IRSTI 06.71.07
UDC 338.432
Research Article
https://www.jpra-kazniiapk.kz
https://doi.org/10.46666/2023-3.2708-9991.15

MILK AND DAIRY PRODUCTS MARKET: CREATION OF DAIRY CLUSTERS

СҮТ ЖӘНЕ СҮТ ӨНІМДЕРІ НАРЫҒЫ: СҮТ КЛАСТЕРЛЕРІН ҚҰРУ

РЫНОК МОЛОКА И МОЛОЧНОЙ ПРОДУКЦИИ: СОЗДАНИЕ МОЛОЧНЫХ КЛАСТЕРОВ

G.K. JOLDASBAYEVA [1]*
Dr.E.Sc., Professor
A.T. BAKTGEREYEVA[1]
C.E.Sc.
SH. GAISINA[2]
Dr.E.Sc., Professor
[1] Almaty Technological University, Almaty, Kazakhstan
[2]Technical University of Applied Sciences, Lemgo, Germany
**corresponding author e-mail: gulnara_00@mail.ru*
Г.К. ДЖОЛДАСБАЕВА[1]*
э.ғ.д., профессор
А.Т. БАКТГЕРЕЕВА[1]
э.ғ.к.
Ш. ГАЙСИНА [2]
э.ғ.д., профессор
[1]Алматы технология университеті, Алматы, Қазақстан
[2] Қолданбалы ғылымдар Техникалық университеті, Лемго, Германия
**автордың электрондық поштасы: gulnara_00@mail.ru*
Г.К. ДЖОЛДАСБАЕВА[1]*
д.э.н., профессор
А.Т. БАКТГЕРЕЕВА[1]
к.э.н.
Ш. ГАЙСИНА [2]
д.э.н., профессор
[1]Алматинский технологический университет, Алматы, Казахстан
[2]Технический университет прикладных наук, Лемго, Германия
**электронная почта автора: gulnara_00@mail.ru*

Abstract. In modern conditions, public health as a strategic resource is one of the most important indicators that determine the level and quality of life, and is ensured by saturating the market with high-quality food products with high consumer properties. The authors have studied the current state of production of milk and its processed products, which are in the second place in demand after bakery products. In each region of the republic there are processing enterprises of the dairy industry, but not all producers supply goods of high quality. *Purpose -* development of practical recommendations to provide the domestic market with high-grade and competitive dairy products on the basis of formation and development of dairy clusters. *Methods* - the system approach was used to determine the value chain from raw materials to finished products, statistical and comparative analysis - to study the dynamics, state, potential opportunities of the dairy subcomplex, economic entities, generalization method - to summarize the results of the study. *Results - the* main problems existing in the dairy industry of Kazakhstan are revealed: insufficiency of milk for food products, underutilization of production capacities, lack of large farms producing conditioned raw materials in the required volumes, high import dependence, purchase prices for raw milk. *Conclusions* - the authors recommend the formation of territorial dairy cluster structures. The implementation of this direction will allow to meet the needs not only of the domestic market, but also to achieve a high export potential of the dairy industry, to solve the issues of supply of necessary equipment, fodder for livestock, to increase the competitive advantages of dairy products, the level of utilization of the existing production potential, as well as to expand the raw material base. Of

particular importance is the study of promising areas of the dairy industry, since milk and dairy products are necessarily present in the food basket of every family.

Аңдатпа. Қазіргі жағдайда халықтың денсаулығы стратегиялық ресурс ретінде өмір сүру деңгейі мен сапасын айқындайтын маңызды көрсеткіштердің бірі болып табылады және рынокты тұтыну қасиеттері жоғары сапалы азық-түлік өнімдерімен молықтыру есебінен қамтамасыз етіледі. Авторлар нан-тоқаш өнімдерінен кейін сұраныс бойынша екінші орында тұрған сүт және оны қайта өңдеу өнімдері өндірісінің қазіргі жай-күйін зерттеді. Республиканың әрбір аймағында сүт саласының қайта өңдеу кәсіпорындары жұмыс істейді, бірақ барлық өндірушілер жоғары сапалы тауарларды жеткізе бермейді. *Мақсаты* - сүт кластерлерін қалыптастыру және дамыту негізінде ішкі нарықты жоғары сортты және бәсекеге қабілетті сүт өнімдерімен қамтамасыз ету бойынша практикалық ұсынымдар әзірлеу. *Әдістер* - жүйелі тәсіл шикізаттан дайын өнімдерге дейін құн жасау тізбегін айқындау кезінде, статистикалық және салыстырмалы талдау - сүт кіші кешенінің, шаруашылық жүргізуші субъектілердің серпінін, жай-күйін, ықтимал мүмкіндіктерін зерделеу үшін, қорыту әдісі - жүргізілген зерттеудің қорытындыларын шығару кезінде пайдаланылды. Нәтижелері - Қазақстанның сүт өнеркәсібінде орын алып отырған негізгі проблемалар анықталды: тамақ өнімдерін алу үшін сүттің жеткіліксіздігі, өндірістік қуаттардың толық жүктелмеуі, қажетті көлемде кондициялық шикізат өндіретін ірі шаруашылықтардың болмауы, импортқа тәуелділіктің жоғарылығы, шикі сүттің сатып алу бағасы. *Қорытындылар* - авторлар аумақтық сүт кластерлік құрылымдарын қалыптастыруды ұсынады. Осы бағытты іске асыру отандық нарықтың қажеттілігін қанағаттандырып қана қоймай, сонымен қатар сүт саласының жоғары экспорттық әлеуетіне қол жеткізуге, қажетті жабдықтарды, мал азығын жеткізу мәселелерін шешуге, сүт тауарларының бәсекелестік артықшылықтарын, қолда бар өндірістік әлеуетті пайдалану деңгейін арттыруға, сондай-ақ шикізат базасын кеңейтуге мүмкіндік береді. Сүт индустриясының перспективалық бағыттарын зерделеу ерекше маңызға ие болады, өйткені сүт және сүт өнімдері әрбір отбасының азық-түлік себетінде міндетті түрде болады.

Аннотация. В современных условиях здоровье населения как стратегический ресурс является одним из важнейших показателей, определяющих уровень и качество жизни, и обеспечивается за счет насыщения рынка качественной продовольственной продукцией с высокими потребительскими свойствами. Авторами исследовано современное состояние производства молока и продуктов его переработки, которые находятся на втором месте по спросу после хлебобулочных изделий. В каждом регионе республики действуют перерабатывающие предприятия молочной отрасли, но далеко не все производители поставляют товары высокого качества. *Цель* – разработка практических рекомендаций по обеспечению внутреннего рынка высокосортной и конкурентоспособной молочной продукцией на основе формирования и развития молочных кластеров. *Методы* - системный подход использован при определении цепочки создания стоимости от сырья до готовых продуктов, статистический и сравнительный анализ – для изучения динамики, состояния, потенциальных возможностей молочного подкомплекса, хозяйствующих субъектов, метод обобщения - при подведении итогов проведенного исследования. *Результаты* - выявлены основные проблемы, существующие в молочной промышленности Казахстана: недостаточность молока для получения продуктов питания, недозагруженность производственных мощностей, отсутствие крупных хозяйств, производящих кондиционное сырье в нужных объемах, высокие импортозависимость, закупочные цены на сырое молоко. *Выводы* - авторы рекомендуют формировать территориальные молочные кластерные структуры. Реализация данного направления позволит удовлетворить потребности не только отечественного рынка, но и достичь высокого экспортного потенциала молочной отрасли, решить вопросы поставок необходимого оборудования, кормов для скота, повысить конкурентные преимущества молочных товаров, уровень использования имеющегося производственного потенциала, а также расширить сырьевую базу. Особое значение приобретает изучение перспективных направлений молочной индустрии, поскольку молоко и молочная продукция обязательно присутствуют в продуктовой корзине каждой семьи.

Key words: dairy industry, dairy products market, farms, personal farms, processing enterprises, dairy clusters, competitiveness.

Түйінді сөздер: сүт саласы, сүт өнімдері нарығы, фермалар, жеке шаруашылықтар, қайта өңдеу кәсіпорындары, сүт кластерлері, бәсекеге қабілеттілік.

Ключевые слова: молочная отрасль, рынок молочной продукции, фермы, личные подобные хозяйства, перерабатывающие предприятия, молочные кластеры, конкурентоспособность.

Received: 16.07.2024. Approved after Peer-reviewed: 03.09.2024. Accepted: 17.09.2024.

Introduction

The strategic task of the food and processing industry is the sustainable supply of safe and high–quality food to the population of the country. The dairy industry forms one of the five strategic food markets. Of particular importance in modern conditions is the study of promising directions for the development of the dairy products market, since milk and dairy products are essential and everyday food products (Berezhnaya E.A.) [1].

The food market is characterized by a consistently high level of saturation with all types of dairy products. However, domestic dairy enterprises fully meet the needs of the domestic market only for liquid processed milk and cream, and for other types of dairy products there is import dependence and the country's food security is not ensured. Prices for milk and dairy products tend to constantly increase, and therefore the level of consumption of dairy products per capita is decreasing.

The main problem in the development of the dairy industry is the lack of raw materials-milk. About 70% of raw milk from its total volume is produced in private subsidiary farms of the population, the quality of which does not meet the requirements of product quality and safety, and therefore the low level of processing of raw materials, the low level of use of production capacities of enterprises, etc. All this leads to an increase in the cost of dairy products and makes them uncompetitive compared to cheaper imported products, which are in demand among low-income segments of the population.

Under the current conditions, it is possible to ensure the growth of milk volumes for industrial processing only on the basis of innovation-oriented development of dairy cattle breeding, an optimal combination of large, medium and small dairy farms, increasing the genetic potential of the dairy herd, developing the feed base, improving the system of relationships between raw milk suppliers, processors and sales representatives.

For the development of dairy cattle breeding, feed base and processing enterprises, all measures and support tools are included and implemented by the state, however, the volume of milk produced by large and medium-sized dairy farmers increased by 1.3% in 2023 compared to 2022.

In order to meet the needs of the popular-tion for high-quality, functional, affordable, market-appropriate dairy products, it is advisable to form agro-industrial clusters as one of the important elements of the development of the dairy market. Currently, the formation of clusters in the regions of the country is not being implemented systematically and not fully.

Therefore, solving problems in the dairy industry and in the dairy market by forming dairy clusters as an economic agglomeration of interconnected enterprises and growth points are relevant.

Literature Review

The authors consider the concept of developing the market of high-quality milk and dairy products on the basis of subsidizing the market of milk and dairy products through the implementation of state support measures **(**Pyzhikova I., Ovsyanko L.A.) [2].

According to Aimen A.T., Moldasheva A.B. [3] it follows that in order to solve the problems of increasing the quality and competitiveness of raw milk, it is necessary to form specialized dairy farms of large and medium.

According to Mascaraque M. [4], innovation is crucial for creating added value in the dairy industry. This includes the development of new products that meet the changing preferences of consumers, such as more healthy and functional products, as well as alternative plant-based products. In the long term, these innovative technologies can change the current situation in the dairy industry.

Nechitailov A.S. [5] in his work notes that the successful development of the milk and dairy products market is facilitated by the state of the dairy cattle industry, the economical use of its production potential, the introduction of innovations, the growth of cow productivity, the safety of livestock, improving the quality of milk and dairy products.

As a result of the conducted research on the value chain of dairy products, Koch Ch., Johansson M., Kalling Th. et al. [6] revealed the following pattern: in agriculture in most regions of the world, the consolidation process is underway, large processors prevail in developed countries, the logistics of the cold chain is developed, large retailers and influential players are present in retail trade, and in developing countries, the opposite pattern is observed throughout the chain. The authors also identified 3 important factors that will most influence the future development of the dairy industry in the world, these are demographics – population growth, climate change, i.e. the availability of food, feed and water is crucial for the dairy industry, and the growing global demand for dairy products.

The authors believe that the availability of fodder, the quality of raw milk, and cooperation with local government and dairy experts are considered to be key elements for the success of the cluster (Zijlstra J., Van der Lee Jan) [7].

The formation and evolution of industrial clusters is actually the embodiment of market development. Factors such as government support, creativity in industry, scale of production, innovation, and the development of network technologies have a significant impact on industrial clusters (Yang H., Yanni J., Can C., et al.) [8].

For the development of the dairy industry and the dairy products market, the authors recommend the preservation of all tools and measures of state support for milk producers and processing enterprises, technological re-equipment of enterprises along the chain, the formation of cluster structures (Baktgereyeva A.T., Joldasbayeva G.K., Urkumbayeva A.R.) [9].

Materials and methods

The research was conducted on the basis of using methods of logical and statistical analysis, graphical representation of data, and a method of comparing the analyzed phenomena and processes in economic reality.

The use of economic analysis, in particular, the comparison method, made it possible to identify trends and patterns in the development of the dairy industry, the milk market, the grouping method - to determine the most significant factors affecting the development of the milk market, abstract and logical - to generalize and systematize data on the dairy industry and identify trends in the milk market, economic and statistical - when studying trends in the development of dairy industry enterprises.

The use of a combination of these methods of scientific knowledge made it possible to ensure the reliability of the results of the analysis and synthesis of the data obtained during the research.

The study used domestic and foreign sources, data from statistical collections of the Bureau of National Statistics of the Agency for Strategic Planning and Reforms of the Republic of Kazakhstan, materials of the Ministry of National Economy of the Republic of Kazakhstan, the Ministry of Agriculture of the Republic of Kazakhstan, materials of scientific publications: monographs, analytical reviews on the problem under study.

Results

The dairy industry of Kazakhstan is represented by agricultural organizations, peasant (farmer) farms, households of the population and processing enterprises, provides the population with milk, dairy products, which are vital food products. The total volume of production of all types of milk in 2023 in the Republic of Kazakhstan amounted to 6 503.2 thousand tons, of which agricultural enterprises accounted for 9.3%, which amounted to 602.4 thousand tons of milk, the share of individual entrepreneurs, farms -21.9% (1 427.6 thousand tons), and the largest share accounted for households - 68.7%, which amounted to 4 473.1 thousand tons (Bureau of National Statistics of the Agency for Strategic …. Statistics of agriculture, forestry and hunting…) [10]. Compared to 2022, the share of milk produced by agricultural enterprises and individual entrepreneurs increased by 1.3%.

Despite the high proportion of milk produced on private farms of the population, its quality does not have a homogeneous structure, does not fully comply with technical regulations, quality and safety parameters. The lack of proper sanitary conditions for livestock maintenance and systematic veterinary measures, storage and cooling systems in personal subsidiary farms, as a rule, leads to low quality of manufactured products (Akhmedyarov E.A.) [11]. The real base of the dairy industry is agricultural enterprises and farms that produce 30% of milk for processing from its total volume in the republic, therefore, 500 thousand tons of finished dairy products are imported annually to cover the needs of the domestic market.

If we consider the structure of milk, then out of the total milk production of 6 368.2 thousand tons, the volume of cow's milk is 99.2%, mare's, goat's, camel's milk is 0.8%. If we analyze the volume of milk production by regions, then about 50% falls on 5 regions, i.e. 12.2% of milk falls on the Turkestan region, 10.2% - on the North Kazakhstan region, 9.0% - on the Abai region, 8.4% - on the Almaty region, 7.8% - on the East Kazakhstan region the area.

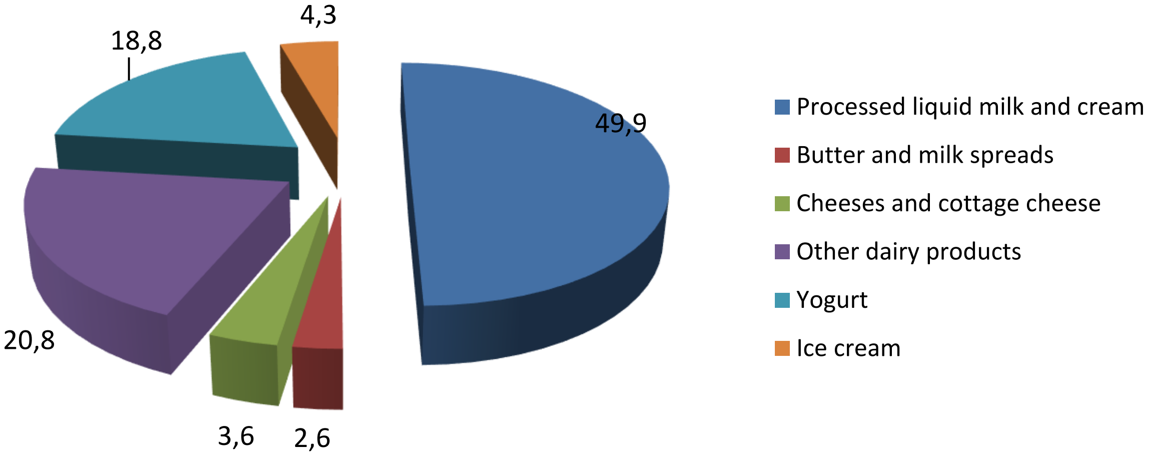
In Kazakhstan, over the past few years, there has been a steady positive trend in milk production. The volume of milk production for 2018-2023 increased from 571.6 thousand tons to 598.7 thousand tons, the annual growth rate averaged 1.2% (table 1).

Table 1 - Structure of milk and dairy products production in the Republic of Kazakhstan, thousand tons

Product name	2019	2020	2021	2022	2023
Processed liquid milk and cream	571.6	617.0	611.7	582.1	618.7
Butter and milk spreads	19.9	26.4	27.2	26.3	30.9
Cheeses and cottage cheese	31.8	36.0	39.7	39.7	44.9
Other dairy products	231.4	250.4	263.2	254.1	249.2
Yogurt, milk and cream, fermented	212.8	226.7	238.6	230.7	227.9
Ice cream	31.8	35.2	42.4	42.0	52.7
Total	1 099.3	1 191.7	1 195.6	1 174.8	1 224.3
Note: compiled on the basis of statistical data (Balance of supply and demand…) [12]					

The dynamics of dairy production volumes showed a positive growth trend: for liquid milk and cream, the growth was 108.3%, for butter - 155.2%, for cheeses and cottage cheese – 141.2%, for other dairy products - 107.8%, for yoghurts - 107.1%, ice cream - 165.7%.

In the structure for 2023, the largest share falls on processed milk 49.9%, followed by other dairy products - 20.8%, and yogurt - 18.8%, other types of products less than 4% (figure 1).



Note: compiled based on the source (Bureau of National Statistics of the Agency for Strategic …. Statistics of agriculture, forestry and hunting…) [10]

Figure 1 - Structure of milk and dairy products in the Republic of Kazakhstan for 2023, %

Regionally, 50% of the milk produced falls on the North Kazakhstan, Almaty and Akmola regions, 54% of butter and spreads - on Kostanay, Almaty regions and Almaty, 50% of cheese and cottage cheese – on Almaty, East Kazakhstan regions and Almaty. In the dairy industry, one of the key problems is that the supply volumes of dairy enterprises do not match the level of market demand. The level of milk processing in the industry is 44.2%, the workload of production capacities of dairy processing enterprises is 77% (Balance of supply and demand…) 12].

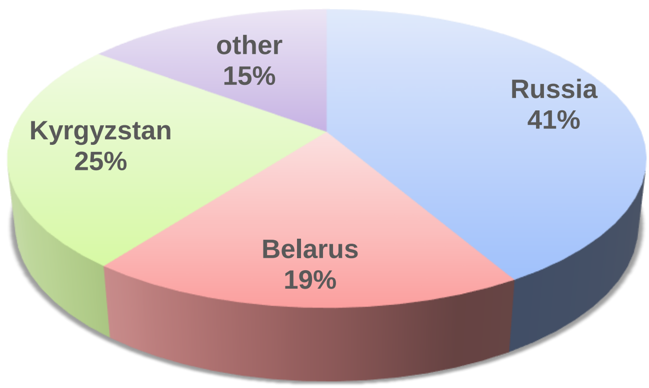
Let's consider the ratio of imports and exports in different segments of the dairy market (table 2).

Table 2 - The share of products of Kazakhstani and foreign enterprises in the milk market of Kazakhstan

Product name	2023		Share, %	
	production, thousand tons	import, thousand tons	of production	of import
Processed liquid milk and cream	618,7	31,7	95,1	4,9
Butter and milk spreads	30,9	8,9	77,6	22,4
Cheeses and cottage cheese	44,9	55,2	44,9	55,1
Yogurt	227,9	45,0	83,5	16,5
Note: compiled by the authors based on the source (Bureau of National Statistics of the Agency for Strategic … Statistics of Industrial Production) [13]				

By the end of 2023, domestic producers provided almost full domestic demand for milk, i.e. by 95.1%. For dairy products, it should be noted that the share of imports in the segment «Cheese and cottage cheese» is the largest and amounted to 55.1% in the segment «Yogurt, fermented milk and cream and others» - 16.5%. As for butter, the market demand is covered by local companies, but 22.4% is satisfied by imports. This indicates a strong dependence on imports, therefore, the most important tasks of ensuring the country's food security are to ensure the domestic market, and secondly, to increase exports.

Dairy products are supplied to the Kazakh market by producers from both near and far abroad. But the largest share of imports, 41%, falls on Russia, 19% on Belarus, and 25% on Kyrgyzstan (figure 2).



Note: source (Balance of supply and demand…) [12]

Figure 2 - The share of foreign producers in the supply of dairy products to the market of Kazakhstan for 2023, %

Producers of Ukraine, France, Lithuania, Poland and other countries are present on the market of milk and dairy products, together their share is 15%.

High volatility of milk prices is a key factor affecting the dairy business and consumer purchasing power. The growth rate of average retail prices for milk and dairy products in 2021-2023 increased for all types of dairy products: for drinking milk - by 68.2%, butter – by 58.6%, sour cream – by 40.8%, cottage cheese – by 74.2%. The increase in prices for milk and dairy products is associated with the level of inflation, rising prices for feed, energy, packaging, logistics, etc. In 2024, the volume of consumption of dairy products is 238 kg per capita, the main reason for the drop in consumption is the rise in prices. The increased prices had a negative impact on the consumer ability of the population of Kazakhstan (Mishchenko M.) [14].

Solving the problem in the dairy industry and its successful development is impossible without active interaction between the state and business. In order to increase the production of high-quality milk and reduce dependence on imports from the state, various measures are being implemented to support the dairy sector. According to the Ministry of Agriculture of the Republic of Kazakhstan, the volume of state subsidies for milk producers in 2021 amounted to 19.4 billion tenge, in 2023 - 35 billion tenge. Within the framework of this program, 10 areas of support are provided: the purchase of breeding stock, equipment for dairy farms, reducing the cost of milk production, reducing feed costs and other measures (Government subsidies for milk producers…) [15].

In 2022, 36 dairy farms with a capacity of 52.4 thousand tons of milk were launched. In 2023, a preferential loan program in the amount of 100 billion tenge was launched at 2.5% per annum for the construction of 65 modern dairy farms with a total production capacity of 373 thousand tons. For dairy processing enterprises, the volume of budget subsidies increased 5 times, from 1.9 billion tenge to 10.3 billion tenge. A comprehensive plan for the development of processing of agricultural products until 2028 has been developed and adopted, 372 billion tenge has been allocated from the state budget for these purposes.

The main deterrent to dairy cattle breeding is the underdevelopment of the feed base, which negatively affects the final cost of raw milk. In order to reduce the cost of raw milk for processing (the cost of feed is up to 70% of the cost of milk for processing), the government is implementing a Roadmap for the development of feed production for 2023-2025. It is planned to increase the acreage of forage crops to 3.3

million hectares by 2025, and the gross feed harvest should grow to 6 million tons. In 2023, the volume of preferential loans for sowing and harvesting operations was increased 3 times and amounted to 580 billion tenge. To date, the provision of coarse feed is 80%, juicy feed – 60%, concentrated feed – 50%.

It should be noted that despite the large amounts of subsidies and investments allocated from the state budget to support large dairy farms, the volume of milk produced by them in 2023 increased by 1.3% compared to 2022. Personal subsidiary farms play an important role in the economy of Kazakhstan, they produce about 70% of milk.

In order to solve the social issue for rural residents, since the main source of their livelihood is income from the sale of milk, as well as ensuring the safety of milk produced on personal subsidiary farms that comply with technical regulations, it would be advisable, in our opinion, to provide state support for small producers based on the experience of foreign countries in the form of subsidies, micro-loans on the basis of legalizing their activities, which would allow them to solve issues of veterinary medicine, sanitary conditions for keeping cows, providing them with full-fledged feeds and others.

For a full-fledged transition to technical regulations and full-fledged competition, small milk producers or personal subsidiary farms, individual entrepreneurs, farms need state support measures that are provided only to large owners of farms with livestock from 50-200 heads.

Despite the ongoing measures of state support for the dairy industry, today there are unresolved problems, such as underutilization of production capacities of dairy enterprises, import dependence by type of dairy products due to a shortage of raw materials, high purchase prices for raw milk, the insufficiency of large professional and model farms of medium and small dairy businesses, the dispersion of small producers over a vast territory republic, high production and transportation costs, the absence of enterprises for the production of packaging for milk and dairy products.

The main task of producers in the country is to withstand competition from foreign companies by expanding the raw material base of the dairy industry, increasing the production capacity of domestic production, attracting foreign investment in the country's agriculture, producing competitive dairy products both in quality and price, forming dairy clusters, stability of all instruments of state support for the dairy industry over the long term period.

Summing up the results of the analysis, in order to increase the competitiveness of domestic producers, provide processing enterprises with raw materials in full, introduce innovations, new technologies, etc., it is advisable to develop a single value chain.

An example is the Ice Dairy Company in Aktobe region, on the basis of which a dairy cluster is organized, which includes more than 40 agricultural enterprises-milk producers, enterprises for the production of feed and a dairy plant.

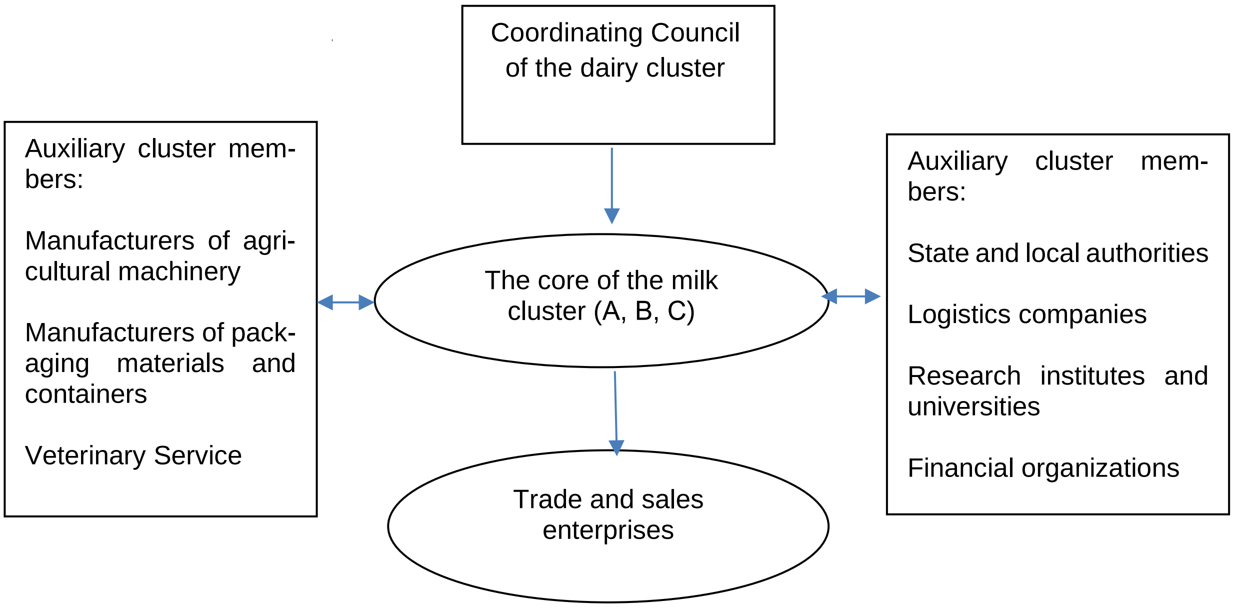
Large dairy companies operate, which in their structure have a feed base, dairy farms, a dairy processing plant, a distribution department, communication with research institutes, veterinary medicine, etc. These include JSC «Agro Industrial Company «Adal», JSC "FoodMaster Company" and others.

But it should be noted that the own raw material base of these companies does not fully meet their need for raw materials, therefore, an effective solution for the development of the raw material base for large companies, in our opinion, is integration and partnership with individual entrepreneurs, personal subsidiary farms, as well as providing them with financial and veterinary assistance to improve the quality and safety of milk, due to future payments from the dairy company or the reduction in the cost of milk sold by personal subsidiary farms.

We propose the formation and development of a dairy cluster through integration, cooperation of geographically closely located enterprises that are part of a single technological chain from the production of raw materials to finished products. One of the main directions of the functioning of the industry cluster is the conduct of joint production within the framework of a single technological chain "production-processing-sales".

Based on the study of the results. previously conducted research by scientists in the field of cluster formation and practical experience of functioning dairy clusters in foreign countries, the authors have developed the organizational structure of a dairy cluster consisting of a core and support companies that provide the necessary goods, perform work and services for the core of the cluster, while their activities are not limited to these companies (figure 3).

Based on the study of the results. previously conducted research by scientists in the field of cluster formation and practical experience of functioning dairy clusters in foreign countries, the authors have developed the organizational structure of a dairy cluster consisting of a core and support companies that provide the necessary goods, perform work and services for the core of the cluster, while their activities are not limited to these companies.



Note: compiled by the authors, where, A-dairy processing enterprises, B-agricultural and farming enterprises, C- feed production enterprises

Figure 3 – Organizational structure of the dairy cluster

Auxiliary companies of the dairy cluster include manufacturers of equipment, packaging materials and containers, veterinary services, educational institutions, research centers and laboratories, logistics enterprises and others.

The cluster will be managed by a Coordinating Council, whose members are representatives of enterprises belonging to the cluster. The main functions of the Council include: coordination, analysis and control of the use of common, material, innovative, information and other financial resources.

The creation of a dairy cluster should be carried out according to the following scheme:

- to organize a Coordinating Council;
- to select the cluster members;
- to analyze the performance and financial stability of the entire cluster and its member companies;
- to carry out the process of formation and subsequent assessment of the functioning of the cluster;
- develop a cluster development strategy.

The effectiveness of creating a cluster will depend on the forms of interaction between enterprises belonging to this cluster, mutually beneficial economic relations between partners, as well as the available resource, labor, and financial potential of each company.

Ultimately, the creation of a dairy cluster will have a synergistic effect: for milk producers - reducing entrepreneurial risk by concluding long–term contracts, increasing profitability, for processing enterprises - full use of production capacities, reducing the cost of finished products, expanding the range, developing new useful and functional dairy products, increasing the market share of locally produced dairy products, for the region – the development of the economy, the creation of new jobs, providing the population with high–quality, natural, affordable dairy products, the state - increasing tax revenues to the budget, reducing social tension.

Discussion

An analysis of the dynamics of milk production by all economic entities revealed that only 30% of milk is produced by large and medium-sized agricultural enterprises for industrial processing and 70% of milk is produced by personal farms, the quality of which does not have a homogeneous structure, does not fully comply with technical requirements, quality and safety indicators due to the lack of proper sanitary conditions for livestock and planned veterinary measures.

An analysis of the dynamics of the structure of milk and dairy products shows that domestic producers almost fully meet the domestic demand for processed milk, and for dairy products, due to insufficient milk volume that meets standards, there is import dependence.

An analysis of the current state of the country's dairy industry and the milk and dairy products market has revealed such problems as the predominance of small milk producers, personal subsidiary farms, despite significant amounts and tools of state support, the insufficiency of large dairy farms, not full utilization of the level of production capacities of processing enterprises, lack of development of feed production, and others, do not allow to fully to meet the needs of the dairy market both in terms of its volume and product line.

In order to solve the identified problems in the industry and based on the experience of foreign countries, the authors propose the formation and development of dairy clusters that unite dairy farms, feed and dairy producers that make up the core of the cluster and auxiliary companies serving the core of the cluster.

Given the high level of milk production by personal subsidiary farms, it is proposed to attract small and medium-sized businesses to the dairy cluster, as well as provide state support to small producers based on the experience of foreign countries in the form of subsidies, micro-loans, which will improve the quality of their milk.

Conclusion

1 The dairy industry of Kazakhstan is represented by agricultural and farming enterprises, households of the population and processing enterprises, provides the population with milk and dairy products.

The volume of milk production has a positive growth trend, of which 70% of milk comes from households that do not meet product quality and safety standards in terms of quality, therefore, the real base of processing enterprises are raw materials from large and medium-sized dairy farms, as well as imported milk powder.

2. With the exception of the "Milk and cream" segment, import dependence is observed for all types of dairy products, the share of imports in the "Cheese and cottage cheese" segment is especially high, which amounted to 55.8%, in the "Yogurt" segment -22.3%, in butter - 22.3%.

3. The dairy industry has such key problems as a low level of milk processing, which is 44%, a low level of utilization of production capacities of processing enterprises, an insufficient number of large dairy farms producing high-quality raw materials in the right volumes, high import dependence on dairy products due to a shortage of raw materials, as well as high purchase prices for raw milk.

4. Despite significant measures of state support for large and medium-sized businesses in the dairy sector, it should be noted that a large proportion of milk falls on personal subsidiary farms of the population. It follows from this that government support measures are also needed for small producers in the form of subsidies and micro-loans based on the legalization of their activities.

5. In order to solve problems in the dairy sector, the authors propose the formation and development of a dairy cluster through integration, cooperation of geographically closely located and included in a single technological chain from the production of raw materials to finished products of enterprises. Ultimately, the creation of a dairy cluster will have a synergistic effect for milk producers, processing enterprises, the economy of the region, the state and the population.

Contribution of the authors: Dzholdasbayeva Gulnara Karimovna: development of the content and methodology of the article, analysis and generalization of data on the dairy industry and the milk market, development of practical recommendations, writing a brief conclusion summarizing the results of the study; Bakhtygereeva Alma Taganovna: collection and processing of statistical data, writing annotations and keywords; Gaisina Sholpan: bibliographic review of literature.

Conflict of interest: the authors declare that there is no conflict of interest.

Reference

[1] Бережная, Е.А. Рынок молока и молочной продукции / Е.А. Бережная // Вестник науки. -2021. - Т.3. -№ 1 (34). -С. 33-37.

[2] Pyzhikova, I. The development of quality milk and dairy products market with the consideration of state support / I. Pyzhikova, L.A. Ovsyanko // Journal of Applied Economic Sciences. -2018. №13(3). -P.813-82.

[3] Aimen, A.T. Current Status of Dairy Products in Republic of Kazakhstan/ A.T. Aimen, A.B. Moldasheva **//** Open Journal of Business and Management.-2022.- №.5.-Vol.10.-P.2432-2441.

[4] Mascaraque, M. Redefining dairy and alternatives through innovation. [Electronic resource].- 2023. Available at: https://www.euromonitor.com/article/ redefining-dairy-and-alternatives-through-innovation **(**date of access: 14.06.2024).

[5] Нечитайлов, А.С. Рынок молока и молочной продукции: особенности формирования и перспективы развития [Электронный ресурс].– 2019.– URL: https://www.dissercat.com/content/rynok-moloka-i-molochnoi-produktsii-oso-bennosti--formirovaniya-i--perspektivy-razvitiya (дата обращения: 04.07.2024).

[6] Koch, C. The Future of the Dairy Industry-2030 Scenario Analysis / C. Koch, M. Johansson, Th. Kalling, M. Kärreman // Industry Report Se-

ries of The Institute of Innovation Management.- Lund: Lund University, 2021. -33p.

[7] Zijlstra, J. Dairy cluster design for Myanmar / J. Zijlstra, Jan van der Lee //Technical Report. – Wageningen: Wageningen University & Research centre, 2015. -866p.

[8] Yang, H., Yanni, J., Can, C., Ke, M. Research on innovation ecosystem of dairy industry cluster based on machine learning and improved neural network. [Electronic resource].-2022. Available at: https://www.researchgate.net/publication/359734442_ **(**date of access: 04.07.2024).

[9] Baktgereyeva, A.T. Kazakhstan dairy market: guidelines for optimization / A.T. Baktgereyeva, G.K. Joldasbayeva, A.R. Urkumbayeva // Problems of AgriMarket. -2024.- №.2.-P.159-169

[10] Бюро национальной статистики Агентства по стратегическому планированию и реформам РК. Статистика сельского, лесного и охотничьего хозяйства. Основные показатели развития животноводства в РК [Электронный ресурс].-2024. -URL: https://www.stat.gov.kz/ru/(дата обращения: 04.07.2024).

[11] Ахмедьяров, Е.А. Современное состояние производства и переработки молока в Казахстане / Е.А. Ахмедьяров // Central Asian Economic Review. -2019. -№2.-С.148-157.

[12] Баланс спроса и предложения как инструмент информационной прозрачности рынка молока и молочной продукции [Электронный ресурс]. -2023. –URL: https://www.kazsut.com/balance/ (дата обращения: 04.07.2024).

[13] Бюро национальной статистики Агентства по стратегическому планированию и реформам РК. Статистика промышленного производства. [Электронный ресурс]. -2024. –URL: https://www.stat.gov.kz/ru/industries/business-statistics/stat-industrial- production/ (дата обращения: 04.07.2024).

[14] Мищенко, М. Каковы объемы производства молока в регионах Казахстана? [Электронный ресурс]. -2024. –URL: https://www.dairynews.today/kz/ news/ kakovy-obemy-proizvodstva-moloka-v-regionakh-kazakhstana-mikhail-mishchenko-predstavil-analitiku-na-.html (дата обращения 06.07.2024).

[15] Государственные субсидии для производителей молока в Казахстане выросли за три года на 50%. [Электронный ресурс]. -2024. –URL: https://www.dairynews.today/kz/news/gosudarstvennye-subsidii-dlya-proizvoditeley-molo-ka-v-kazakhstane-vyrosli-za-tri-goda-na-50.html (дата обращения 12.06.2024).

Reference

[1] Berezhnaya, E.A. (2021). Rynok moloka i molochnoj produkcii [Market of milk and dairy products]. *Vestnik nauki -Bulletin of Science,* 3(1(34)), 33-37 [in Russian].

[2] Pyzhikova, I., Ovsyanko, L.A. (2018). The development of quality milk and dairy products market with the consideration of state support. *Journal of Applied Economic Sciences,* 13(3), 813-820 [in English].

[3] Aimen, A.T., Moldasheva, A.B. (2022). Current Status of Dairy Products in Republic of Kazakhstan. *Open Journal of Business and Management,* 10 (5), 2432-2441 [in English].

[4] Mascaraque, M. (2023). Redefining Dairy and Alternatives through Innovation. Available at: https://www.euromonitor.com/article/redefining -dairy--and--alternatives--through--innovation) [in English].

[5] Nechitailov, A.S. (2019). Ryinok moloka i molochnoy produktsii: osobennosti formirovaniya i perspektivyi razvitiya **[**Market of milk and dairy products: features of formation and development prospects]. Available at https://www.dissercat.com/ content/ rynok-moloka-i-molochnoi-produktsii-osobennosti-formirovaniya-i-perspektivy-razvitiya (date of access: 04.07.2024) [in Russian].

[6] Koch, Ch., Johansson, M. Kalling, Th., Karreman, M. (2021). The Future of the Dairy Industry-2030 Scenario Analysis. *Industry Report,* 33 [in English].

[7] Zijlstra, J. (2015). Van der Lee, Jan. Dairy cluster design for Myanmar. *Wageningen University & Research centre: Report,* 866 [in English].

[8] Yang, H., Yanni, J., Can, C., Ke, M. (2022). Research on Innovation Ecosystem of Dairy Industry Cluster Based on Machine Learning and Improved Neural Network. Available at: doi: 10.1155/2022/4509575 https://www.researchgate.net/ publication/359734442_ [in English].

[9] Baktgereyeva, A.T. Joldasbayeva, G.K., Urkumbayeva, A.R. (2024). Kazakhstan dairy market: guidelines for optimization. *Problems of AgriMarket*, 2, 159-169 [in English].

[10] Byuro nacionalnoj statistiki Agentstva po strategicheskomu planirovaniyu i reformam Respubliki Kazahstan. Statistika selskogo, lesnogo i ohotnichego hozyajstva, Osnovnye pokazateli razvitiya zhivotnovodstva [Bureau of National Statistics of the Agency for Strategic Planning and Reforms of the Republic of Kazakhstan, Statistics of agriculture, forestry and hunting, Key indicators of livestock development] (2024). Available at: https:// https://stat.gov.kz/ru (date of access: 10.04.2024) [in Russian].

[11] Akhmedyarov, E.A. (2019). Sovremennoe sostoyanie proizvodstva i pererabotki moloka v Kazahstane [The current state of milk production and processing in Kazakhstan]. *Central Asian Economic Review*, 2, 148-157 [in Russian].

[12] Balans sprosa i predlozheniya kak instrument informatsionnoy prozrachnosti ryinka moloka i molochnoy produktsii [Balance of supply and demand as a tool for information transparency of the milk and dairy products market] (2023). Available at: https://kazsut.com/balance/ (date of access: 07.05.2024) [in Russian].

[13] Byuro natsionalnoy statistiki Agentstva po strategicheskomu planirovaniyu i reformam

RK, Statistika promyishlennogo proizvodstva, Osnovnyie pokazateli rabotyi promyishlennosti RK [Bureau of National Statistics Agency for Strategic Planning and Reforms of the Republic of Kazakhstan. Statistics of Industrial Production] (2024). Available at: https://stat.gov.kz/ru/industries/ business-statistics/ stat-industrial-production/ (date of access: 12.04.2024) [in Russian].

[14] Mishchenko, M. (2024). Kakovyi ob'emyi proizvodstva moloka v regionah Kazahstana? [What are the volumes of milk production in the regions of Kazakhstan?] Available at: https://dairynews.today/kz /news/kakovy-obemy-proizvodstva-moloka-v-regionakh-kazakhstana (date of access 06.07.2024) [in Russian].

[15] Gosudarstvennyie subsidii dlya proizvoditeley moloka v Kazahstane vyirosli za tri goda na 50% [Government subsidies for milk producers in Kazakhstan have increased by 50% over three years] (2024). Available at: https://dairynews.today/ kz/ news/ gosudarstvennye-subsidii-dlya-proizvoditeley-moloka-v-kazakhstane-vyros li-za-tri-goda-na-50.html (date of access: 12.06. 2024) [in Russian].

Information about authors:

Joldasbayeva Gulnar Karimovna - **The main author**; Doctor of Economic Sciences, Professor; Professor of the Department of Economics and Management; Almaty Technological University; 050012 Tole bi str.,100, Almaty, Kazakhstan; e-mail: gulnara_00@mail.ru; https://orcid.org/0000-0002-5757-3083

Baktgereyeva Alma Taganovna; Candidate of Economic Sciences; Senior Lecturer of the Department of Economics and Management; Almaty Technological University; 050012 Tole bi str., 100, Almaty, Kazakhstan; e-mail: alma.taganovna@mail.ru; https://orcid.org /0000-0002-7445-7797

Gaisina Sholpan; Doctor of Economic Sciences, Professor; Professor of the Faculty of Business Administration and Economics; Technical University of Applied Sciences OWL; 32657 Campusallee 12, Lemgo, Germany; e-mail: sholpan.gaisina@th-owl.de; https://orcid.org/0000-0002-5552-6515.

Авторлар туралы ақпарат:

Джолдасбаева Гүлнар Кәрімқызы - **негізгі автор**; экономика ғылымдарының докторы, профессор; «Экономика және менеджмент» кафедрасының профессоры; Алматы технологиялық университеті; 050012 Төле би көш., 100, Алматы қ., Қазақстан; e-mail: gulnara_00@mail.ru; https://orcid.org/0000-0002-5757-3083

Бактгереева Алма Тағанқызы; экономика ғылымдарының кандидаты; «Экономика және менеджмент» кафедрасының сениор-лекторы; Алматы технологиялық университеті; 050012 Төле би көш., 100, Алматы қ., Қазақстан; e-mail: alma.taganovna@mail.ru; https://orcid.org/0000-0002-7445-7797.

Гайсина Шолпан; экономика ғылымдарының докторы, профессор; Іскерлік басқару және экономика факультетінің профессоры; Қолданбалы ғылымдар Техникалық университеті, 32657 Кампусаллея 12, Лемго, Германия; e-mail: sholpan.gaisina@th-owl.de; https://orcid.org/0000-0002-5552-6515.

Информация об авторах:

Джолдасбаева Гульнар Каримовна – **основной автор**; доктор экономических наук, профессор; профессор кафедры «Экономика и менеджмент»; Алматинский технологический университет; 050012 ул.Толе би, 100, г.Алматы, Казахстан; e-mail: gulnara_00@mail.ru; https://orcid.org/0000-0002-5757-3083

Бактгереева Алма Тагановна; кандидат экономических наук; сениор-лектор кафедры «Экономика и менеджмент»; Алматинский технологический университет; 050012 ул.Толе би,100, г.Алматы, Казахстан; e-mail: alma.taganovna@mail.ru; https://orcid.org/0000-0002-7445-7797.

Гайсина Шолпан; доктор экономических наук, профессор; профессор факультета бизнес администрирования и экономики; Технический университет прикладных наук; 32657 Кампусаллея 12, Лемго, Германия; e-mail: sholpan.gaisina@th-owl.de; https://orcid.org/0000-0002-5552-6515.