

**SCIENTIFIC AND METHODOLOGICAL FOUNDATIONS OF
INDICATORS FOR ASSESSING THE EFFICIENCY OF FIXED
ASSETS UTILIZATION IN CONSTRUCTION ENTERPRISES
AND METHODS FOR THEIR CALCULATION**

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Abstract. *This article examines the scientific and methodological aspects of assessing the efficiency of fixed asset utilization in construction enterprises. The economic essence of fixed assets, their role in the production process, and the system of key indicators reflecting efficiency are comprehensively discussed. In addition, the calculation methods used to assess the efficiency of fixed asset utilization are analyzed, and their advantages and limitations are identified. The research findings contribute to improving the efficiency of fixed asset utilization in construction enterprises and to enhancing the methodology for their assessment.*

Keywords: *fixed assets, efficiency, fixed asset turnover, capital intensity, depreciation, construction enterprise, assessment indicators.*

Introduction

Further development of construction activities in our country, first of all, requires the reconstruction and modernization of production capacities of construction enterprises, as well as the practical implementation of advanced equipment and technologies created on the basis of scientific and technological

achievements. These tasks have become one of the priority objectives in the national economy. Therefore, one of the most pressing issues today is the search for mechanisms to ensure efficient utilization of production capacities of construction enterprises, as well as the introduction of highly efficient technologies through upgrading the structure of fixed assets with modern equipment.

In order to accelerate the development of the national economy in the near future and to create prosperous living conditions for the population, the Decree of the President of the Republic of Uzbekistan Sh. M. Mirziyoyev entitled *“The Development Strategy of New Uzbekistan”* was adopted, on the basis of which the Development Program for 2022–2026 was formulated. This program defined priority areas for national development and initiated urgent measures aimed primarily at improving the welfare of the population within these priority directions.

At present, special attention is being paid to strengthening the material and technical base of construction enterprises in the country. In particular, this includes the Resolution No. PQ-2137 *“On Measures to Further Develop Construction Organizations and Strengthen Their Material and Technical Base”*, the Resolution of the Cabinet of Ministers of the Republic of Uzbekistan No. 108 adopted to ensure its implementation, as well as Resolution No. 11 *“On Additional Measures to Ensure the Sustainable Operation of Industrial Enterprises and Construction Organizations and the High-Level Utilization of Their Capacities.”*

In the construction sector, it is of great importance to assess the condition, efficiency, and structure of fixed production assets of contracting enterprises and to modernize them accordingly. For this purpose, it is necessary to identify those assets that significantly influence production growth and efficiency improvement. Thus, the above considerations once again confirm that one of the main unresolved issues in the construction sector is the

development of the material and technical base of construction and design enterprises in accordance with modern requirements.

Identifying effective ways to replace fixed assets of construction enterprises with modern equipment and technologies, ensuring their efficient utilization, and improving the structure of fixed assets through the introduction of highly efficient machinery remain highly relevant and unresolved issues today.

Degree of Problem Investigation

Issues related to construction economics and the economics of construction enterprises have been extensively studied by scholars from foreign countries and the Commonwealth of Independent States (CIS). In particular, the scientific works of foreign researchers such as A. Arens, R. Dodi, and R. Antonio address issues of capital utilization efficiency, fixed asset valuation, and justification of investment decisions. Among CIS scholars, the studies of P. S. Stepanov, L. F. Sukhova, T. G. Doroshenko, O. V. Efimova, and others provide scientific analysis of the economic nature of fixed assets, depreciation levels, and methods for calculating fixed asset turnover and profitability.

During the years of independence in the Republic of Uzbekistan, a number of scientific studies have been conducted on enterprise economics and the utilization of fixed assets. In particular, the works of K. B. Urazov, T. G. Gulyamova, U. T. Fayziyeva, M. Q. Ziyoyev, A. N. Djabriev, K. B. Ganiyev, V. U. Yodgorov, R. I. Gimush, I. X. Davletov, and D. R. Khairov have addressed certain economic aspects of the construction sector. However, despite these contributions, modern, comprehensive, and industry-specific methodological frameworks for assessing the efficiency of fixed asset utilization in construction enterprises have not been sufficiently developed.

This situation substantiates the need to scientifically and methodologically improve the indicators for assessing the efficiency of fixed

asset utilization in construction enterprises and the methods for their calculation.

Analysis and Results

In modern economic theory, fixed assets are interpreted as assets possessing a certain use value, created through social labor, and forming part of the materialized factors of production. Under market economy conditions, fixed assets created through the efforts and resources of enterprises constitute property that directly influences the formation of production capacity and the efficiency of its utilization. At the macroeconomic level, fixed assets represent an integral component of a country's national wealth.

Fixed assets are a crucial part of an enterprise's means of production. They participate in the production process over a long period, retain their physical and material form, and gradually transfer their value to the cost of finished products. This transfer of value occurs through the process of depreciation, and the monetary funds generated in this process are referred to as depreciation charges. Depreciation charges serve as the primary financial source for the replacement, renewal, and modernization of fixed assets.

In recent years, a steady increase in the number of enterprises has also been observed in Uzbekistan's construction sector. In particular, as of August 1, 2024, the number of registered construction enterprises reached 53,499, which represents a significant increase compared to 41,479 enterprises in 2020. This statistical growth further intensifies the need for an in-depth analysis and assessment of the efficiency of fixed asset utilization in construction enterprises.

The efficiency of fixed asset utilization is understood as the ratio of the volume of output produced or the economic result achieved to the value of fixed assets employed. In economic practice, both aggregate and partial indicators are used to determine this efficiency. These indicators reflect the economic relationship between fixed assets and production outcomes.

One of the main aggregate indicators is fixed asset turnover, which shows the amount of output produced per unit of fixed asset value. An increase in this indicator signifies an improvement in the efficiency of fixed asset utilization. The inverse of fixed asset turnover is capital intensity, which characterizes the amount of fixed assets required to produce one unit of output.

In addition, fixed asset profitability is an important indicator in assessing the efficiency of fixed asset utilization. This indicator reflects the amount of profit generated relative to the value of fixed assets and allows identification of the relationship between an enterprise's financial results and the level of fixed asset utilization.

Depreciation charges also play a significant role in the process of evaluating fixed asset efficiency. Depreciation serves to compensate for the physical and moral wear of fixed assets and creates opportunities for their renewal and modernization. Proper and well-grounded calculation of depreciation charges contributes to a realistic and objective assessment of fixed asset utilization efficiency.

With regard to calculation methods, traditional economic analysis methods are currently applied alongside economic-statistical and factor analysis techniques. Factor analysis enables identification of the factors influencing the efficiency of fixed asset utilization and assessment of their impact levels. Under modern conditions, the use of digital technologies and automated accounting systems significantly enhances the accuracy and timeliness of evaluating fixed asset efficiency.

The main indicators used to assess the efficiency of fixed asset utilization and their calculation formulas are presented in Table 1.

Table 1.

Indicators of Fixed Asset Utilization Efficiency

№	Indicator	Calculation Formula	Economic Meaning
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1	Fixed asset turnover	$F_q = \frac{Y}{AF}$	Volume of output produced per unit of fixed asset value
2	Capital intensity	$F_s = \frac{AF}{Y}$	Value of fixed assets required to produce one unit of output
3	Fixed asset profitability	$F_r = \frac{F}{AF} \times 100\%$	Net profit relative to the value of fixed assets
4	Depreciation rate	$A_d = \frac{A}{AF} \times 100\%$	Degree of wear and depreciation of fixed assets

The table presents the main aggregate indicators used to assess the efficiency of fixed asset utilization and their calculation formulas. In this context:

- Y – volume of produced output (works, services), UZS;
- AF – average annual value of fixed assets, UZS;
- F – net profit of the enterprise, UZS;
- A – depreciation charges, UZS.

These indicators make it possible to conduct a comprehensive assessment of fixed asset utilization efficiency in construction enterprises. Below, the calculation of fixed asset turnover and fixed asset profitability for a construction enterprise is presented based on five-year statistical data (financial figures are provided for illustrative purposes).

Table 2.

Dynamics of Fixed Asset Utilization Efficiency Indicators in a
Construction Enterprise

Year	Volume of construction works, bln UZS	Average annual value of fixed	Profit, bln UZS	Fixed asset turnover	Fixed asset profitability, %
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		assets, bln UZS			
2020	78	38	7,0	2,05	18,4
2021	85	39	8,5	2,18	21,8
2022	95	40	10,0	2,38	25,0
2023	110	42	12,0	2,62	28,6
2024	125	45	14,0	2,78	31,1

***Note:** Fixed asset turnover and fixed asset profitability were calculated by the author based on statistical data.*

The dynamics of fixed asset utilization efficiency in a construction enterprise were analyzed for the period 2020–2024. During this period, the volume of construction works increased from 78 billion UZS to 125 billion UZS, demonstrating a stable growth trend. At the same time, the average annual value of fixed assets rose from 38 billion UZS to 45 billion UZS, indicating a gradual expansion of the enterprise's material and technical base. The enterprise's profit also increased significantly over the analyzed period, from 7.0 billion UZS to 14.0 billion UZS.

Based on these indicators, fixed asset turnover increased from 2.05 in 2020 to 2.78 in 2024. This indicates that the volume of output produced per unit of fixed asset value has been increasing year by year, reflecting improved efficiency in the utilization of fixed assets. In particular, after 2022, the faster growth of construction work volumes compared to the growth of fixed asset value had a positive impact on the significant increase in fixed asset turnover.

Similarly, the fixed asset profitability indicator demonstrated a positive trend throughout the analyzed period. Specifically, fixed asset profitability increased from 18.4% in 2020 to 31.1% in 2024, indicating a steady rise in profits generated through the use of fixed assets. This improvement can be explained by enhancements in the technical condition of fixed assets, their modernization, and more efficient organization of production processes.

Overall, the results of the five-year analysis show that while the average annual value of fixed assets increased gradually, the growth rate of construction work volumes exceeded the growth rate of fixed asset value. The consistent increase in both fixed asset turnover and fixed asset profitability scientifically confirms the improvement in the efficiency of fixed asset utilization in the construction enterprise.

These findings demonstrate the importance of applying dynamic analysis methods when assessing the efficiency of fixed asset utilization in construction enterprises and substantiate the need to further improve the methodology for calculating efficiency indicators.

Conclusion and Recommendations

The results of the conducted research indicate that the efficiency of fixed asset utilization in construction enterprises is one of the key factors determining production volumes, financial performance, and overall competitiveness. The dynamic analysis carried out for the period 2020–2024 showed that the average annual value of fixed assets increased gradually, while the growth rates of construction work volumes and profits exceeded this increase. As a result, a stable upward trend in fixed asset turnover and fixed asset profitability indicators was ensured.

The analysis revealed that improvements in fixed asset utilization efficiency are associated not only with the expansion of production capacity but also with increased intensity of using existing fixed assets, improvements in their technical condition, and enhanced management processes. At the same time, it was identified that the physical and moral depreciation of certain fixed assets negatively affects production efficiency.

It was scientifically substantiated that the efficiency of fixed asset utilization should be assessed through the integrated application of indicators such as fixed asset turnover, capital intensity, fixed asset profitability, and depreciation rate. Analyzing these indicators in an interrelated manner enables

the adoption of well-grounded managerial decisions regarding fixed asset management.

Based on the research findings, the following scientific and practical recommendations are proposed:

1. In assessing the efficiency of fixed asset utilization in construction enterprises, it is advisable to introduce a comprehensive evaluation system that encompasses fixed asset turnover, fixed asset profitability, and depreciation rate, rather than relying on individual indicators.

2. It is recommended to gradually renew and modernize obsolete fixed assets in order to increase the level of production capacity utilization, thereby further improving fixed asset turnover and fixed asset profitability indicators.

3. To enhance the efficiency of fixed asset utilization, it is necessary to improve depreciation policy, ensure targeted use of depreciation charges, and actively involve these funds in modernization processes.

4. To ensure continuous monitoring of the condition of fixed assets, it is essential to implement digital technologies and automated accounting systems, which will help reduce equipment downtime and ensure continuity of production processes.

The practical implementation of these conclusions and recommendations will contribute to improving the efficiency of fixed asset utilization in construction enterprises, reducing production costs, and strengthening the financial stability of enterprises.

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