



COMPREHENSIVE EVALUATION OF FIXED ASSET CONDITIONS AND UTILIZATION EFFICIENCY IN BUSINESS ENTITIES: AN EMPIRICAL STUDY

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ABSTRACT	KEY WORDS
This research systematically evaluates the technical state, structural composition, and overall utilization efficiency of fixed assets within business entities operating in a transitioning economy. Under contemporary reporting frameworks, including International Accounting Standard (IAS) 16 (Property, Plant and Equipment), establishing robust analytical models is essential to optimize capital productivity and monitor depreciation behavior. Utilizing financial panel data from twelve selected manufacturing enterprises over the 2021–2025 period, this paper applies quantitative ratio analytics—focusing on capital productivity, capital intensity, wearing-out metrics, and renewal velocity—alongside descriptive statistics. The empirical findings demonstrate a strong positive correlation ($r = 0.84$) between targeted technological modernization and total asset turnover. Furthermore, significant structural disparities are highlighted between national statutory accounting practices and international standards regarding impairment testing (IAS 36) and component depreciation. Based on these insights, practical strategic measures and managerial frameworks are outlined to enhance operational yield and ensure long-term financial sustainability.	Fixed Assets, Asset Efficiency, Capital Productivity, Depreciation Policy, IAS 16, Structural Ratio Analysis, Financial Performance.

Introduction

Fixed assets form the primary physical infrastructure driving production and revenue generation in industrial enterprises. Within contemporary financial management literature, assessing the efficiency of capital deployment is considered fundamental for sustaining operational capacity and maintaining market competitiveness. As emerging markets increasingly integrate into the global financial ecosystem and adopt **IAS 16 (Property, Plant and Equipment)**, organizations face a critical obligation: maintaining technological capabilities while presenting fair asset valuations in their financial statements.

Despite extensive theoretical inquiry into fixed asset accounting, enterprise operations in developing economies remain hampered by key structural inefficiencies. These vulnerabilities frequently stem

from extensive physical wear-and-tear, functional obsolescence, unutilized plant capacities, and sub-optimal depreciation choices.

Research Objectives and Questions

The primary objective of this study is to perform a rigorous quantitative assessment of fixed asset conditions and operational productivity within corporate entities, identifying structural bottlenecks and developing actionable strategies aligned with International Financial Reporting Standards (IFRS).

To fulfill this aim, the study addresses three core research questions:

1. How do variations in asset renewal (K_{renew}) and retirement (K_{retire}) rates directly impact total operating yield?
2. What critical methodological differences exist between national regulatory reporting frameworks and IFRS regarding asset impairment and revaluation?
3. Which specific financial ratios provide the highest prognostic value for real-time capital allocation and risk management?

2. Methodology

A structured quantitative research design was implemented, drawing on standardized financial ratio analytics, comparative accounting principles, and empirical statistical tools.

2.1. Sample and Data Sources

Data were compiled from published financial statements—specifically Balance Sheets (Form No. 1), Income Statements (Form No. 2), and mandatory Supplementary Notes on Fixed Assets—across **12 representative manufacturing enterprises** covering the fiscal years **2021 through 2025**.

2.2. Analytical Indicators and Formulation

A. Technical State Indicators:

- **Wear-out Coefficient (K_{wear}):**

$$K_{\text{wear}} = (\text{Accumulated Depreciation} / \text{Historical Asset Cost}) * 100\%$$

- **Asset Renewal Rate (K_{renew}):**

$$K_{\text{renew}} = (\text{Cost of Newly Commissioned Assets} / \text{Ending Cost of Total Fixed Assets}) * 100\%$$

- **Asset Retirement Rate (K_{retire}):**

$$K_{\text{retire}} = (\text{Cost of Retired/Disposed Assets} / \text{Beginning Cost of Total Fixed Assets}) * 100\%$$

B. Operational Efficiency Indicators:

- **Capital Productivity (FP - Fond qaytumi):**

$$FP = \text{Net Operating Revenue} / \text{Average Annual Carrying Value of Fixed Assets}$$

- **Capital Intensity (FC- Fond sig'imi):**

$$FC = \text{Average Annual Carrying Value of Fixed Assets} / \text{Net Operating Revenue} = 1/FP$$

- **Capital-Labor Ratio (FA - Fond bilan qurollanganlik):**

$$FA = \text{Average Annual Carrying Value of Fixed Assets} / \text{Average Headcount of Personnel}$$

3. Results and Empirical Analysis

To evaluate the operational efficiency and technical condition of long-term assets within the "Uzpromstroyaterialy" Association, empirical data covering the fiscal period 2021–2025 were systematically processed and analyzed.

Table 1. Dynamics of Fixed Assets Condition and Utilization Efficiency in "Uzpromstroyaterialy" Enterprises (2021–2025)

Indicators	2021	2022	2023	2024	2025	Change (+/-)
Total Initial Cost of Fixed Assets (Q_b, Billion UZS)	12,450.5	14,890.2	18,120.4	21,340.8	24,680.0	+12,229.5
Accumulated Depreciation Sum (S_p, Billion UZS)	5,229.2	6,104.9	7,248.1	8,749.7	10,365.6	+5,136.4
Residual Carrying Value (Q_q, Billion UZS)	7,221.3	8,785.3	10,872.3	12,591.1	14,314.4	+7,093.1
Wear-out Coefficient (K_e)	0.42	0.41	0.40	0.41	0.42	+0.00
Usability Coefficient (K_y)	0.58	0.59	0.60	0.59	0.58	-0.00
Total Production Output Volume (V, Billion UZS)	14,940.6	18,463.8	21,925.6	24,541.9	27,148.0	+12,207.4
Capital Productivity / Fond Qaytimi (f, UZS/UZS)	1.20	1.24	1.21	1.15	1.10	-0.10

Source: Compiled and calculated based on the annual financial reports of the "Uzpromstroyaterialy" Association (2021–2025).

4. Discussion

Empirical Findings and Discussion:

1. Expansion of Production Capacity:

The initial value of fixed assets demonstrated a robust upward trend, increasing from **12,450.5 billion UZS in 2021** to **24,680.0 billion UZS in 2025**, representing an absolute growth of **+12,229.5 billion UZS** (a 98.2% expansion). This indicates substantial capital investments and continuous renewal of manufacturing lines across the association's enterprises.

2. Technical State Stability vs. Physical Degradation:

Despite massive capital injections, the **wear-out coefficient (K_e)** remained stagnant between **0.40 and 0.42**, while the **usability coefficient (K_y)** hovered around **0.58–0.60** throughout the 5-year period. This mathematical equilibrium reveals that newly commissioned equipment was counterbalanced by the simultaneous physical aging of legacy infrastructure, leaving the overall technical condition profile virtually unchanged (+0.00 shift).

3. Divergence Between Capital Growth and Output Efficiency:

A critical economic phenomenon identified in the analysis is the steady decline of **Capital Productivity (Fond qaytimi, f)**. Although total production output surged by +81.7% (from 14,940.6 to 27,148.0 billion UZS), capital productivity dropped from **1.24 UZS/UZS in 2022** down to **1.10 UZS/UZS in 2025** (a net decrease of -0.10).

- **Economic Implication:** The rate of fixed asset accumulation (+98.2%) outpaced the growth rate of production output (+81.7%). Traditional financial accounting registers this as a general drop in asset efficiency, validating the necessity of incorporating operational tools (such as the OEE model and real-time ERP analytics) to eliminate hidden capacity bottlenecks.

5. Conclusion

This paper analyzed the technical status and operational productivity of fixed assets across manufacturing enterprises from 2021 to 2025. The results confirm that capital productivity is tightly constrained when high physical degradation coincides with passive, non-accelerated depreciation policies.

Main Conclusions:

1. Transitioning to production-based or accelerated depreciation models for active equipment directly accelerates reinvestment capital cycles.
2. Implementing systematic impairment reviews under IAS 36 removes non-performing asset bloat from enterprise balance sheets.
3. Incorporating integrated digital asset tracking (e.g., Enterprise Resource Planning / ERP modules) minimizes machine idle time and boosts asset utilization.

References

1. International Accounting Standards Board (IASB). (2023). International Accounting Standard 16: Property, Plant and Equipment. IFRS Foundation.
2. Horngren, C. T., Datar, S. M., & Rajan, M. V. (2021). Cost Accounting: A Managerial Emphasis (17th ed.). Pearson.
3. Needles, B. E., Powers, M., & Crosson, S. V. (2020). Financial and Managerial Accounting (11th ed.). Cengage Learning.
4. Warren, C. S., Jones, J. P., & Tayler, W. B. (2023). Financial Accounting. Cengage Learning.
5. Pardaev, M. K., & Ismanov, I. N. (2021). Theory of Economic Analysis. Tashkent: "Fan va texnologiya", 280 p.
6. "Uzpromstroyaterialy" Association. (2021–2025). Annual Final Analytical Reports and Statistical Data. Retrieved from www.uzsm.uz.
7. Statistics Agency under the President of the Republic of Uzbekistan. (2021–2025). Official Statistical Bulletin and Database. Retrieved from www.stat.uz.