

FACTORS INFLUENCING THE ECONOMIC EFFICIENCY OF THE INDUSTRY

***Annotation.** In this article, the economic efficiency of the industrial sector is analyzed in terms of its functioning mechanisms within the economic system, intersectoral interaction boundaries, and functional relationships. The study also examines the theoretical foundations and factors influencing industrial efficiency, focusing on innovation, clustering, and state industrial policy as determinants of competitiveness and sustainability.*

***Keywords.** industry, resource transformation, economic benefit, industrial efficiency, innovation, industrial policy.*

Introduction. In the conditions of New Uzbekistan, the advantages of independence and the state's economic policy further enhance the leading role of industry. Today, the main directions of reforms and their solution are being implemented primarily in the industrial sector and are yielding good results. When analyzing the economic efficiency of the industrial sector, it is necessary to theoretically substantiate the mechanisms of its activity in the economic system, the boundaries of intersectoral interaction, and its functions in departmental relations. Industry is not a separate industry, but a system that develops in multifaceted interaction with all sectors of the real sector as a central link in resource transformation. From this point of view, it is necessary to assess economic efficiency not only through indicators of domestic production or financial returns, but also from the point of view of national economic profit [1].

Cluster theory creates a solid scientific basis for deepening this systematic approach. According to the clustering concept put forward by M. Porter, industrial efficiency occurs in the unity of collective innovation, infrastructure flexibility, and human resource potential. This view systematically theorizes the functional relationships between industrial entities, technological distribution, and the local competitive environment. As a result of the cluster's activities, the scale of production expands, costs decrease, and synergy is formed based on local innovations. This situation indicates the need to assess industrial efficiency not at the domestic level, but at the regional and intersectoral levels [2].

At the same time, theories of industrial policy interpret industrial efficiency at the intersection of state and market relations. In this case, the practice of forming efficiency as a norm based on the role and powers of the state, intersectoral subsidies, tax benefits, and regulatory mechanisms is scientifically substantiated. It should be noted that the elements of industrial policy for industrial sectors serve not only as a methodological basis for increasing efficiency, but also for ensuring technological disruptions and the potential of international competitiveness [2,3].

Another theoretical point is the need to use comparative advantage theories. In the industrial economy, targeted strategies should be directed precisely at those segments in which products are resource-efficient, technologically export-oriented, and potentially competitive in terms of market coverage. The theory of comparative advantage justifies this based on the rational allocation of resources. This approach emphasizes the optimality of each decision from the point of view of economic efficiency, from industry selection to technological modernization.

Methods. Scientific and methodological analysis shows that when assessing industrial efficiency, it is a big scientific mistake to limit oneself to a single indicator or only to financial analysis. On the contrary, the interrelation of efficiency with intersectoral diversification, the level of clustering, technological adaptation, and labor productivity requires an integrated approach. Through such system modeling, not only the internal capabilities of the industrial sector are fully

revealed, but also its transmission function in the modernization of the economy [4,5].

The diversity of theoretical approaches to determining economic efficiency, intersectoral relations in the economy, and the multidimensional nature of resource use make it difficult to assess this concept using a universal model. Therefore, in determining the parameters of economic efficiency in the context of industrial economics, a system of models based on different theoretical schools, differing in functional purpose and calculation method, but harmonized, is used. The following table systematizes the scientifically based models widely used in assessing efficiency in industry and their specific theoretical foundations, evaluation criteria, and possibilities of practical application. These models allow analyzing the efficiency of industry activities not only on the basis of performance indicators, but also taking into account innovative, social, environmental, and strategic aspects [6,7].

Table 1.1

Theoretical models for assessing economic efficiency

No	Model name	Theoretical basis	Main classification criteria	Area of application	Industrial significance
1.	Cobb-Douglas production function	Neoclassical growth theory (Solow, Romer)	Capital, labor, total factor productivity (TFP)	Production process modeling	Industry links production efficiency with resources.
2.	AHP - Hierarchical Analysis Method	Set decision theory	Multi-criteria ratings, expert assessments	Integral evaluation, selection sorting	Multifactorial analysis affecting industrial efficiency
3.	TOPSIS - A method of approaching efficiency	Content Distance Analysis (Hwang & Yoon, 1981)	Distance from ideal point, normalized rating	Multi-parameter estimation	Convenient for comparison and ranking of industrial enterprises
4.	DEA - Informative Performance Analysis	Linear programming, effective	Technical efficiency, economies of	Micro-level Performance Analysis	Opportunity to evaluate enterprises in

	e Analysis	boundary theory	scale		comparison with "the most effective"
5.	ESG index models	Sustainable development theory	Environmental, social, management indicators	Green industry, corporate strategies	Assessment of industrial efficiency through sustainable development criteria
6.	ROI/ROA - Classic Financial Models	Traditional finance theory	Return on investment, return on assets	Financial efficiency of the enterprise	Assessment of economic results in relation to capital
7.	TFP - Total Factor Performance Index	Endogenous growth theory	Productivity of innovation taking into account labor and capital	Macro and meso level	Measures the impact of technological efficiency and innovation
8.	SWOT-Effectiveness Analysis	Theory of economic strategic analysis	Internal and external opportunities and risks	Industry development, competitive advantage	Identify strategic directions for enterprise or industry performance

The issue of assessing economic efficiency is one of the most important and methodologically complex areas of industrial economics. When defining and analyzing this category, it is inappropriate to limit oneself to simple financial or production indicators and requires a systematic and scientific approach. Various models have been developed by theoretical schools for assessing economic efficiency, which can be conditionally divided into two categories: classical static models and modern dynamic models.

Results and Discussion. Classical static models were widely used, especially in the second half of the 20th century, where the main focus was on the "resource-result" ratio. In such approaches, indicators such as labor productivity, resource return, profitability, *ROI*, and *ROA* are assessed as the main expressions of economic efficiency. Although they can be used in various fields, in dynamically and technologically active industries, such as industry, these models have imperfect points. For this reason, dynamic modeling methods were

developed, that is, models that take into account such factors as time, innovation, scale, and intersectoral interaction [8].

Among such modern models, the Cobb-Douglas production function occupies an important place. It allows modeling the influence of capital and labor factors on production results based on a logarithmic function. This model also covers technological changes through total factor productivity (*TFP*), which is important in assessing industrial efficiency from the perspective of innovative development.

Another important model is integral assessment methods, such as *AHP-TOPSIS*, which are widely used in the analysis of economic processes with multi-criteria and subjective components. While the *AHP* (Analytical Hierarchy Process) method modulates decision-making through a hierarchical system, *TOPSIS* (Technique for Order of Preference by Similarity to Ideal Solution) allows ranking objects based on proximity to the ideal. These models allow comparing industrial enterprises by the level of efficiency, identifying strong and weak links within the industry, as well as making optimal decisions in the distribution of investment resources [8,9].

One of the most modern and methodologically complex models in the industrial economy is *DEA* (Data Envelopment Analysis). This model measures technical efficiency based on linear programming and effective boundary theory. The *DEA* model allows for the division of enterprises into "effective" and "ineffective" groups based on data and evaluates each object in relation to a conditional standard. This model is very suitable for use in the context of industrial enterprises and allows for an objective comparison of the activities of entities with different production scale and technological base.

Modern approaches to determining efficiency, accordingly, require a combination of macro (national economy), meso (sector level), and micro (enterprise level) analysis. At the macro level, efficiency is assessed through the share of industry in *GDP*, export volumes, and intersectoral transmission mechanisms. At the meso level, industries within the industry - such as chemistry,

textiles, and mechanical engineering - are studied separately. At the micro level, the level of capacity utilization of enterprises, investments in technological renewal, resource consumption, and labor productivity are taken as a basis [9].

In general, the main task of scientific analysis is the harmonious and purposeful use of various theoretical models in assessing economic efficiency, their adaptation to real industrial conditions. Within the framework of our scientific research, the creation of a comprehensive approach using several models creates the basis for the development of proposals and recommendations that can be applied in practice to increase the competitiveness of the industry and the efficient allocation of resources.

Conclusion. The assessment of industrial efficiency is a multidimensional process requiring integration of classical and modern theoretical approaches. Industrial policy, innovation dynamics, and intersectoral interactions play a decisive role in improving economic outcomes.

Key conclusions include:

- Industrial efficiency must be assessed not only in terms of financial results but also through innovation, sustainability, and competitiveness factors.
- Cluster-based and dynamic models such as *DEA* and *Cobb–Douglas* provide more accurate reflections of real industrial performance.
- Integrating macro, meso, and micro approaches ensures a more objective evaluation of the sector's contribution to economic growth.
- Sustainable industrial policy based on innovation, efficient resource use, and comparative advantages strengthens long-term national competitiveness.

The harmonized use of theoretical models and empirical analysis forms a scientific basis for developing practical recommendations to enhance the industrial sector's efficiency and its role in the modernization of Uzbekistan's economy.

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