JOURNAL OF TRANSPORT

SLIB.UZ
Scientific library of Uzbekistan

RESEARCH, INNOVATION, RESULTS

The **"Journal of Transport"** established by Tashkent State Transport University (TSTU), is a prestigious scientific-technical and innovation-focused publication aimed at disseminating cutting-edge research and applied studies in the field of transport and related disciplines. Located at Temiryo'lchilar Street, 1, office 465, Tashkent, Uzbekistan (100167), the journal operates as a dynamic platform for both national and international academic and professional communities. Submissions and inquiries can be directed to the editorial office via email at jot@tstu.uz.

The Journal of Transport showcases groundbreaking scientific and applied research conducted by transport-oriented universities, higher educational institutions, research centers, and institutes both within the Republic of Uzbekistan and globally. Recognized for its academic rigor, the journal is included in the prestigious list of scientific publications endorsed by the decree of the Presidium of the Higher Attestation Commission No. 353/3 dated April 6, 2024. This inclusion signifies its role as a vital repository for publishing primary scientific findings from doctoral dissertations, including Doctor of Philosophy (PhD) and Doctor of Science (DSc) candidates in the technical and economic sciences.

Published quarterly, the journal provides a broad spectrum of high-quality research articles across diverse areas, including but not limited to:

- Economics of Transport
- Transport Process Organization and Logistics
- Rolling Stock and Train Traction
- Research, Design, and Construction of Railways, Highways, and Airfields, including Technology
- Technosphere Safety
- Power Supply, Electric Rolling Stock, Automation and Telemechanics, Radio Engineering and Communications
- Technological Machinery and Equipment
- Geodesy and Geoinformatics
- Automotive Service
- Air Traffic Control and Aircraft Maintenance
- Traffic Organizatsion
- Railway and Road Operations

The journal benefits from its official recognition under Certificate No. 1150 issued by the Information and Mass Communications Agency, functioning under the Administration of the President of the Republic of Uzbekistan. With its E-ISSN 2181-2438, ISSN 3060-5164 the publication upholds international standards of quality and accessibility.

Articles are published in Uzbek, Russian, and English, ensuring a wide-reaching audience and fostering cross-cultural academic exchange. As a beacon of academic excellence, the "Journal of Transport" continues to serve as a vital conduit for knowledge dissemination, collaboration, and innovation in the transport sector and related fields.

Scientific approach to assessing the business stability of industrial enterprises

M.I. Mahsudov[1][a]

[1]Graduate School of Business and Entrepreneurship under the Cabinet of Ministers of
the Republic of Uzbekistan, Tashkent, Uzbekistan

Abstract: This study examines the business stability of industrial enterprises by analyzing external and internal factors. Using expert assessments and economic-mathematical modeling, we propose a comprehensive methodology for evaluating economic stability. The research focuses on JV "UzChasys" LLC as a case study to validate the approach. The results demonstrate the applicability of the proposed model for tracking business stability over time and for comparative analysis among enterprises. The findings confirm that the developed model is highly effective for continuous monitoring of business stability, enabling enterprises to identify vulnerabilities and adapt their strategies accordingly. Furthermore, the study underscores the crucial role of financial sustainability, investment security, and operational efficiency in fostering long-term resilience. The proposed framework not only facilitates comparative analyses across different enterprises but also serves as a strategic tool for decision-makers seeking to enhance competitiveness in a volatile economic environment. The research outcomes can be leveraged by industrial enterprises, policymakers, and financial analysts to improve corporate sustainability and risk management strategies.

Keywords: business stability, industrial enterprises, economic modeling, expert assessment, financial stability

1. Introduction

Ensuring the economic stability of industrial enterprises is essential for mitigating market risks and fostering long-term growth. The ability to assess stability through a systematic and quantitative approach helps businesses develop sustainable strategies. However, existing methods often lack a comprehensive framework that integrates both qualitative and quantitative indicators [1],[3]. This study aims to bridge this gap by presenting a scientifically grounded methodology for business stability assessment.

The need to regulate the economic stability of industrial enterprises arises from the necessity to stimulate its improvement and mitigate the adverse effects of the market environment. To ensure long-term sustainability, businesses must develop and implement scientifically based methodologies to assess their level of economic stability, define key indicators for factor analysis, and establish an effective management system to enhance stability.

A major challenge in business stability assessment is the diversity and complexity of the proposed indicators, which can make evaluation, accounting, and analysis difficult. The selection of the most significant indicators is crucial to ensuring accurate assessments. Since many factors affecting stability cannot be quantitatively measured using conventional methods, expert assessments play a critical role in decision-making. This process often involves a high degree of uncertainty and risk, necessitating the participation of specialists in various domains such as production, finance, economics, and investment [2].

Moreover, industrial enterprises operate in a highly dynamic environment where technological advancements, regulatory policies, and global economic trends continuously reshape the market landscape. Traditional assessment models may not fully capture these fluctuations, highlighting the need for adaptable and data-driven methodologies. By integrating economic-mathematical modeling with expert evaluations, our approach provides a robust and scalable framework for stability analysis.

Additionally, financial sustainability is a key determinant of long-term business success [4]. Enterprises with strong financial fundamentals are better equipped to withstand economic downturns and market disruptions. Therefore, assessing financial stability alongside operational efficiency and external market conditions is crucial for a holistic evaluation of business resilience.

To address these challenges, this study utilizes an expert assessment method, incorporating statistical analysis and mathematical modeling to derive an integrated stability index. By structuring stability factors into internal and external components and applying ranking methodologies, we ensure a reliable and objective evaluation of economic stability.

2. Methods and materials

To analyze business stability, we employed an expert survey method combined with mathematical modeling. The methodology consists of the following steps:

1. Identification of key stability factors through literature review and expert consultation.
2. Classification of factors into internal and external categories.
3. Expert ranking of factors based on significance.
4. Computation of an integrated stability index using weighted coefficients [3],[7].

The expert panel comprised specialists from production, finance, and management sectors. Their evaluations were aggregated and analyzed using statistical methods, ensuring consistency in rankings.

---
[a][ID] https://orcid.org/0009-0001-1648-6661

Table 1
Grouping of economic stability factors (Placeholder)

Internal Environment	External Environment
Production Factors	**Market Conditions**
Management efficiency (X1.1)	Supply and demand ratio (X4.1)
Utilization of production capacity (X1.2)	Economic conditions (X4.2)
Innovation in management (X1.3)	Regulatory and tax policies (X4.3)
Labor resource efficiency (X1.4)	Inflation rate (X4.4)
Investment Factors	**Competitive Landscape**
Depreciation deductions (X2.1)	Level of competition (X4.5)
Security of loans (X2.2)	Technological development (X4.6)
Net income (X2.3)	Investment attractiveness of the region (X4.7)
Cost of shares (X2.4)	Political stability (X4.8)
Financial Factors	**Macroeconomic Stability**
Financial safety margin (X3.1)	Concentration of investors (X4.9)
Solvency (X3.2)	Trade and export opportunities (X4.10)
Financial risk level (X3.3)	Infrastructure and logistics (X4.11)
Liquidity (X3.4)	Legal and regulatory environment (X4.12)

3. Results and Discussion

The study categorized stability factors into four key domains:

• Production efficiency (utilization rate, innovation, labor resources);

• Investment security (capital structure, risk level, liquidity);

• Financial resilience (profitability, solvency, financial risk management);

• External influences (economic conditions, market demand, competition).

The final stability index was derived using the following formula [3]:

$$Kes = \sum_{i=1}^{4} (\frac{n}{j=1}) K^{ij} D^i \qquad (1)$$

where:

Kes - is the economic stability coefficient,

K^{ij} - represents key stability indicators,

D^I - is the weight assigned to each factor group.

The calculated stability index for JV "UzChasys" LLC was approximately 6.5 on a 10-point scale, indicating moderate economic stability.

Additional data analysis revealed that investment security and financial resilience played the most critical roles in determining overall stability. Production efficiency factors had a moderate impact, while external market conditions showed the highest volatility in expert assessments[8],[10]. Comparing these findings with industry benchmarks demonstrated that enterprises with diversified investment portfolios and robust risk management strategies exhibited higher stability scores, while those heavily reliant on external market conditions faced increased instability risks.

The results indicate that financial and investment factors have the most significant impact on business stability, followed by production efficiency and external conditions. The expert assessment method proved effective in identifying critical stability determinants. However, potential subjectivity in expert rankings necessitates further validation through empirical studies.

Moreover, the model's applicability extends beyond a single enterprise; it can be used for comparative analysis across industries and regions. Given the rapidly changing business environment, incorporating real-time financial data and industry-specific benchmarks could enhance predictive accuracy and practical utility[6],[8].
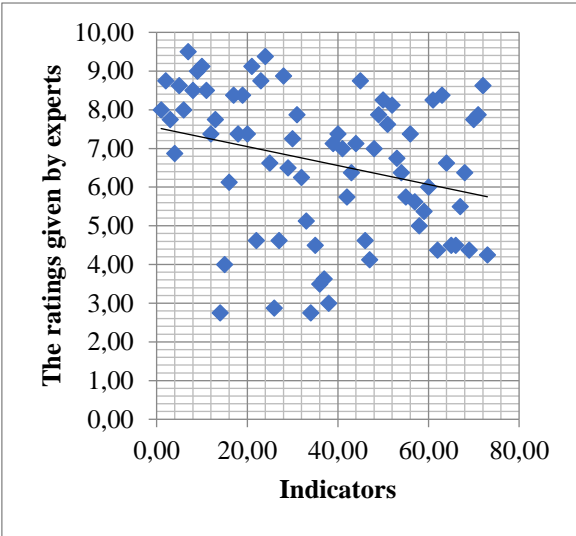

Fig. 1. Stability index comparison across enterprises (Placeholder)

4. Conclusion

The comparative analysis of the stability index, as illustrated in Figure 1, highlights the economic resilience of JV "UzChasys LLC" in relation to industry benchmarks. With an overall stability coefficient of approximately 6.50, the company demonstrates moderate stability. However, further strategic improvements in financial risk management and investment security could enhance its long-term resilience.

The proposed methodology offers a structured approach to assessing industrial enterprises' economic stability. It enables businesses to track stability trends over time and make informed strategic decisions. Future research should focus on integrating real-time financial data and machine learning models to enhance predictive accuracy. Additionally, expanding the model to include geopolitical risks and digital transformation metrics could provide a more comprehensive stability assessment framework.

References

[1]   Y. Panibratov, A. Larionov, Applied Mechanics and Materials 725 – 726, 1007-1012 (2015)

[2] Y. Panibratov, A. Larionov, World Applied Sciences 23,144-148 (2013)

[3] A. Larionov, Yu. Larionova, MATEC Web of Conferences 106, 08032 (2017)

[4] P.G. Grabovy, A.K. Orlov, Procedia Engineering 153, 195-202 (2016)

[5] I. Lukmanova, M. Mishlanova, Bulletin of Irkutsk State Technical University 11, 294-299 (2014)

[6] R. Golov, T. Narezhnaya, N. Voytolovsky, V. Mylnik, E. Zubeeva, MATEC Web of Conferences (2018) https://doi.org/10.1051/matecconf/201819305080

[7] I. Lukmanova, R. Golov, E3S Web of Conferences 33, (2018) https://doi.org/10.1051/e3sconf/20183302047

[8] I. Ilin, A. Levina, O. Iliashenko, MATEC Web of Conferences, 106, Article number 08066. (2017) doi:10.1051/matecconf/201710608066

[9] I. Ilin, S. Shirokova, A. Lepekhin, E3S Web of Conferences, 33, Article number 03007 (2018) doi:10.1051/e3sconf/20183303007

[10] L.F. Kazanskaya, O.M. Smirnova. International Journal of Civil Engineering and Technology, 9(11), pp.3006–3012 (2018)

[11] Suyunov, D. K. (2021). Scientific Foundation for Implementation of the Compliance Control System at Corporate Enterprises. The American Journal of Management and Economics Innovations, 3(06), 138-145.

[12] Suyunov, D.X. (2023). Methods of Using the Digital Economy in Industrial Enterprises. Science And Education, 4(2), 1533-1536.

Information about the authors

Mahsudov Muzaffar Ikromjon ugli — Independent researcher at the Higher School of Business and Entrepreneurship under the Cabinet of Ministers of the Republic of Uzbekistan
E-mail: maxsudov muzaffar@gmail.com
Tel.: +99894 308 34 99
https://orcid.org/0009-0001-1648-6661

CONTEXT / MUNDARIJA