend their activities entirely or shift to non-agricultural sectors.

The sustainable development of agriculture largely depends on stimulating the activities of local producers. Regulation of domestic production plays a crucial role in maintaining a competitive environment in agriculture. Trends in the development of the competitive environment create a foundation for enterprises to fully realize their internal potential by enabling the formation of long-term competitive advantages in both domestic and global markets. According to the "Azerbaijan 2030: National Priorities for Socio-Economic Development", approved by the Decree of the President of the Republic of Azerbaijan, Mr. Ilham Aliyev, dated February 2, 2021, one of the key priorities for the

next decade is the establishment of a sustainably growing competitive economy. This priority includes increasing per capita national income, developing the non-oil sector and small and medium-sized enterprises, attracting foreign investment, and achieving sustainable and high-rate economic growth through enhanced macroeconomic stability [1]. In 2024, the country's gross domestic product increased by 2.6% compared to the previous year, reaching 126.3 billion manats, while GDP per capita rose by 2.1% to 12,382.5 manats [2, p. 19].

Relevance of the topic. In the modern period, characterized by the deepening of international economic integration, the improvement of the economic system of society, and the necessity of ensuring a reliable and sustainable supply of the population primarily with domestically produced agricultural products, the production of competitive agricultural goods in the agrarian sector has become one of the key tasks facing every state. At the same time, meeting the population's demand for agricultural products through environmentally friendly and competitive production is of particular importance.

This is due to the fact that genetic modifications in agricultural products are being met with serious concern worldwide. The use of technologies, chemical preparations, and genetically modified varieties and breeds that pose potential risks to human health threatens the reliable provision of food security. Ensuring the protection of public health therefore necessitates meeting the population's demand for agricultural products mainly through domestic production.

Consequently, increasing competitiveness in agriculture is of strategic importance for both protecting the domestic market and expanding export potential. From this perspective, the study of directions for improving competitiveness in agriculture is highly relevant and timely.

Research objective. To substantiate the necessity of producing competitive agricultural products and to examine the directions for improving competitiveness in agriculture.

Research object. Entrepreneurial entities engaged in the production of agricultural products in the Republic of Azerbaijan.

Research methods. The study employed observation, comparative analysis, logical generalization, a purposeful systematic approach, classification, and other relevant research methods.

MATERIALS AND DISCUSSION. The essence of competition and its role in economic development. Competition is the struggle among market participants to obtain greater profits through the production of goods and services. It is a driving force behind economic progress. In a market economy, competition is a key factor in increasing the efficiency of enterprises and private entrepreneurial activity. As a result of competition, market participants are constantly motivated to surpass each other, improve their economic performance, and avoid falling behind their rivals.

On one hand, competition stimulates producers to make production sufficiently flexible; on the other hand, it can lead to the bankruptcy of those unable to withstand economic pressure. Competition necessitates the rapid application of scientific and technological achievements in production, the adoption of advanced labor organization methods, and organizational and structural changes in the economy. Otherwise, an economy risks falling behind in global economic development. Through competition, product quality improves, allowing producers to offer competitive products in international markets. Additionally, competition encourages producers to reduce material costs per unit of output, thereby increasing both production efficiency and overall economic efficiency. This, in turn, allows consumer demand to be met more effectively using available resources.

Moreover, competition compels economic entities to maintain a portion of production capacity in reserve. When market conditions become favorable, these reserve resources can be mobilized to create advantageous production and market opportunities. Experience in Western countries shows that maintaining part of production capacity in reserve is necessary for survival in competitive markets. Competition manifests not only among producers but also between producers and consumers, as well as among consumers themselves.

To analyze the nature and intensity of competition, Michael E. Porter's "**Five Forces Model**" is widely used. According to this theory, five competitive forces can be distinguished:

1. **Rivalry among existing competitors:** How many competitors exist in the market, and how aggressive are they?
2. **Threat of substitute products or services:** Can buyers easily replace your product with another?
3. **Threat of new entrants:** Is it easy for new competitors to enter the market, or are significant investments required?
4. **Bargaining power of suppliers:** Can suppliers dictate prices?
5. **Bargaining power of buyers:** Are customers strong enough to drive prices down?

Porter's Five Forces Model serves as a conceptual tool for identifying and diagnosing the principal structures of competitive forces. Its use provides a simple approach to understanding complex market problems.

Competition reflects the relationships among market participants in a market economy. While it stimulates production flexibility, it also eliminates inefficient enterprises. The competitiveness of a product can be assessed at the market level or within a specific enterprise. Agricultural enterprises that are capable of generating normal profits by efficiently allocating existing resources in areas with comparative advantages in domestic and foreign markets are considered competitive. Enterprises that can achieve additional profits in the market to a certain extent are also deemed competitive.

The importance of reducing production costs in enhancing the competitiveness of agricultural products. Efficient use of production factors plays a crucial role in reducing production costs. Achieving this requires careful resource management, adoption of new productive technologies, use of high-quality seeds and hybrids, improvement of feed quality, and other related measures.

The efficiency of fixed capital utilization is also essential in lowering production costs. Efficient use of fixed capital reduces capital expenses per unit of output. This efficiency can be enhanced by improving the structure of fixed assets, eliminating excess resources from production, increasing the active portion of fixed capital, optimizing the use of machinery and equipment, and improving the performance of tractors, combines, and other agricultural machinery.

In 2024, total domestic investments in fixed capital across all economic sectors amounted to 18,774.7 million manats, while domestic investments in fixed capital for agriculture, forestry, and fisheries amounted to only 282.2 million manats, representing just 1.5% of total investments [2, p. 500]. In the same year, out of 12,416.3 million manats of fixed assets commissioned nationwide, only 104.2 million manats (0.8%) belonged to agriculture, forestry, and fisheries [2, p. 496]. As seen, similar to previous years, the share of agriculture, forestry, and fisheries in both fixed capital investments and commissioned assets remained very low in 2024.

Increasing labor productivity directly contributes to reducing labor costs, which are a major component of production costs. Studies indicate that, compared to 2020, labor input per centner decreased in several sectors by 2024: cereals (13.3%), raw cotton (18.0%), sugar beet (17.1%), and tobacco (24.9%). However, some sectors experienced increases: vegetables (4.9%), fruits and berries (8.2%), and milk production (31.2%) [2, p. 110]. Key factors for improving labor productivity include comprehensive mechanization and automation of production, improvement of labor remuneration, and enhancement of working conditions. Efficient use of labor resources is also strongly influenced by high productivity and worker motivation [5, p. 148].

To increase the competitiveness of agricultural production, it is essential to first raise productivity and reduce production costs. Effective economic tools play a critical role in this process. Increasing productivity relies on the use of elite seeds and saplings, high-quality breeds of livestock, and the improvement of soil quality—these are fundamental and essential conditions.

Reducing production costs provides broader opportunities to increase the productivity of crops and livestock, thereby enhancing the overall competitiveness of agricultural products.

Table 1

Total agricultural production and yield

Product (initial weight)	2022	2023	2024
Cereals and pulses	3,161.3	3,248.6	3,278.1
Cotton	322.5	276.3	310.8
Tobacco	5.1	6.3	6.5
Sugar beet	210.6	206.1	244.2
Sunflower for seeds	28.3	28.2	30.2
Potato	1,074.3	1,010.5	927.4
Vegetables	1,823.3	1,825.6	1,838.9
Melons and gourds	469.3	438.2	490.6
Fruits and berries	1,253.1	1,261.3	1,317.9
Grapes	202.6	224.5	205.1
Tea leaves	1.00	1.12	1.07
Yield per hectare (centners/ha)			
Product	2022	2023	2024
Cereals and pulses	31.3	33.0	31.0
Cotton	30.9	29.5	30.3
Tobacco	20.8	23.1	24.7
Sugar beet	455.1	481.6	437.8
Sunflower for seeds	23.0	25.9	21.9
Potato	190.4	199.6	193.3
Vegetables	196.2	200.8	210.0
Melons and gourds	233.1	254.0	253.5
Fruits and berries	71.5	70.7	70.7
Grapes	102.7	113.3	102.2
Tea leaves	12.2	15.3	12.5

Statistical indicators of Azerbaijan. Baku-2025. p. 441

As can be seen from the table, in 2024, compared to 2022, a slight increase in total agricultural production was observed across all sectors except cotton. Regarding productivity per hectare, a slight decrease was recorded in cereals and pulses, cotton, sunflower for grain, and fruits and berries, while other sectors showed an increase. Overall, there were no significant changes in total production and productivity of agricultural products between 2022 and 2024.

Directions for improving competitiveness in agriculture

The main directions for enhancing competitiveness in agriculture include:

- Digital and Innovative Technologies
- Strategic Management of Water Resources
- Climate-Friendly Agriculture
- Financial and State Support
- Expanding Export Potential
- Entrepreneurship Development and Cooperation

One of the major challenges of modern agriculture is the inefficient use of existing water resources. In Azerbaijan, the shortage of irrigation water represents a significant difficulty, particularly for small and medium-sized agricultural enterprises. Therefore, assessing irrigation water requirements and planning its use appropriately is of critical importance. To achieve this, the suitable irrigation method and volume must be determined by considering climatic parameters, soil moisture, and plant characteristics. Sensors and equipment necessary for these processes can be integrated into an Internet of Things (IoT) system, allowing real-time monitoring and separate processing of data for individual

crops. Changes in the parameters are continuously tracked, and all information is transmitted to the user via a central transmitter. The system can then calculate the optimal irrigation amount for each application, preventing excessive water use, reducing disease risks, preserving soil quality, and avoiding productivity losses. The types of sensors employed and the corresponding control measures depend primarily on climate conditions, soil moisture levels, photosynthesis rates, and stomatal conductance values. Against the backdrop of climate change, optimizing irrigation systems-particularly drip irrigation-has emerged as a decisive factor for enhancing agricultural competitiveness in 2026. To increase efficiency in this area, approximately 490 million manats were allocated from the state budget for land reclamation and irrigation projects in 2026. Resource conservation in agriculture was established as a key strategic goal for both environmental sustainability and cost reduction. Given the threat of water scarcity in Azerbaijan, the efficient use of water resources is considered fundamental to maintaining competitiveness. The main approaches implemented in this direction include:

- Modern irrigation systems: The transition to drip and sprinkler irrigation systems, which can save 50-70% of water compared to traditional methods, will be accelerated.
- Smart Irrigation: Irrigation is conducted only when necessary and in amounts tailored to plant needs, using sensors that monitor soil moisture in real time.
- Infrastructure renewal: To improve the efficiency of water delivery and reduce losses, 490 million manats from the 2026 state budget were allocated to rehabilitate main soil channels and implement land reclamation measures [11].

In terms of climate-friendly agriculture, priority measures include the use of drought-tolerant seed varieties, the preservation of soil health, and strategies aimed at reducing the carbon footprint of agricultural production.

Financial and State Support. The state support policy for the agricultural sector is implemented with the aim of increasing the income of agricultural enterprises, protecting consumers, improving the production structure, boosting output, enhancing efficiency, and mitigating or preventing price fluctuations of agricultural products. In other words, disruptions in the structure and organization of the agricultural sector, structural instability, shifts in supply and demand, immobility of resources, and volatility in agricultural incomes and prices are the main reasons necessitating state intervention in agriculture [7, p. 58-59]. In the 2026 state budget, specific funds have been allocated to stimulate exports. Through the Export and Investment Promotion Agency (AZPROMO), farmers receive marketing and exhibition support for accessing foreign markets. In 2026, the state offers a 40% subsidy and long-term interest-free loans for the acquisition of resource-saving technologies, such as modern irrigation equipment. This initiative ensures that even small-scale farmers have access to cost-efficient technologies. The 2026 state budget allocates 1.2 billion manats for agricultural and food security measures, representing approximately 15% of the agricultural GDP. Of this amount, 42% (513 million manats) is directed toward direct subsidies and support for machinery. Farms implementing resource-saving technologies are expected to reduce production costs by an average of 15-25% in 2026, enabling them to offer cheaper and more competitive products in the market [11].

Expanding export potential: Research shows that in Azerbaijan, the import of many agricultural products exceeds their export. In 2024, imports of live animals and animal products reached 548,760.0 thousand USD, while exports amounted to 108,496.0 thousand USD. For plant-based products, imports totaled 905,669.6 thousand USD, with exports at 108,496.0 thousand USD. Imports of animal and plant-based fats and oils were 226,504.2 thousand USD, whereas exports amounted to 28,850.1 thousand USD [2, p. 572].

To expand export potential, measures are planned to increase the competitiveness of agricultural products. In 2026, Azerbaijan aims to enhance its agricultural export potential through strategies that target both traditional and new markets. The state's objective for 2026 is to maximize the share of the agricultural sector in non-oil exports. By geographically diversifying agricultural exports, Azerbaijan plans not only to strengthen its presence in Russia and other CIS markets but also to significantly increase exports to the Gulf countries (UAE, Saudi Arabia), the European Union, and China in 2026.

Priority product groups for export include fruits and vegetables, cottonseed, and processed silk and textile products.

Strengthening the “Made in Azerbaijan” brand, along with ensuring international certification of exported products, is expected to increase competitiveness and facilitate direct access to European supermarkets.

Value-Added Products: Currently, the majority of agricultural products in Azerbaijan are exported in the form of raw materials. Transitioning from raw material exports to processed products—such as juices, canned goods, and dried fruits—is therefore a key economic trend for 2026. This shift is expected to increase export revenues in the sector by 20-30%. Consequently, the development of agro-processing industries is of critical importance.

Studies indicate that agricultural entrepreneurs often sell products to processing enterprises at very low prices, resulting in cash revenues that do not cover production costs. Therefore, it is necessary to establish a fair pricing mechanism that regulates economic relations between producers, suppliers, processors, and sales organizations. At present, the capacity of the country’s processing industry is insufficient to handle the raw materials produced, and some processed products are not competitive in the global market. In this context, the implementation of the measures outlined in the Presidential Decree “On a number of measures for the development of production and processing industry in the agricultural sector,” dated July 15, 2021, is crucial. These measures include determining the range of locally processed products that can replace imports, optimizing production costs, and providing tax incentives to agro-processing enterprises to reduce the price of locally produced goods [3]. To ensure a competitive mechanism in the agro-processing sector, it is necessary to establish financial and credit systems, pricing mechanisms, long-term forecasting, tax policies, state regulation, effective insurance systems, state support for sector development, and export relations—all based on market economy principles. Reconciling the interests of agricultural producers and processors is essential for ensuring competitiveness. Under modern economic conditions, increasing the competitiveness of agro-processed products requires preventing monopolistic practices in consumer markets, adopting advanced international experience in trade, and achieving optimal economic and environmental efficiency in production [5].

One of the key directions for improving agricultural competitiveness is Entrepreneurship Development and Cooperation. Within the framework of the “Socio-Economic Development Strategy for 2022-2026,” promoting farmer cooperation and establishing agroparks are considered essential for gaining a competitive advantage. As a result of these reforms, the sector is expected to achieve an average annual growth rate of 4% by 2026.

Digitalization and innovative technologies in agriculture. Digitalization in agriculture is the process of using digital technologies to simplify and make workflows and processes more efficient, change the business model, and open new sources of income and value-creating opportunities using digitized information. Digitalization is the adoption of information and communication technologies, including the Internet, mobile technologies and devices, and data analytics, to improve the creation, collection, exchange, integration, analysis, retrieval, search, and presentation of digital content. In particular, in the modern technology-based world, it is very important to master digital culture to remain competitive and succeed. In the modern era, there is a growing need to build systems based on the application of new technological solutions that can make all sectors of agricultural production more productive and sustainable. Currently, the development of information technologies and the improvement of remote management have reached such a level that even the reports of the United Nations Food and Agriculture Organization (FAO) call it the “digital revolution” [10].

The modern economy requires the widespread application of digital technologies. The latest achievements in digital technologies—such as faster computers, smartphones, sensors, and artificial intelligence (AI)—are transforming the use of equipment in agriculture, leading to new trends in economic development. The benefits of mechanization and digital automation in agriculture begin with labor savings, which quickly translate into additional advantages. While mechanization positively impacts labor productivity, poverty reduction, food security, and healthy nutrition, it also raises

concerns regarding unemployment, biodiversity loss, and land degradation. Digitalization in agriculture is a set of innovative methods that involve the use of digital tools and data to improve the efficiency, sustainability, and management of processes in the agricultural sector. It incorporates the following technologies:

- smart sensors;
- internet resources;
- artificial intelligence (AI);
- data analytics;
- automation, robotization, etc.

Digitalization is the defining technological transformation of this era, and it is having a significant impact on agriculture. In the agricultural sector, digitalization is increasingly focused on precision agriculture and the Internet of Things (IoT). The Internet of Things refers to the connection and integration of technological signals, that is, smart devices. The forecast that the world population will reach 9.7 billion by 2050 makes it necessary to increase global agricultural production by at least 70% to meet future food demand. In this context, improving agricultural productivity through more efficient methods and the use of advanced agricultural technologies is inevitable [9].

The following benefits of smart agricultural technologies can be highlighted:

- Minimizing harmful chemicals that affect the environment
- Increasing productivity and improving product quality
- Simplifying workforce tasks
- Minimizing energy costs
- Enabling quick and efficient implementation of business decisions
- Reducing economic fluctuations through the establishment of an agricultural registry system [6, p.147]

In 2026, it is planned to allocate a portion of agricultural spending specifically to innovative approaches and the digitalization of the agricultural sector, such as artificial intelligence (AI) drones and digital farm management systems. The Digital Farming Era 2026 initiative includes the “*Electronic Agriculture*” Information System (EKTIS), AI and data-driven decision-making, strategy and roadmap development, smart irrigation, and satellite observation as the primary directions for digitalization. Through these measures, the 2022–2026 strategy aims to achieve an average annual growth of 4% in agriculture. These technologies are expected to reduce costs and enhance the competitiveness of Azerbaijani agricultural products in international markets.

Scientific novelty of the research: As a result of this study, the key directions for improving the competitiveness of agricultural enterprises and agri-food products, as well as the factors ensuring this competitiveness, have been identified.

Applied significance of the research: The findings can be used by economic entities engaged in entrepreneurial activity within the agricultural sector to determine strategies for improving the competitiveness of their products.

Economic efficiency of the research: The results, along with the proposed recommendations, can contribute to more efficient development of entrepreneurship by increasing the competitiveness of products through the study and implementation of agricultural competitiveness improvement strategies in the future.

Conclusion. In enhancing the competitiveness of agricultural products, it is essential to reduce production costs, improve the efficiency of fixed capital utilization, increase domestic investments in fixed capital, lower labor costs, and raise the productivity of crops and livestock. The main directions for improving competitiveness in agriculture include: Digital and Innovative Technologies, Strategic Management of Water Resources, Climate-Responsible Agriculture, Financial and State Support, Expansion of Export Potential, Entrepreneurship Development and Cooperation. The implementation of directions of improving competitiveness in agriculture is of particular importance in ensuring food security of the population by increasing the competitiveness of agriculture, leading to both the protection of the domestic market and the improvement of export potential.

Digitalization and innovative technologies play a critical role in improving competitiveness in agriculture. Digitalization involves a set of innovative methods that utilize digital tools and data to enhance efficiency, sustainability, and management of processes within the agricultural sector. It represents the defining technological transformation of this era and has a significant impact on agriculture. In particular, digitalization emphasizes precision agriculture and the Internet of Things (IoT). Therefore, in the current period, implementing strategies to improve competitiveness in agriculture should be a primary objective of the state.

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