

The Paradox of Performance: Profit Growth amid Structural Financial Instability

Marek Nagy^{1*}

* Correspondence: marek.nagy@uniza.sk

¹University of Zilina, Faculty of Operation and Economics of Transport and Communications, Department of Economics, Univerzitna 1, 010 26 Zilina, Slovakia

Abstract

Research background: Financial performance remains a fundamental determinant of the long-term sustainability and competitiveness of enterprises. In an increasingly dynamic business environment, the ability to monitor and interpret financial results is essential for identifying risks, ensuring financial health, and supporting strategic decision-making. Financial analysis plays a central role in this process, offering insights into the economic condition and operational effectiveness of a company.

Purpose of the article: This study aims to assess the financial performance of the selected company over the period from 2020 to 2023 by applying key tools of financial analysis. The goal is to identify both strengths and weaknesses in the company's financial structure and to propose measures that could enhance its stability, performance, and strategic position.

Methods: The analysis is based on publicly available financial statements, including the balance sheet and income statement. It employs horizontal and vertical analysis along with a set of financial ratios focused on liquidity, activity, indebtedness, and profitability.

Findings & Value added: The selected company demonstrated overall financial stability during the observed period, with notable improvements in profitability and asset utilization. However, risks were identified in areas such as low liquidity and an increased dependence on external financing. The study proposes targeted recommendations aimed at addressing these vulnerabilities. The findings may serve as a decision-making tool for company management in financial planning and performance optimization. Additionally, the results contribute to the broader academic and practical understanding of financial analysis in small and medium-sized enterprises.

Keywords: financial performance assessment; financial analysis; profitability; liquidity; indebtedness

JEL Classification: G30; M21; L25

Received 25 April 2025

Received in revised form 24 June 2025

Accepted

4 August 2025

Available online

31 December 2025

Cite as: Nagy, M. (2025). The Paradox of Performance: Profit Growth amid Structural Financial Instability, Ekonomicko-manazerske spektrum, 19(2), 1-11.



1. Introduction

Financial performance represents one of the most essential aspects influencing the functioning, development, and long-term sustainability of an enterprise. In the context of a dynamic business environment and constantly evolving economic conditions, it is necessary to monitor and evaluate financial performance continuously (Wang et al., 2021). This process enables the identification of strengths and weaknesses within a company, supporting the formulation of strategic decisions that promote financial stability and competitiveness (Bateni and Asghari, 2020). To thoroughly assess the financial situation of an enterprise, financial analysis is employed as a comprehensive tool that evaluates the company's economic health, stability, and operational efficiency. It also facilitates benchmarking against other entities in the same sector, offering a broader understanding of the company's position in the market. This study is structured into two main sections (Farida and Setiawan, 2022). The theoretical section outlines the essential terminology, methods, and indicators used in financial analysis. It provides a systematic explanation of its principles, the data sources required for implementation, and the methodological tools applicable to financial performance assessment. These foundations are then applied in the analytical section, which focuses on a real case of the selected company.

The analysis is based on data from publicly accessible financial statements, primarily the balance sheet and income statement, for the period from 2020 to 2023. The selected company operates in the field of freight and passenger transport and provides a range of related services. The analytical approach involves horizontal and vertical analysis of financial statements, along with the application of key financial ratios in the areas of liquidity, activity, indebtedness, and profitability. The financial analysis conducted in this study aims to evaluate the overall financial health of the selected company, detect relevant performance trends, and assess its economic condition. The results serve as the basis for formulating targeted recommendations that can contribute to improving financial efficiency and supporting sustainable growth. These insights may also offer added value in the decision-making processes of company management and provide a reference point for future research into the financial evaluation of small and medium-sized enterprises.

2. Literature review

Financial analysis plays a key role in evaluating the performance, efficiency, and sustainability of enterprises. It enables stakeholders to understand a company's financial structure, identify potential weaknesses, and implement corrective actions in a timely manner. According to Kliestik et al. (2018b), financial analysis serves not only as a retrospective overview of economic activities but also as a forward-looking instrument for strategic financial planning. It provides essential support for investment decisions, financial forecasting, and risk assessment.

The structure of financial analysis can be divided into several fundamental areas. These include horizontal and vertical analysis of financial statements and the application of financial indicators focusing on liquidity, profitability, activity, and indebtedness (Olayinka, 2022). Each of these dimensions reflects a specific aspect of a company's financial condition and is essential for understanding the overall performance dynamics.

Liquidity indicators assess a company's ability to meet its short-term obligations. They are based on the relationship between liquid assets and current liabilities. As noted by Brozyna et al. (2016), insufficient liquidity is often a key signal of operational imbalance and may lead to insolvency if not corrected. The most commonly used indicators include the current ratio, quick ratio, and cash ratio. These indicators are frequently applied in studies comparing financial health across companies or industries.

Profitability indicators reflect a company's ability to generate profit from its operations. According to Karas and Reznakova (2021), profitability is often the primary benchmark for financial performance, as it directly affects the firm's ability to finance future investments, repay debts, and

reward shareholders. Key profitability indicators include return on assets, return on equity, and return on sales, which are widely used in empirical financial research (Ibrahimov et al., 2025).

Activity ratios are used to evaluate the efficiency of asset utilization. These ratios indicate how effectively the company converts resources into revenues. As discussed by Horvathova and Mokrisova (2014) high turnover rates in assets or receivables often suggest sound operational management and effective use of working capital. Conversely, low turnover ratios may signal problems with inventory management, excess capacity, or inefficient internal processes.

Indicators of indebtedness focus on the relationship between external and internal sources of financing (Hariyani et al., 2024; Nagy et al., 2024). The level of debt influences a firm's risk profile, its interest burden, and long-term solvency. Studies such as those by Hiong et al. (2021) emphasize that excessive debt, particularly short-term liabilities, can severely constrain a company's flexibility and increase vulnerability to market fluctuations. The most common metrics include the debt-to-equity ratio, self-financing ratio, interest coverage ratio, and total debt ratio.

Modern financial analysis also increasingly incorporates synthetic models and comprehensive performance frameworks (Magrini, 2025; Seretidou et al., 2025). According to Ogachi et al. (2020), combining traditional financial indicators with synthetic metrics such as Altman's Z-score or DuPont analysis allows for a more nuanced interpretation of financial health. These methods provide a multi-criteria perspective and are particularly useful when assessing firm performance over time.

In summary, financial analysis is a well-established analytical discipline that draws on quantitative metrics to offer actionable insights into a firm's financial status. The methodologies outlined in the literature form the backbone of this study and provide the basis for the applied analysis of the selected company.

3. Methodology and Results

This study applies a structured financial analysis to assess the performance of the selected company over the period from 2020 to 2023. The analysis is based on official financial statements obtained from the national register of financial reports. These include the balance sheet and income statement, which together provide a comprehensive view of the company's assets, liabilities, revenues, and expenditures. The methodology integrates both horizontal and vertical analysis techniques as well as a series of key financial ratios to evaluate liquidity, operational efficiency, indebtedness, and profitability.

Horizontal analysis is used to determine year-on-year changes in the financial structure. It captures both absolute and relative variations in balance sheet and income statement items.

Table 1 and Table 2 present the horizontal analysis of assets and liabilities, respectively. These tables illustrate how fixed assets, current assets, and different sources of financing evolved across the analysed period. The changes are shown in both numerical and percentage terms, enabling the identification of significant shifts in capital structure and operational priorities. Vertical analysis examines the internal composition of assets and liabilities for each year. By expressing individual items as percentages of total assets or total liabilities, it is possible to observe proportional changes within the financial structure.

Table 1: Horizontal analysis of assets

Assets	2020/2021		2021/2022		2022/2023	
	abs.	%	abs.	%	abs.	%
Non-current assets	515,887	25.45	71,803	2.82	1,206,677	46.15
Tangible long-term assets	526,095	42.18	246,901	13.92	422,839	20.93
Current assets	-102,08	-1.31	-175,098	-22.76	783,838	131.95
Long-term receivables	54,650	7.94	-197,605	-26.60	776,042	142.34
Short-term receivables	-25,724	-100,00	2,086		-2,086	-100,00
Bank and financial accounts	-39,134	-59.76	20,421	77.51	9,882	21.13

Note: abs. absolute value Source: own elaboration

Table 2: Horizontal analysis of liabilities

Liabilities	2020/2021		2021/2022		2022/2023	
	abs.	%	abs.	%	abs.	%
Equity	21,304	6.65	30,678	8.97	41,995	11.27
Profit from previous years	27,407	34.24	29,046	27.03	30,676	22.48
Profit after tax	-6,103	-17.36	1,632	5.62	11,319	36.90
Liabilities	494,583	28.99	41,125	1.87	1,164,682	51.95
Long-term liabilities	424,339	32.74	-236 , 827	-13.78	369,792	24.95
Short-term liabilities	-11,177	-9.88	60,487	59-35	74,999	46.18
Current bank loans			217,465		498,891	229.41
Financial assistance	81,421	27.30			221,000	58.22

Source: own elaboration

The results are presented in Table 3 and Table 4. This analysis provides insights into how the company's investment priorities and financing strategies changed over time.

Table 3: Vertical analysis of assets

Assets (%)	2020	2021	2022	2023
Non-current assets	61.55	69.75	77.28	63.94
Tangible long-term assets	61.55	69.75	77.28	63.94
Current assets	38.45	30.25	22.72	36.06
Long-term receivables	33.95	29.21	20.85	34.58
Short-term receivables	1.27		0.08	
Bank and financial accounts	3.23	1.04	1.79	1.48

Source: own elaboration

Table 4: Vertical analysis of liabilities

Liabilities (%)	2020	2021	2022	2023	
Equity	15.82	13.45	14.25	10.85	
Share capital	0.74	0.59	0.57	0.39	
Additional capital funds	9.39	7.49	7.28	4.98	
Profit from previous years	3.95	4.23	5.22	4.37	
Profit after tax	1.73	1.14	1.17	1.10	
Liabilities	84.18	86.55	85.75	89.15	
Long-term liabilities	63.89	67.61	56.70	48.47	
Short-term liabilities	5.58	4.01	6.21	6.21	
Current bank loans			8.32	18.75	
Financial assistance	14.71	14.93	14.52	15.72	

Source: own elaboration

A core component of the methodology is the computation of financial ratios that capture the company's performance in four main dimensions. Liquidity indicators include the quick ratio, current ratio, and total liquidity ratio, which are presented in Table 5.

Table 5: Liquidity analysis

Liquidity	2020	2021	2022	2023
Short-term external resources	411,299	481,543	759,495	1,554,385
Ratio indicators				
L1 – liquidity of the 1st level	0.15921	0.05471	0.06158	0.03645
L2 – liquidity of the 2nd level	0.22175	0.05471	0.06432	0.03645
L3 – liquidity of the 3rd level	0.22175	0.05471	0.06432	0.03645
Difference (fund) indicators				
Net cash	-345,818	-455,196	-712,727	-1,497,735
Net cash assets	-320,094	-455,196	-710,641	-1,497,735

Source: own elaboration

These metrics collectively assess the company's ability to meet short-term obligations and manage cash resources effectively. Liquidity indicators, including the quick ratio and the current ratio, provide insight into immediate solvency. Throughout most of the observed period, both

ratios remained below optimal thresholds. The quick ratio consistently fluctuated around values significantly lower than the recommended minimum of 0.8, indicating a shortage of cash and liquid equivalents relative to current liabilities. Although the current ratio showed slightly more favourable values, it too failed to consistently exceed the standard range of 1.0 to 1.5.

A noticeable deterioration in liquidity was observed between 2020 and 2021, during which both indicators declined. This decline may have resulted from a reduction in short-term receivables and cash reserves, accompanied by a simultaneous increase in current liabilities. A moderate recovery followed in 2023, attributed to an improved composition of current assets. Nevertheless, the overall liquidity position remained below ideal levels. The total liquidity ratio, which encompasses all current assets, presented a slightly more favourable perspective in 2023, approaching a value of 1.5. However, this still fell short of the recommended upper threshold of 2.5. These findings underscore the need for improved working capital management to enhance financial flexibility and strengthen resilience against short-term financial pressures. Additionally, operational efficiency, measured through activity ratios and summarized in Table 6, complements the liquidity assessment by evaluating how effectively the company utilizes its assets to generate revenue and maintain cash flow continuity.

Table 6: Analysis of activity

Activity	2020	2021	2022	2023
Revenue from primary business activity	4,953,855	6,165,480	8,601,414	14,356,059
Debt ratios				
Debt ratio of total assets		0.37056	0.29978	0.22414
Debt ratio of fixed assets		0.24498	0.22053	0.15546
Debt ratio of current assets		0.12558	0.07924	0.06868
Turnover ratios				
Turnover of total assets		2.69863	3.33580	4.46151
Turnover of fixed assets		4.08200	4.53445	6.43258
Collection period of short-term receivable	e	0.76144	0.04426	0.02652
Payment period of short-term liabilities		6.36468	5.60843	5.08263

Source: own elaboration

These include asset turnover ratios and inventory turnover rates, providing insight into how efficiently the company utilizes its assets to generate revenue. Debt-related metrics are covered in Table 7.

Table 7: Debt related metrics

Debt	2020	2021	2022	2023
Self-financing rate	15.82 %	13.45 %	14.25 %	10.85 %
Debt rate	84.18 %	86.55 %	85.75 %	89.15 %
Debt structure				
Credit debt	14.71 %	14.93 %	22.84 %	34.47 %
Short-term debt	63.89 %	67.61%	56.70 %	48.47 %
Long-term debt	20.29 %	18.94 %	29.05 %	40.68 %
Interest coverage	2.67766	2.58306	2.46097	1.94436
Interest burden	37.35 %	38.71 %	40.63%	51.43 %
Current debt	2.85363	4.07413	4.03414	3.73454

Source: own elaboration

These indicators assess the company's reliance on external financing and its ability to manage debt-related obligations. The analysis includes the debt-to-equity ratio, self-financing ratio, interest coverage ratio, and cash flow debt coverage, all of which reflect the level of financial risk and sustainability. Profitability ratios are compiled in Table 8.

These include return on sales, return on assets, and return on equity, offering a perspective on how effectively the company transforms inputs into financial results. To consolidate the findings,

Table 8: Profitability ratios

Profitability	2020	2021	2022	2023
Profit levels (€)				
EAT	35,147	29,044	30,676	41,995
EBT	35,147	36,765	38,831	53,158
EBIT	56,097	59,989	65,410	109,448
EBITDA	597,887	540,172	555,721	912,171
CF from self-financing	576,937	509,227	520,987	844,718
Ratio indicators (%)				
Return on assets (ROA)	1.73 %	1.14 %	1.17 %	1.10 %
Return on equity (ROE)	10.96 %	8.50 %	8.23 %	10.13 %
Return on sales (ROS)	0.71%	0.47 %	0.36 %	0.29 %
Return on capital (ROI)	1.73 %	1.14 %	1.17 %	1.10 %
Return on revenue	0.71%	0.47 %	0.36 %	0.29 %
Return on costs	0.71%	0.47 %	0.36 %	0.29 %
Return on wages	8.63 %	5.50 %	5.45 %	5.40 %

Source: own elaboration

a final synthetic overview is presented in Table 9, which provides a comprehensive list of proposed recommendations based on the identified financial strengths and weaknesses.

Table 9: Comprehensive recommendation table

Indicator area	Identified problem	Recommended action
Liquidity	Insufficient coverage of short-term liabilities; low	Refinancing short-term liabilities, adjusting invoic
	attractiveness for investors.	maturities, increasing cash.
Activity	Short term of liabilities reduces liquidity.	Extending the maturity of liabilities.
Debtness	High share of external financing sources (>80%).	Reducing debt, increasing equity.
Return on assets	Low profit on assets.	Optimizing assets, eliminating unused assets.
Return on capital	Low return for investors despite high ROE.	Increasing the efficiency of capital use, reducing unprofitable investments.
Return on sales	Low profitability of sales.	Increasing sales prices, increasing sales volume, reducing costs.
Return on costs	Low return on costs.	Eliminating unnecessary expenses, optimizing costs.
Return on wages	High labour costs with non-increasing revenues.	Reducing labour costs, streamlining work processes.

Source: own elaboration

In summary, the applied methodology has proven effective in delivering a detailed and objective assessment of the selected company's financial performance across multiple dimensions. By integrating horizontal and vertical analysis with a broad set of financial ratios, the study captured both structural and dynamic aspects of the company's financial condition. The multi-year horizon reinforced the validity of trend identification and provided the necessary temporal depth to reveal persistent patterns and fluctuations.

The findings reveal that while profitability indicators demonstrated a generally positive trajectory, with improvements in return on sales, assets, and equity, these were counterbalanced by challenges in liquidity and debt management. The company struggled to maintain optimal liquidity ratios, indicating a potential vulnerability to short-term financial pressures. Operational efficiency, as reflected in activity indicators, remained stable but underwhelming, suggesting untapped potential for process optimization and asset utilization. The debt structure analysis further underscored a concerning dependence on external financing, with elevated debt-to-equity and interest burden ratios signalling financial strain in earlier years. These conclusions are reinforced by the exclusive reliance on audited financial statements, which enhanced the objectivity and reliability of the analysis. The results led to specific and actionable recommendations tailored to address the company's key financial weaknesses, including improving working capital management, reducing reliance on debt, and optimizing operational processes.

Taken together, the methodological approach and empirical findings offer valuable insights not only for the management of the selected company but also for broader academic and practical discussions on financial performance evaluation in small and medium-sized enterprises. The evidence-based nature of the conclusions provides a solid foundation for further managerial decision-making and supports future research aimed at enhancing financial resilience and sustainability in similar business contexts.

4. Discussion

The financial analysis of the selected company revealed a multifaceted picture of financial performance that combines resilience in terms of profitability with persistent risks related to liquidity and capital structure. This section critically evaluates the empirical results in light of existing literature and highlights both theoretical and practical implications.

The liquidity position of the selected company remained below optimal thresholds throughout most of the analysed period (Zhang et al., 2020). Despite a partial improvement in the final year, the company consistently demonstrated weak short-term solvency, as reflected by low values in the quick and current ratios. These findings are consistent with those of Valaskova et al. (2020), who argue that SMEs in transport-intensive industries often struggle to maintain liquidity buffers due to delayed receivables, rising input costs, and volatile demand. Moreover, Stefko et al. (2021) emphasise that insufficient liquidity can erode operational independence, forcing firms to rely on costly short-term financing or defer critical investments. This situation appears relevant to the selected company, where temporary cash shortages may restrict its capacity to adapt to market opportunities or disruptions (Eldem et al., 2022).

On the other hand, the company's operational efficiency displayed a degree of consistency. While the asset turnover ratio did not improve markedly over the four years, it remained stable, suggesting adequate but not optimised asset utilisation. The persistence of low inventory turnover, however, raises concerns about capital being tied up in non-productive stock. Svabova et al. (2020) and Valaskova et al. (2022) both highlight that low turnover often signals weaknesses in inventory planning and logistics synchronisation, which may increase warehousing costs and reduce profitability margins. This finding is particularly relevant in sectors where operating cycles are highly sensitive to inventory flows.

A more serious concern emerged from the analysis of indebtedness. The selected company relied heavily on debt capital to finance its activities, resulting in a high debt-to-equity ratio and volatile interest coverage. These indicators suggest that despite a positive trend in profitability, the firm may be overleveraged. Zvarikova et al. (2017) and Kliestik et al. (2018a) warn that in times of economic downturn or rising interest rates, such financial structures can expose companies to increased bankruptcy risk. The fact that the selected company's equity base grew more slowly than its liabilities underlines the structural nature of this imbalance.

Nevertheless, the continuous growth of profit indicators offers an optimistic counterbalance. The improvement in return on sales, return on assets, and return on equity reflects internal efforts to streamline operations and reduce cost inefficiencies. Pisula et al. (2015) noted that SMEs that reinvest profits into improving core business functions tend to achieve sustainable profitability even in the absence of strong liquidity. Furthermore, Gulka (2016) emphasise the role of profitability as a confidence signal for external stakeholders such as banks, investors, and suppliers. In this light, the selected company's improving profitability could help negotiate more favourable credit terms or attract long-term partnerships that mitigate financing risk (Wu et al., 2024; Demirel et al., 2022).

An additional insight from the study relates to the relationship between financial performance and strategic service diversification. Although the primary focus was on financial indicators, the company's diversified activities, including passenger and freight transport, self-service fuel stations, and vehicle maintenance, may contribute to its revenue stability. According to Boda and

Uradnicek (2019), SMEs with diversified revenue streams are better positioned to withstand sectoral volatility and can redistribute risk across business units. While such diversification may dilute focus and require higher capital expenditure, it can also serve as a cushion in times of operational or financial stress.

In summary, the financial profile of the selected company is defined by a productive but undercapitalised operational model (Ro et al., 2025; Alvarez et al., 2023). The firm has managed to improve profitability despite constrained liquidity and rising debt. This trade-off reflects a common pattern among SMEs striving to expand without sufficient internal financing. The findings underscore the need for more proactive financial planning, including the use of scenario-based cash flow forecasting, equity reinforcement, and capital structure optimisation (Lansdell et al., 2025). From a broader perspective, the study affirms the importance of integrated financial analysis for decision-making in SMEs and highlights how seemingly isolated indicators must be interpreted in their systemic and strategic context.

5. Conclusions

This study provides a comprehensive evaluation of the financial performance of the selected company over the period from 2020 to 2023. The applied methodology combined horizontal and vertical analysis with key financial ratios, offering a multi-dimensional perspective on the company's economic health. The results revealed a financial structure marked by strong profitability and moderate operational efficiency but persistent challenges related to liquidity and high levels of indebtedness.

The core contribution of the analysis lies in identifying a critical imbalance between profitability and capital structure. While the company managed to improve earnings and asset utilisation, these achievements were partially offset by its reliance on external financing and insufficient liquidity reserves. This dynamic reflects a broader pattern observed in small and medium-sized enterprises, where limited access to equity funding often forces firms to depend on short-term debt, exposing them to elevated financial risk.

Despite these challenges, the improvement in profitability demonstrates that operational gains are achievable even under capital constraints. This suggests that cost control, process efficiency, and service diversification play a critical role in sustaining positive financial outcomes. The findings of this study highlight the importance of strategic financial planning, particularly in the areas of liquidity management and capital structure optimisation.

Managers should consider implementing rolling cash flow forecasts, more stringent receivables collection policies, and a reassessment of inventory holding levels to release trapped working capital. Additionally, financial managers are advised to explore strategies aimed at reducing dependence on short-term debt by gradually increasing retained earnings, renegotiating credit terms, or seeking equity-based financing alternatives. Building a more balanced capital structure can increase the company's resilience to external shocks and improve its creditworthiness. Furthermore, operational improvements in inventory management and turnover cycles could reinforce both liquidity and profitability.

From a broader perspective, the study confirms the value of integrated financial analysis as a diagnostic tool for decision-making in SMEs. Financial indicators should not be viewed in isolation but interpreted as part of an interconnected framework that links liquidity, solvency, and profitability to the firm's competitive position and strategic direction. The use of consistent timeseries data and complementary performance indicators enables the early detection of vulnerabilities and supports the formulation of evidence-based recommendations.

While the analysis focused on a single enterprise, the results may have wider implications for similarly structured companies in the transport and services sector. Although this study provides a robust evaluation of the financial performance of a selected enterprise, it is not without limitations. The analysis is based on a single case study, which may limit the generalisability of the findings to

other firms or industries. The exclusive focus on quantitative financial indicators, while valuable for objective benchmarking, may overlook qualitative factors such as managerial competence, market positioning, or external regulatory influences.

The time horizon of four years provides sufficient scope for identifying trends but may not capture longer business cycles or structural shifts in the industry. Moreover, the study relies entirely on historical financial data, which do not reflect real-time managerial decisions or external shocks that may have influenced the company's behaviour. Future research could address these limitations by conducting comparative analyses across multiple firms within the same sector, enabling industry-level benchmarking. Longitudinal studies extending over a longer period could also offer insights into the impact of economic cycles or financial policy adjustments.

In addition, mixed-method approaches that incorporate interviews with management or stakeholder perspectives may enrich the interpretation of quantitative results and provide a more comprehensive understanding of financial decision-making processes in SMEs.

In conclusion, the selected company demonstrates a foundation for sustainable growth, provided that it addresses its liquidity gaps and rebalances its financial structure. The results of this work may inform managerial decision-making and contribute to the broader discourse on financial resilience in small and medium-sized businesses.

Author contributions

All authors listed have made a substantial, direct and intellectual contribution to the work, and approved it for publication.

Funding

This research received no external funding.

Data Availability Statement

The data presented in this study are available on request from the corresponding author.

Acknowledgments

This research was financially supported by the Slovak Research and Development Agency Grant VEGA 1/0494/24: Metamorphoses and causalities of indebtedness, liquidity and solvency of companies in the context of the global environment.

Conflicts of Interest

The authors declare no conflict of interest.

Declaration of generative AI and AI-assisted technologies in the writing process

The authors declare that no generative AI or AI-assisted technologies were used in the writing or preparation of this manuscript.

References

Alvarez, L., Garcia-Pasada, M., & Mayordomo, S. (2023). Distressed firms, zombie firms and zombie lending: A taxonomy. *Journal of Banking & Finance*, 149, 1067692. https://doi.org/10.1016/j.jbankfin.2023.106762

Bateni, L., & Asghari, F. (2020). Bankruptcy prediction using logit and genetic algorithm models: A comparative analysis. *Computational Economics*, 55(1), 335?348. doi: 10.1007/s10614-016-9590-3. https://doi.org/10.1007/s10614-016-9590-3

Boda, M., & Uradnicek, V. (2019). Predicting financial distress of Slovak agricultural enterprises. Ekonomicky casopis, 67(4), 426-452.

- Brozyna, J., Mentel, G., & Pisula, T. (2016). Statistical methods of the bankruptcy prediction in the logistics sector in Poland and Slovakia. *Transformations in Business & Economics*, 15(1), 93-114.
- Demirel, H.C., Leendertse, W., & Volker, L. (2022). Mechanisms for protecting returns on private investments in public infrastructure projects. *International Journal of Project Management*, 40(3), 155-166. https://doi.org/10.1016/j.ijproman.2021.11.008
- Eldem, B., Kluczek, A., & Baginski, J. (2022). The COVID-19 Impact on Supply Chain Operations of Automotive Industry: A Case Study of Sustainability 4.0 Based on Sense–Adapt–Transform Framework. Sustainability, 14(10), 5855. https://doi.org/10.3390/su14105855
- Farida, I., & Setiawan, D. (2022). Business Strategies and Competitive Advantage: The Role of Performance and Innovation. *Journal of Open Innovation: Technology, Market, and Complexity*, 8(3), 163. https://doi.org/10.3390/joitmc8030163
- Gulka, M. (2016). The prediction model of financial distress of enterprises operating in conditions of SR. *Biatec*, 24(6), 5-10.
- Hariyani, D., Hariyani, P., Mishra, S., & Sharma, M.K. (2024). Causes of organizational failure: A literature review. Social Sciences & Humanities Open, 10, 101153. https://doi.org/10.1016/j.ssaho.2024.101153
- Hiong, H. K., Jalil, M. F., & Seng, A. T. H. (2021). Estimation and prediction of financial distress: Non-financial firms in Bursa Malaysia. *Journal of Asian Finance, Economics and Business*, 8(8), 1-12. https://doi.org/10.13106/jafeb.2021.vol8.no8.0001
- Horvathova, J., & Mokrisova, M. (2014). Determination of business performance applying modern methods of business performance evaluation. *Economics, Management, Innovation*, 6(3), 46-60.
- Ibrahimov, O., Vancsura, L., & Paradi-Dolgos, A. (2025). The Impact of Macroeconomic Factors on the Firm's Performance—Empirical Analysis from Turkiye. Economies, 13(4), 111. https://doi.org/10.3390/economies13040111
- Karas, M., & Reznakova, M. (2021). The role of financial constraint factors in predicting SME default. Equilibrium. Quarterly Journal of Economics and Economic Policy, 16(4), 859-883. https://doi.org/10.24136/eq.2021.032
- Kliestik, T., Misankova, M., Valaskova, K., & Svabova, L. (2018a). Bankruptcy prevention: New effort to reflect on legal and social changes. *Science and Engineering Ethics*, 24(2), 791-803. https://doi.org/10.1007/s11948-017-9912-4
- Kliestik, T., Vrbka, J., & Rowland, Z. (2018b). Bankruptcy prediction in Visegrad group countries using multiple discriminant analysis. Equilibrium. Quarterly Journal of Economics and Economic Policy, 13(3), 569-593. https://doi.org/10.24136/eq.2018.028
- Lansdell, P., Botha, I., & Marx, B. (2025). Unmasking Delistings: A Multifactorial Analysis of Financial, Non-Financial, and Macroeconomic Variables. *Journal of Risk and Financial Management*, 18(4), 194. https://doi.org/10.3390/jrfm18040194
- Magrini, A. (2025). Bankruptcy risk prediction: A new approach based on compositional analysis of financial statements. *Big Data Research*, 41, 100537. https://doi.org/10.1016/j.bdr.2025.100537
- Nagy, M., Juracka, D., Nica, E., & Popescu, G. (2024). Evaluating Financial Health and Stability in the Energy Industry: Analyzing Key Indicators in Times of Crisis. *Journal of Business Sectors*, 2(2), 1–10. https://doi.org/10.62222/ZIFH1168
- Ogachi, D., Ndege, R., Gaturu, P., & Zoltan, Z. (2020). Corporate bankruptcy pre-diction model, a special focus on listed companies in Kenya. *Journal of Risks and Financial Management*, 13(3), 47. https://doi.org/10.3390/jrfm13030047
- Olayinka, A.A. (2022). Financial statement analysis as a tool for investment decisions and assessment of companies' performance. *International Journal of Financial Accounting and Management*, 4(1), 49-66. https://doi.org/10.35912/ijfam.v4i1.852

- Pisula, T., Mentel, G., & Brozyna, J. (2015). Non-statistical methods of analysing of bankruptcy risk. Folia Oeconomica Stetinensia, 15(1). https://doi.org/10.1515/foli-2015-0029
- Ro, S., Lee, J., & Kim, D. (2025). The Dark Side of Project Financing: Leverage, CEO Overconfidence, and Sustainability Challenges in the Construction Sector. Sustainability, 17(1), 16. https://doi.org/10.3390/su17010016
- Seretidou, D., Billios, D., & Stavropoulos, A. (2025). Integrative Analysis of Traditional and Cash Flow Financial Ratios: Insights from a Systematic Comparative Review. *Risks*, 13(4), 62. https://doi.org/10.3390/risks13040062
- Stefko, R., Horvathova, J., & Mokrisova, M. (2021). The application of graphic methods and the DEA in predicting the risk of bankruptcy. *Journal of Risk and Financial Management*, 14(5), 220. https://doi.org/10.3390/jrfm14050220
- Svabova, L., Michalkova, L., Durica, M., & Nica, E. (2020). Business failure prediction for Slovak small and medium-sized companies. Sustainability, 12(11), 4572. https://doi.org/10.3390/su12114572
- Valaskova, K., Durana, P., Adamko, P., & Jaros, J. (2020). Financial compass for Slovak enterprises: Modeling economic stability of agricultural entities. *Journal of Risk and Financial Management*, 13(5), 92. https://doi.org/10.3390/jrfm13050092
- Valaskova, K., Nagy, M., Zabojnik, S., & Lazaroiu, G. (2022). Industry 4.0 wireless networks and cyber-physical smart manufacturing systems as accelerators of value-added growth in Slovak exports. *Mathematics*, 10(14), 2452. https://doi.org/10.3390/math10142452
- Wang, D., Li, X., Tian, S., He, L., Xu, Y., & Wang, X. (2021). Quantifying the dynamics between environmental information disclosure and firms' financial performance using functional data analysis. Sustainable Production and Consumption, 28, 192-205. https://doi.org/10.1016/j.spc.2021.03.026
- Wu, Y., Hu, H., & Wang, X. (2024). Commercial Credit Financing and Corporate Risk-Taking: Inhibiting or Facilitative? *Sustainability*, 16(16), 6813. https://doi.org/10.3390/su16166813
- Zhang, J., He, L., & An, Y. (2020). Measuring banks' liquidity risk: An option-pricing approach. *Journal of Banking & Finance*, 111, 105703. https://doi.org/10.1016/j.jbankfin.2019.105703
- Zvarikova, K., Spuchlakova, E., & Sopkova, G. (2017). International comparison of the relevant variables in the chosen bankruptcy models used in the risk management. *Oeconomia Copernicana*, 8(1), 145-157. https://doi.org/10.24136/oc.v8i1.10