Analysis of the System of Factors Affecting Efficiency in the Process of Increasing Production Efficiency

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Abstract

This study analyzes the system of factors affecting production efficiency in the context of increasing production efficiency under conditions of innovative economic development. The research emphasizes rational resource use as a key driver of sustainable industrial growth and competitiveness. Based on a system approach, efficiency factors are classified into macro- and micro-levels, as well as internal and external environments, with a particular focus on controllable micro factors. Using the input–output framework and a case-oriented analysis of porcelain production, the paper identifies labor, capital, raw materials, energy, technology, and inventory management as the most influential internal factors. The findings show that coordinated management of these factors, supported by feedback mechanisms and strategic resource management, can significantly improve productivity, reduce costs, and enhance product quality.

Keywords: Production efficiency; Efficiency factors; Resource management; Industrial enterprises; Porcelain production; Human capital

1. Introduction

In the context of innovative economic development, sustainable growth of industrial enterprises requires the rational and efficient use of economic resources. Improving production efficiency, intensifying production processes, increasing labor productivity, enhancing the intellectualization of labor, and improving product quality are among the key objectives of modern industrial development. Effective resource utilization is widely recognized as a fundamental driver of intensive production growth [1]. The concept of economic resources occupies a central position in the formation of production factors. Due to their relative scarcity and limitation, resources require optimal allocation and strategic management. L. I. Abalkin emphasized that efficient use of resources is one of the main factors ensuring intensive economic development [1]. V. M. Polterovich linked resource efficiency with the institutional environment, arguing that sustainable results can be achieved only through the combination of effective management and institutional reforms [2]. In addition, A. G. Granberg highlighted the importance of optimal resource allocation mechanisms in regional industrial development [3]. Uzbek scholars, including Sh. N. Zayniddinov and Q. Kh. Abdurakhmonov, have substantiated the decisive role of rational resource use and human capital development in improving enterprise competitiveness and labor productivity [4] [7]. In this regard, analyzing the system of factors affecting production efficiency is essential for developing effective management decisions aimed at ensuring sustainable industrial growth.

2. Methods

This study is based on a system and analytical research approach. The methodological framework includes:

- a system-based classification of production efficiency factors into macro and micro levels, as well as internal and external environments;
- application of the input–output model, which considers production as a sequence of inputs (resources), transformation processes, outputs (finished products and services), and feedback mechanisms;

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- qualitative analysis of scientific literature by CIS and Uzbek scholars on resource efficiency, institutional factors, and human capital;
- a case-oriented analysis of porcelain production to identify industry-specific efficiency factors.

These methods make it possible to identify controllable factors and assess their impact on production efficiency at the enterprise level.

3. Results

The analysis shows that factors affecting production efficiency can be divided into macro and micro factors. Macro factors include market demand, competition, customer requirements, and the general economic environment [1]. These factors are largely uncontrollable in the short term. Micro factors, which account for approximately 85% of efficiency outcomes, are directly influenced by enterprise management decisions [2]. Internal efficiency factors play a decisive role in improving production performance and include factors related to the production process and initial resources [3]. According to the input–output approach, the production process consists of resource inputs, transformation processes, outputs, and feedback mechanisms that ensure performance monitoring and evaluation [1]. The creation of various goods that can satisfy many human needs requires production activities that transform natural substances. Anything that participates in the production process and contributes to the creation of the final product (service) is called a factor of production or an economic resource [2]. A factor of production can be land, an excavator, ore, cotton, electricity, a factory building, a blast furnace, etc. The production process cannot do without such an important factor as human labor. Based on the diversity of the natural forms of factors, they can be grouped into enlarged categories. Factors of production are divided into personal and material factors [3]. Individuals include people who have their own knowledge, experience, and production skills. It is man who is the initiator, organizer, and active participant in the production process [4]. All the rest, that is, material resources, are often called means of production, because with their help a person produces the goods of interest to him. Research conducted by Uzbek scientists also highlights the role of human capital in increasing production efficiency. In particular, Q. Kh. Abdurakhmonov scientifically substantiated that increasing labor productivity, developing employee skills, and improving the incentive system have a positive impact on enterprise efficiency [7].

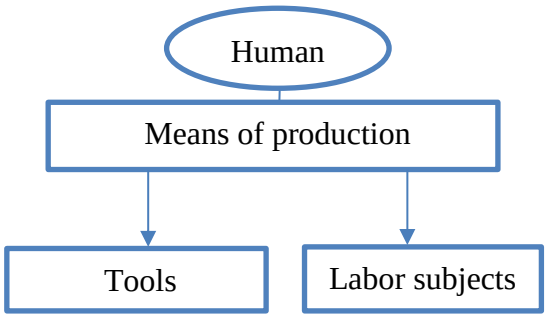

Figure 1. Creation of economic benefits

Efficiency is not only a measure of economic results, but also a measure of the economical use of production facilities in the process of creating economic benefits in order to meet consumer demand [1]. Its size can be used to stimulate the improvement of the current activities of the enterprise, and without making additional changes, it is possible to achieve an increase in productivity by 5–10% [2]. Analysis and calculation of the impact of various factors on economic indicators is becoming an important aspect of analyzing the activities of the enterprise [3]. This cannot be done without a complete and in-depth analysis of factors. The analysis determines the real goals and control points for the development of the enterprise's activities. Efficiency indicators help to form a sound analysis [4].

All enterprises have their own management structure. Each department of the structure (labor, raw materials, finance, etc.) is responsible for the use of resources. In order to increase the efficiency of the enterprise, it is important to divide all the factors affecting it into groups. As a result, it is determined which factors are more important and who is responsible. This approach determines which department of the enterprise is actively involved in improving its efficiency and allows for making informed management decisions [7]. Modern enterprises perform many tasks and use different strategies. Therefore, it is necessary to group the factors affecting production efficiency so that they correspond to the organizational structure and production process.

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To do this, the organizational structure can be changed in order to more accurately classify the factors and use them more effectively [5].

In a market economy, many factors affect the efficiency of the enterprise. One approach to classifying efficiency factors helps to divide the factors into macro and micro [1]. The macro environment is such factors as the level of customer service, market demand, competition, and the economic environment. They usually cannot be controlled by the enterprise management in the short term or are difficult to exert a strong influence on them [2]. The micro environment depends on the enterprise itself, for example, employee qualifications, production processes, technology, and management systems. These factors are under the control of management and can be directly influenced [3]. According to research, approximately 85% of the factors affecting the performance of global companies are micro factors, that is, areas that management can control. Only 15% are macro factors, which are beyond the influence of the enterprise. At the same time, even if the enterprise cannot fully control macro factors, it should constantly study them.

The division of factors affecting the activities of the enterprise into internal and external environments is widely used in scientific literature [1] [6]. CIS scientist N. D. Kondratyev noted that macroeconomic factors affect the efficiency of the enterprise through long-term development cycles [6]. Studying the external environment helps to make the right decisions aimed at adapting the enterprise's activities in the future, changing the strategy, and increasing efficiency in the long term. When analyzing factors affecting the efficiency of the enterprise, it is important to study factors related to the external and internal environment of the company. These factors directly and indirectly affect the efficiency of the enterprise [2].

Table 1: Efficiency factors related to raw materials in porcelain production

Factor group	**Description**	**Impact on efficiency**
Labor resources	Workers' skills, experience, and knowledge of porcelain manufacturing technology	Workers' skills, experience, knowledge of porcelain manufacturing technology
Capital resources	Technological equipment, furnaces, devices	Technological equipment, furnaces, devices
Capital-labor ratio	The optimal ratio between labor and capital	Effective use of resources and serves to justify management decisions
Raw materials and supplies	Porcelain raw materials (kaolin, mineral additives), water, pigments	Determines product quality and material efficiency, reduces waste
Energy resources	Electricity, gas	Reduces costs through efficient use of furnaces and technological processes
Technologies	Automation, temperature control systems, information technology	Optimizes the production process, strengthens quality control, and improves management efficiency
Warehouse stocks	Level of inventory planning and control	Reduces excess costs and speeds up resource turnover

Internal efficiency factors:

1) Factors related to the production process. (Table 1) Among the internal factors, factors related to the production process occupy a special place. The production process is a complex system, the efficiency of which depends on the correct identification of the main factors and their rational use. In accordance with the "input-output" approach, the production process consists of input factors (resources), process (transformation of resources into products), output (finished products and services) and feedback (measurement and evaluation of results).

2) Balanced and coordinated management of these factors helps to increase production efficiency. The feedback mechanism is of great importance in monitoring efficiency and making management decisions. The task of the enterprise management is to assess the factors affecting efficiency and effectively use them in the interests of the enterprise.

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3) Factors related to initial resources. This group of factors is of particular importance in assessing production efficiency, as they are directly related to such specific efficiency indicators as labor productivity and return on capital. The ratio between capital and labor and the analysis of their efficiency allow making informed management decisions on improving the combination of resources, choosing methods for their rational distribution and use.

4. Discussion

The obtained results confirm the findings of previous studies emphasizing the dominant role of internal, controllable factors in improving enterprise efficiency. The classification of factors into macro and micro levels is consistent with the approaches proposed in economic theory and industrial management research. While macro factors influence enterprise performance through long-term economic cycles, micro factors provide immediate opportunities for efficiency improvement through management interventions. The results also support the conclusions of Uzbek scholars regarding the importance of human capital development, labor productivity growth, and incentive systems in enhancing enterprise competitiveness. Strategic resource management and the use of feedback mechanisms enable enterprises to adapt production processes to changing conditions and achieve sustainable efficiency growth.

5. Conclusion

Increasing industrial enterprise efficiency in innovative economic conditions is directly linked to rational and efficient use of economic resources. Ensuring efficiency requires not only increasing resources but also optimizing their combination, improving management systems, and intensifying production processes. Effective management of internal and external factors—through automation, technology adoption, strategic resource planning, and feedback mechanisms—enhances competitiveness, product quality, and volume, contributing to sustainable socio-economic development.

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