IMPROVING THE ECONOMIC EFFICIENCY OF THE FOOD INDUSTRY BASED ON THEORETICAL AND METHODOLOGICAL ANALYSIS

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Annotatsiya: Maqolada oziq-ovqat sanoatida ishlab chiqarishning iqtisodiy samaradorligini oshirishning nazariy va uslubiy asoslari ko'rib chiqilgan. Resurslardan samarali foydalanish, xarajatlarni minimallashtirish, innovatsion rivojlanish, sifat standartlari va barqaror rivojlanish tamoyillarini joriy etish bilan bog'liq ilmiy yondashuvlar tizimlashtirilgan. Ishlab chiqarish jarayonlari samaradorligini baholashda Kobb-Duglas modelini qo'llash mumkinligi asoslangan.

Kalit so'zlar: oziq-ovqat sanoati, iqtisodiy samaradorlik, xarajatlarni minimallashtirish, sifat standartlari, barqaror rivojlanish, Kobb-Duglas modeli.

Аннотация: В статье рассматриваются теоретические и методологические основы повышения экономической эффективности производства в пищевой промышленности. Систематизированы научные подходы, связанные с эффективным использованием ресурсов, минимизацией затрат, инновационным развитием, внедрением стандартов качества и принципов устойчивого развития. Обоснована возможность применения модели Кобба–Дугласа для оценки эффективности производственных процессов.

Ключевые слова: пищевая промышленность, экономическая эффективность, минимизация затрат, стандарты качества, устойчивое развитие, модель Кобба–Дугласа.

Abstract: The article discusses the theoretical and methodological foundations for improving the economic efficiency of production in the food industry. Scientific approaches related to the efficient use of resources, cost minimization, innovative development, the introduction of quality standards, and the principles of sustainable development are systematized. The possibility of applying the Cobb–Douglas model to assess the efficiency of production processes is justified.

Keywords: food industry, economic efficiency, cost minimization, quality standards, sustainable development, Cobb–Douglas model.

Introduction. In the global economy, as in various industries, improving production relations in the food industry and increasing its economic efficiency are among the pressing issues of scientific and practical priority not only for industrial enterprises but also for the national economy of any country. This is because the food industry is a sector of industry that has both high economic and social significance. At the same time, in reforms aimed at ensuring food security in the country, priority will

be given to providing the population with high-quality food at affordable prices through the development of the local food industry, which requires improving the economic efficiency of production processes in the national food industry.

When determining the priority areas for improving the economic efficiency of food production in the country, it is necessary to thoroughly analyze the scientific views formed in the economic literature and determine the possibilities for their implementation in practice.

Literature review. In general, studies conducted in the field of improving the economic efficiency of production in the food industry are characterized by increased efficiency in the use of resources in the organization of production processes at enterprises in the industry, priority given to innovation, and the identification of areas for reducing costs through technological shifts in production. At the same time, it is necessary to ensure an appropriate level of quality by organizing production practices in line with global trends in the development of the food industry. These circumstances further increase the need to analyze scientific views on improving the economic efficiency of production in the food industry in economic literature.
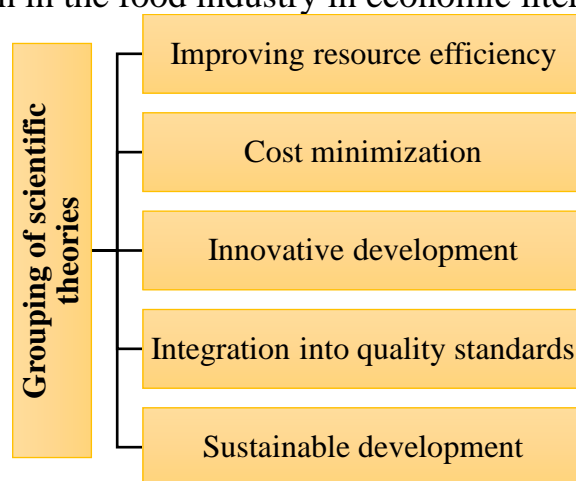

Figure 1. Grouping of theories on improving economic efficiency in food production

According to research, from the point of view of the approach used in economic literature in the development of scientific theories aimed at improving the economic efficiency of production in various industries, including the food industry, the justification of the conclusions obtained and their application in practice, it was possible to divide them into such groups as theories of improving the efficiency of resource use, cost minimization, innovative development, integration into quality standards, and sustainable development (see Figure 1).

In most scientific studies, the Cobb-Douglas model is used to analyze the scientific and theoretical foundations for improving the economic efficiency of not only the food industry but also various industrial production facilities. The model is important in economic science because it has not lost its relevance and is used in practice in studies aimed at improving or assessing the economic efficiency of production at industrial enterprises. In recent years, foreign economists such as K.A. Ioan [1], B.M. Balk[2], P. Stiefenhoffer [3], J. Vergas [4], explored the areas of application of this model in the context of modern industrial production and

scientifically proved that the model allows one to determine the directions for increasing the economic efficiency of production.

It was also established that domestic economists, such as G. Shadmanova [5], A. Ishnazarov [6], B.B. Sharipova [7], A.I. Sotvoldiev [8], B.B. Khalilov [9], along with explaining the essence of the model, they attempted to evaluate the production processes of various industrial enterprises based on this model.

According to the analysis, the Cobb-Douglas model can be used to analyze the relationship between raw materials, labor, capital, and technology used in the production process in various industries, including the food industry. This model generally helps identify areas for improving production efficiency by determining the optimal level of resource utilization in the production process and is calculated based on the following function:

$$Q = A \times L^{\alpha} \times K^{\beta}$$

Here:

Q– an indicator expressing the actual cost of manufactured products in the period under study (or analyzed)

A– an indicator expressing the level of technological efficiency;

L– the volume of labor expended on the production of goods;

K– the amount of capital spent on production;

α and β – technological elasticity of the corresponding indicators (labor and capital).

Another group of theories in economic literature aimed at improving the economic efficiency of production in various sectors of the national economy, including the food industry, are cost minimization theories. The development of scientific views in this area is explained by the emergence of the "Industry 1.0" concept, which is considered the initial stage of industrial production development in the global economy. The results of scientific research by scholars such as F. Quesnay play an important role in the development of scientific theories in this area [10], K. Marx [11], A. Smith [12], D. Ricardo [13], A. Turgot [14], J.B. Say [15], F. Engels [16], who conducted research of fundamental importance in the development of economic science. When studying production costs in various industries, including the food industry, priority is given to analyzing the relationships between "last" and "standard quantities", including "standard utility", "standard productivity", "standard revenues", and "standard costs".

In economic literature, in scientific research of such foreign scientists as P. Doganis [17], G.P. Giorgiadis [18], R.D. Swamilaksita [19], S. Zhagtap [20], using the aforementioned Cobb-Douglas model, directions for the efficient use of resources to ensure the production of affordable, high-quality products at food industry enterprises were identified and corresponding conclusions were drawn. Scientific theories regarding the priority of ensuring product quality while increasing the economic efficiency of production in the food industry first emerged in the research of such economists from abroad as E. Sallis [21], J. Jens [22], D.M. Boje [23], L. Koskela [24]. In the 1990s, the United Nations (UN) adopted the Millennium Development Goals (MDGs), which had global significance. By 2015, this system of goals had been refined, and the adoption of the Sustainable Development Goals (SDGs) led to the

formation of scientific views on sustainable development in the economic literature, aimed at improving the economic efficiency of industrial production. In general, the development of this type of scientific viewpoint was reflected in the research of economists such as L. Walras [25], R. Hicks [26], P. Samuelson [27], A. Wald [28] in the 1920s, and with the adoption of the UN Global Goals, the research conducted by these scientists served as a fundamental basis for scientific research aimed at improving the economic efficiency of production in industries, including the food industry, based on theories of sustainable development.

In particular, in the scientific research of such domestic economists as H.P. Abulkasimov [29], N.M. Ziyavitdinova [30], I.Yu. Umarov [31], it has been proven that, along with increasing the economic efficiency of local food industry development through the use of innovation, it is possible to effectively address the goals and objectives of ensuring national food security. Scientific research conducted by Russian scientists such as Sh. Shodmanov [32], M. Boltaboeva [33], D.S. Toshnazarov [34], A.N. Makhmudov [35], also demonstrates this based on the coverage of the content of the economic category of production, aspects of production costs that differ from the term cost of production are considered.

Based on the general characteristics of scientific views on production costs developed in the economic literature, it can be concluded that the cost of production is formed as a result of the realization of production costs. This circumstance indicates that the reflection of production costs in the cost of finished goods is carried out as the cost of finished goods.

The results of research conducted by scientists such as J. Schumpeter [36], F. Nixon [37], B. Twiss [38], B. Santo [39], E. Dundon [40], are of fundamental importance in the formation of scientific views related to the group of theories of innovative development. In particular, by such Russian economists as M.A. Mavlonov [41], G.P. Gulomov [42], A.A. Mamadaliev [43], D. Shodieva [44], A.E. Norov [45], O.E. Ernazarov [46], B.B. Bakhtiyorov [47], priority areas for the effective use of innovations in the organization of production in local industries have been identified.

Research methodology. The methodological basis of the study was systems and structural analysis, methods of theoretical generalization, comparative analysis, and economic and mathematical tools. Specifically, the Cobb-Douglas production function was used, allowing for the assessment of the relationship between labor, capital, technology, and output.

The Cobb–Douglas function is used to determine directions for increasing the economic efficiency of food industry production through optimal use of resources and reducing production costs.

Analysis of material and research results. In general, scientific approaches aimed at improving the economic efficiency of production in innovative industries, including the food industry, prioritize the automation of these processes through the technical and technological modernization of production processes and their digitalization. Practical analysis has proven that, in the context of the implementation of the concepts of "Industry 3.0" and "Industry 4.0", the aforementioned scientific theories aimed at increasing resource efficiency and minimizing costs are consistent with theories such as "knowledge economy" and "human capital". This allows for a

significant reduction in production costs through the introduction of new ideas into production processes, including innovative projects, while simultaneously optimally utilizing resources.

The achievement of increasing the level of global competitiveness of enterprises operating in the industry by increasing the economic efficiency of industrial production based on theories of innovative development has also been confirmed in scientific research by scientists such as S.Besic[48], M. Yuchneevich [49], M.Zh. Eskandari [50], S.Zh. Fielke [51], A. Bargoni [52], N. Boonklum [53].

Another group of scientific theories aimed at improving the economic efficiency of production in the food industry are theories of integration into quality standards. These theories aim to reflect the quality of production equipment and facilities, personnel, and raw materials in a generalized manner in the final product. In particular, in the post-pandemic context of the COVID-19 crisis, the system of standards developed for product quality in the food industry prioritizes increasing the production volumes of products that are beneficial to human health.

At the same time, domestic economists M.U. Badalova [54], J. Kambarov [55], N. Khalilov [56], U.M. Baytanov [57]. We explored priority areas for improving production efficiency in the local food industry based on international and national quality standards.

Today, in research aimed at increasing the economic efficiency of production in terms of product quality in the global food industry, the system of international standards presented in Table 1 is gaining priority.

Table 1

The system of international standards for food quality and safety

Standards	Contents of the standard
PAS 220:2008	PAS 220 (Publicly Available Specification) - standards for risk control associated with the general specialized production process for product quality management in food industry enterprises; This type of standard is currently in use in various countries as mandatory standards and requirements for food quality (PRP - prerequisite program). These requirements are established in accordance with ISO 22000:2005.
FSSC 22000	The standards system was developed by the Confederation of Food Industries of the European Union (CIAA) based on ISO 22000:2005 and PAS 220:2008, and the Global Food Safety Initiators (GFSI) recommended that this standards system be applied in all countries of the European region.
GMP	The GMP (Good Manufacturing Practice) standard consists of a system of norms, requirements and rules for the production of food products, food additives, active ingredients and medicines.
HACCP	HACCP (Hazard Analysis and Critical Control Points) is a standard developed for food safety management systems based on hazard analysis and critical control points.

IFS	A system of food safety standards developed between the governments of Germany and France based on the HACCP standards system
BRC	The UK Government's food safety standards system, based on the HACCP standards system
DS3027 HACCP	Danish Food Safety Standard
ISO 22000:2005	A system of standards developed from the perspective of food safety for human life. It is applicable to all food businesses. This standard is the basis for the practice of certifying food products for compliance.
ISO/TS 22004:2005	A system of standards developed from the point of view of food safety for human life means that the company operates with guidelines based on the ISO 22000:2005 standard.

Also, domestic economists Y. Mukhammedov[59], U. Zainitdinova [60], U.A. Madrahimov [61], I.Yu. Kayumova [62] explored the possibilities of transition of the country's national economic sectors to the path of sustainable development.

In addition, domestic economists have explored the possibilities of transitioning sectors of the country's national economy to a path of sustainable development.

Scientific theories of sustainable development, developed to improve the economic efficiency of food industry production, are characterized by the priority of environmental protection, rational use of natural resources, especially land and water resources, reduction of emissions of environmentally harmful gases through production, as well as the widespread use of alternative, energy-saving means.

Table 2

A comparative analysis of groups of theoretical views aimed at improving the economic efficiency of production in the food industry

A group of scientific theories	Priority areas	The essence of theories
Improving resource efficiency	Optimization of labor costs	Determining the optimal level of technological elasticity of resources required for production
	Optimization of capital expenditure	
	Optimization of raw material consumption	Reducing production costs by optimizing costs associated with the production process
Minimizing costs	Fixed and variable costs	The essence of theories

	Large-scale effect	Determining the optimal level of technological elasticity of resources required for production
	Optimization of logistics costs	Reducing production costs by optimizing costs associated with the production process
Theories of innovative development	Technological innovations	Achieving economic efficiency through the introduction of new technologies based on strengthening the integration relations between science and industry
	Product innovation	
	Innovation cycle and commercialization	
Integration into quality standards Integration into quality standards	International quality standards	Achieving consumer confidence in the market and increasing market coverage through the production of quality products
	National quality standards	Achieving consumer confidence in the market and increasing market coverage through the production of quality products
	The company's own quality standards	
Theories of sustainable development	Environmentally friendly technologies	Rational use of natural resources and environmental protection in the food industry
	Reducing emissions of harmful gases	
	Sustainability of energy sources	

In general, in the economic literature, a comparative comparison of scientific views on increasing the economic efficiency of food industry production has been achieved based on their grouping in theories of increasing resource efficiency, cost minimization, innovative development, integration into quality standards and sustainable development in the order given in Table 2.

According to research, scientific approaches to improving the economic efficiency of food production play a significant role in identifying priority areas for improving efficiency from a practical perspective. Overall, scientific approaches in this area have shown that economic stability is achieved by minimizing costs associated with organizing the food industry's production process.

Conclusions. Based on a grouping of scientific views on increasing the economic efficiency of production in the food industry, we came to the following scientific conclusion:

➕ Organization of the development of food industry production, development of the national economy at the level of economic regions from the country's production resources in a market economy, ensuring stable and effective development of productive forces along with ensuring the economic independence of our country, economically efficient and sustainable development of the country will serve the effective development of the construction of the New Uzbekistan;

➕ Based on the study of industrial production models in the scientific works of economists around the world, the possibility of increasing the efficiency of production at various industrial food production enterprises has been identified;

➕ The use of the Cobb-Douglas model, as in enterprises of the national industrial sector, requires the need to analyze the relationships between them in order to increase the economic efficiency of production at food industry enterprises and obtain sufficient profits for the organization of reproduction, the organization of the effective use of fixed assets allocated for the production of raw materials, labor, living and previous labor;

➕ A comparative analysis of a group of theoretical views aimed at increasing the economic efficiency of food industry production is proposed.

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