



Dora Kolaric,
univ. mag. ing. traff.
University North,
Koprivnica, Croatia
e-mail: dokolaric@unin.hr
ORCID 0009-0009-7966-5999

doc. dr. sc. **Ivana Martinčević**
University North,
Koprivnica, Croatia
e-mail: ivana.martincevic@unin.hr
ORCID 0000-0002-9154-4331

**Prethodno priopćenje /
Preliminary communication**

Article info:
Received: 18.10.2025
Accepted: 25.11.2025
UDC: 656.073:338.5
DOI: 10.38190/ope.15.2.4

ASSESSMENT OF THE FINANCIAL STABILITY AND PROFITABILITY OF LOGISTICS COMPANIES THROUGH THE APPLICATION OF FINANCIAL INDICATORS

Abstract: *The aim of this study was to analyze the financial performance and stability of company A and company B during the period from 2020 to 2024. Using the EMS model and BEX index, key indicators of profitability, liquidity, leverage, and asset turnover were assessed. Results show that company B achieved higher ROA (3.96-6.95%) and ROE (8.09-12.26%), with stable liquidity and reduced leverage, whereas company A recorded lower results and greater reliance on external financing. The analysis also indicates strong long-term sustainability for company B and moderate financial risk for company A. The study highlights the need for cost optimization, strengthening the capital structure, and continued monitoring of liquidity and profitability in the logistics sector. These findings provide practical guidance for strategic management and future growth planning in logistics companies.*

Keywords: BEX index; EMS model; liquidity, profitability; leverage

1. Introduction

The logistics industry today represents one of the most dynamic and competitive sectors of the global economy. The rapid development of technology, the growth of e-commerce, and increasing consumer demands for faster, more reliable, and environmentally responsible delivery have led to significant changes in the business models of logistics companies (Christopher, 2016). In such an environment, the ability to maintain financial stability and profitability becomes a key prerequisite for long-term sustainability and competitive advantage (Rushton et al., 2021). The assessment of a company's financial position is based on the analysis of financial statements and the application of various indicators that quantitatively express business performance. Profitability indicators, such as Return on Assets (ROA) and Return on Equity (ROE), indicate the effectiveness of resource management and the ability to generate profit (Brigham & Houston, 2019). Liquidity and indebtedness indicators, on the other hand, measure financial stability, that is, the company's ability to meet its short-term and long-term obligations (Vidučić et al., 2015). By combining different financial indicators, it is possible to create a more comprehensive picture of business performance and the risks to which a company is exposed. In this context, models such as the Evaluation Model of Stability (EMS) and the Business Excellence Index (BEX) are used as integrated tools for assessing financial stability, effectiveness, and business

sustainability. Their application allows for a comprehensive evaluation based on the interrelation of key indicators, providing a more realistic insight into a company's financial condition and business perspectives (Žager et al., 2020). The purpose of this paper is to analyze and compare the financial stability and profitability of two leading logistics companies in Croatia by applying financial indicators and performance evaluation models. Using financial statement data from a five-year period, the research focuses on identifying the interconnections between profitability, liquidity, indebtedness, and overall business stability. Through the application of the EMS and BEX models, the aim is to identify the patterns of financial behavior that contribute to higher efficiency and stability in the logistics sector and to provide recommendations for improving financial management. This contributes to a better understanding of financial dynamics in the logistics industry and lays the foundation for further research in the field of business sustainability assessment.

2. Theoretical Framework and Financial Indicators in the Logistics Sector

Logistics is a fundamental function of modern business systems, playing a critical role in integrating processes across the entire supply chain. It encompasses the planning, implementation, and control of efficient and cost-effective flows of goods, services, and information from origin to



consumption, aiming to meet customer requirements (Christopher, 2016). In today's globalized economy, logistics has evolved from a purely operational function into a strategic component of international business, influencing competitiveness, market responsiveness, and overall organizational performance. The effectiveness of logistics directly affects international trade by ensuring timely, reliable, and cost-efficient distribution of goods. Advanced logistics systems reduce transaction costs, improve transparency, accelerate customs procedures, and enhance the competitiveness of national economies (World Bank, 2023). At the company level, efficient logistics contributes to market expansion, operational resilience, and the creation of value along the supply chain (Rushton et al., 2021). In Croatia, the logistics sector benefits from a strategic geographic position at the crossroads of Central European and Mediterranean transport corridors. Key infrastructure, including the Port of Rijeka, highway networks, and pan-European transport corridors, provides a strong foundation for domestic and regional logistics operations (Ministry of the Sea, Transport and Infrastructure, 2017). However, challenges remain, such as underutilized rail transport, fragmented warehousing, a shortage of specialized personnel, and the need for digital transformation. Modern logistics is shaped by technological and market trends, including digitalization, automation, the Internet of Things (IoT), artificial intelligence (AI), and blockchain applications for supply chain visibility and optimization. E-commerce growth further drives demand for flexible, rapid, and customized delivery services, while sustainability and green logistics have become priorities due to regulatory pressures and changing consumer preferences (McKinnon et al., 2015). Additionally, global disruptions such as the COVID-19 pandemic and geopolitical crises, including the conflict in Ukraine, have revealed vulnerabilities in supply chains and highlighted the need for resilient and diversified logistics models (Herold & Marzantowicz, 2023).

In Croatia, logistics is increasingly recognized as a strategic sector with potential for growth and competitiveness. Investments in infrastructure, human capital, and digital technologies are essential to enhance efficiency, sustainability, and resilience. Modern logistics management requires coordination among public authorities, private companies, and educational institutions to support workforce development, implement advanced systems, and ensure environmentally sustainable practices. Overall, contemporary logistics combines operational efficiency with

strategic importance. Its integration with financial management enables companies to evaluate performance, optimize resources, and maintain competitive advantage. Understanding logistics trends and challenges, alongside financial indicators, provides the foundation for assessing the stability and profitability of logistics companies. Financial statement analysis is crucial for assessing a company's financial position and business performance. In addition to qualitative management assessments, quantitative indicators provide an objective view of profitability, liquidity, solvency, and operational efficiency, enabling management, investors, creditors, and analysts to gain a deeper understanding of a company's ability to meet obligations and generate profits (Vidučić et al., 2015; Horvat Jurjec, 2011; Kolaric, 2025). Horizontal analysis tracks changes in financial positions over multiple periods, identifies trends of growth, stagnation, or decline in individual balance sheet and income statement items, and allows the identification of key changes affecting long-term business sustainability (Brigham & Houston, 2019; Higgins, 2012), while vertical analysis focuses on the structure of financial statements within a specific period, expressing each item as a percentage of total assets or revenue, providing insights into proportional relationships within the company and facilitating benchmarking with competitors (Fridson & Alvarez, 2011; Tintor, 2020). This type of analysis helps identify changes in the structure of assets, equity, and expenses, forming the basis for a deeper interpretation of the financial condition. Financial ratio analysis enables quantitative evaluation of various aspects of business operations, including liquidity, leverage, activity, efficiency, and profitability, using data from the balance sheet and income statement. Liquidity ratios, such as the current ratio, quick ratio, and cash ratio, measure a company's ability to meet short-term obligations using available assets, ensuring business continuity and preventing illiquidity (Vidučić et al., 2015; Tintor, 2020).

Leverage ratios assess the proportion of debt versus equity and the level of financial risk, where higher leverage increases the risk of insolvency, while lower reliance on external sources strengthens financial autonomy (Tintor, 2020; Vidučić et al., 2015). Activity ratios evaluate the efficiency of asset utilization in generating revenue, including total asset turnover, receivables turnover, and inventory turnover, which help assess operational efficiency (Gulin et al., 2004; Vidučić et al., 2015). Efficiency ratios monitor the relationship between costs and revenues and the effectiveness of resource utilization, while profitability ratios,



such as profit margin, return on assets (ROA), and return on equity (ROE), assess a company's ability to generate profit relative to available resources (Gulin et al., 2004; Vidučić et al., 2015; Tintor, 2020). In addition to traditional financial analysis methods, more complex models are increasingly used to integrate multiple indicators into systems for evaluating corporate financial health. Among them are the BEX indicator, developed specifically for the Croatian market, which combines components such as ROA, ROE, equity ratio, and leverage indicators to rank companies by business performance (Belak, 2014); the Altman Z-Score model, which uses multivariate analysis to assess bankruptcy risk and classifies companies into safe, grey, and high-risk zones (Vidučić et al., 2015); and the EMS model, which combines liquidity, leverage, activity, and profitability indicators, eliminating subjective assessments and enabling objective analysis of a company's financial position (Vidučić et al., 2015). The use of these models allows for a more precise understanding of financial stability, resilience, and long-term growth potential, enhancing the quality of strategic and investment decisions. Logistics and financial statement analysis are essential instruments for effective strategic business management. The integration of logistics and financial systems enables resource optimization, risk identification, and trend recognition, providing a foundation for informed business and strategic decisions and maintaining a competitive advantage in a dynamic market (Horvat Jurjec, 2011; Mamić Sačer et al., 2021).

3. Research methodology

The aim of the research was to identify representative companies with available, comparable, and methodologically suitable financial data for multi-year analysis. Companies A and B were selected based on the following criteria:

- availability of complete and reliable financial statements for the period 2020-2024,
- comparable company size (medium-sized international companies with registered branches in Croatia),
- similar scope and nature of operations within the logistics and freight forwarding sector,
- indicative differences in initial financial indicators, enabling a more meaningful comparative analysis,
- sector representativeness, ensuring that the selected companies may serve as characteristic examples of business operations within the Croatian logistics market.

The selection was therefore not random but based on clearly defined professional and methodological criteria that ensure the valid application of comparative financial analysis.

The methodological framework of this study is based on a quantitative and comparative analysis of secondary data collected from publicly available financial statements of company A and company B for the period 2020-2024. Both companies are medium-sized international companies operating within the logistics and freight forwarding industry, with registered branches in the Republic of Croatia. All relevant data were obtained from the business information portal Poslovna Hrvatska, which provides access to fundamental financial documents of registered legal entities in the Republic of Croatia, including balance sheets, income statements, and notes to the financial statements. The use of reliable and officially verified sources ensures the validity and relevance of the data and minimizes the risk of analytical errors. The primary objective of the methodology is a systematic assessment of financial performance and stability of logistics companies through quantitative evaluation of key financial indicators, with a focus on metrics aligned with the research questions and hypotheses. The methodological approach combines horizontal and vertical financial statement analysis with the calculation and interpretation of selected financial ratios, providing a comprehensive understanding of the companies' operations and financial health. Additionally, financial ratios were calculated and interpreted, providing quantitative measures of key aspects of business operations:

- Liquidity ratios are used to evaluate the company's ability to meet short-term obligations. Liquidity is a critical indicator of operational stability and resilience to short-term financial stress and allows comparative evaluation of company A and company B within the BEX efficiency index framework (Vidučić et al., 2015; Tintor, 2020).
- Leverage ratios measure financial risk and the company's ability to meet long-term obligations. Leverage analysis provides insights into financial autonomy and is crucial for predicting long-term sustainability when combined with liquidity ratios (Tintor, 2020; Vidučić et al., 2015).
- Activity ratios assess the efficiency of asset management and the company's capacity to convert assets into revenue. These indicators help identify inefficiencies or excess capital tied up in non-productive assets (Gulin et al., 2004; Vidučić et al., 2015).



- Profitability and efficiency ratios evaluate business performance and the company's ability to generate profit relative to available resources. Profitability is critical for assessing financial sustainability and long-term growth and serves as the basis for EMS model evaluations of financial stability (Gulin et al., 2004; Vidučić et al., 2015; Tintor, 2020).

To ensure a comprehensive assessment, the methodological framework also incorporates advanced financial models that integrate multiple indicators, allowing for a more precise evaluation of financial stability:

- The BEX indicator combines ROA, ROE, equity ratio, and leverage measures to rank companies according to operational excellence, enabling comparative assessment within the logistics sector (Belak, 2014).
- The EMS model integrates liquidity, leverage, activity, and profitability ratios, eliminating subjective assessment and providing an objective evaluation of financial status, enhancing the accuracy of long-term sustainability predictions (Vidučić et al., 2015).

The methodological approach is designed to test the following research questions:

RQ1: How do profitability indicators, such as ROA and ROE, affect the assessment of financial stability of logistics companies according to the EMS model?

RQ2: What are the differences in liquidity and solvency between company A and company B, and how do these differences impact the BEX efficiency index?

RQ3: How can a simultaneous analysis of liquidity and leverage indicators predict the long-term sustainability of logistics companies?

The methodological approach ensures a rigorous, objective, and scientifically grounded analysis of financial performance, integrating quantitative data with expert interpretation in the context of the logistics sector in Croatia. The combination of horizontal and vertical analyses, standard financial ratios, and advanced models provides a comprehensive insight into corporate financial health, enables trend identification, risk prediction, and resource optimization, and establishes a solid foundation for informed business and strategic decision-making.

4. Research results

The analysis of financial performance is essential for assessing the success, stability, and sustainability of companies operating in the market. In this chapter, a detailed financial analysis of company A and company B will be presented, with the aim of determining its financial strength, liquidity, profitability, and potential for further growth and development. Financial analysis employs multiple analytical methods to ensure a comprehensive overview of the companies' operations. The purpose of this analysis is not only to identify the current state but also to recognize trends and provide a basis for informed future decisions for both management and potential investors or business partners.

4.1. Financial analysis of company A

Based on the balance sheet data of company A for the period 2020-2024, the total value of fixed assets increased significantly over the analyzed period. In 2020, the total fixed assets amounted to €162.963, increasing to €1.674.235 in 2024. The highest growth occurred between 2020 and 2023, when the value increased by €1.838.436. Intangible assets exhibited inconsistent growth, peaking at €10.913 in 2023, but declining to €3.001 in 2024, suggesting possible one-time investments in software or licenses that were not repeated. Tangible assets represent the largest portion of total fixed assets and show strong and stable growth. From €142.376 in 2020, tangible assets increased to €1.506.756 in 2024. Conversely, long-term financial assets show a declining trend, mainly due to a reduction in loans and deposits, which may indicate a reallocation of funds from financial investments to operational investments. The balance sheet of company A shows substantial growth, particularly in fixed assets, with tangible assets driving most of this expansion.

This trend indicates significant investments in equipment and infrastructure, often associated with business expansion or modernization. Simultaneously, the reduction in long-term financial assets and the increase in deferred tax assets suggest strategic financial adjustments. Operating revenues increased significantly during the period, from €15.293.113 in 2020 to €26.571.467 in 2024. The primary contributor was revenue from external sales, demonstrating the company's strong market position and demand for its services. Total operating expenses increased from €15.110.877 in 2020 to €26.214.990 in 2024, mirroring the increase in revenues. The largest share

of expenses consisted of material costs, primarily due to external service costs such as transport and warehousing, typical for logistics companies. Other expenses more than doubled, likely due to additional operational or administrative costs. Financial income decreased by 47.7% over the period, reflecting limited reliance on investments or financial operations within the company.

Observing the liquidity indicators of company A over the period 2020-2024, the current ratio (Figure 1) decreased from 0.64 in 2020 to 0.09 in 2024, indicating significant challenges in meeting short-term obligations.

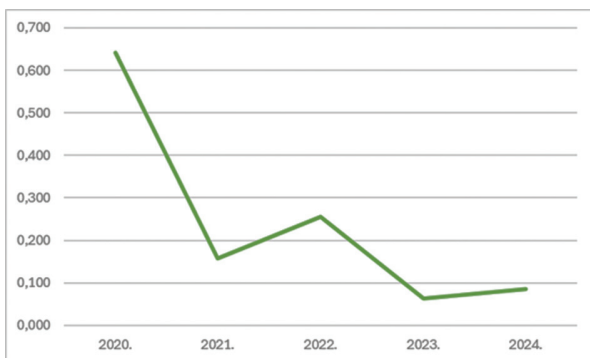


Figure 1. Current ratio (Kolaric, 2025)

The quick ratio (Figure 2), which excludes inventories, also declined from 1.96 to 0.88, while the cash ratio remained below 1 in 2024, highlighting growing financial pressure.

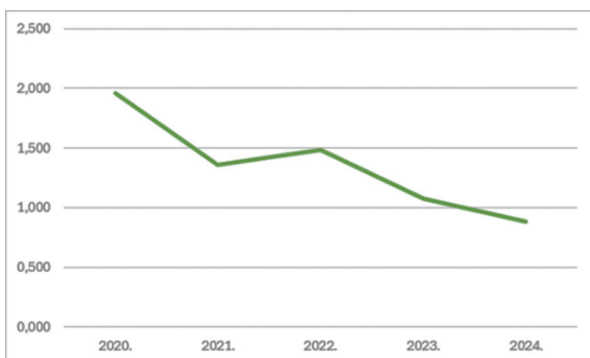


Figure 2. Quick ratio (Kolaric, 2025)

In contrast, the financial stability ratio (Figure 3) increased from 0.08 to 1.49, reflecting a higher proportion of equity in financing operations and suggesting a partial strengthening of long-term financial stability despite liquidity constraints.

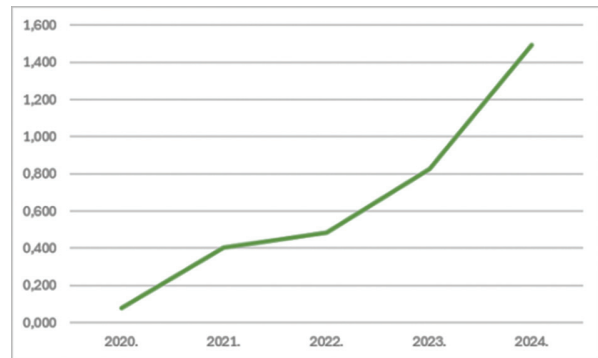


Figure 3. Financial stability ratio (Kolaric, 2025)

Leverage indicators show a clear upward trend in indebtedness. The debt ratio (Figure 4) increased from 0.48 in 2020 to 0.85 in 2024, while the equity ratio decreased from 0.52 to 0.16.

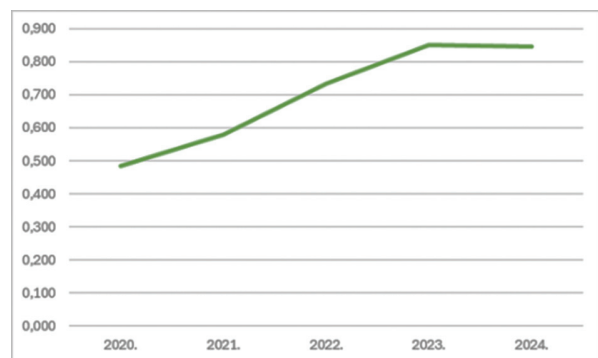


Figure 4. Debt ratio (Kolaric, 2025)

The debt-to-equity ratio (Figure 5) surged from 0.94 to 5.47, indicating significant reliance on external financing, which aligns with the observed drop in sustainable growth and potential risk for financial instability.

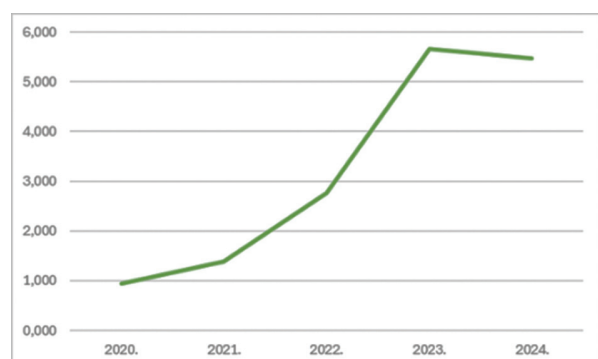


Figure 5. Debt-to-equity ratio (Kolaric, 2025)

Activity ratios suggest that company A maintained relatively stable operational performance, though with certain fluctuations. The total asset turnover (Figure 6) slightly decreased from 3.95 to 3.67,

indicating slower utilization of assets in revenue generation.

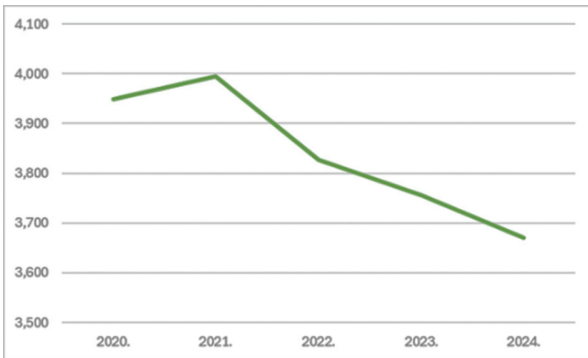


Figure 6. Total asset turnover (Kolaric, 2025)

Receivables turnover (Figure 7) decreased, extending the collection period from 53.71 days in 2022 to 66.86 days in 2024, highlighting potential liquidity risks and the need for more effective credit management.

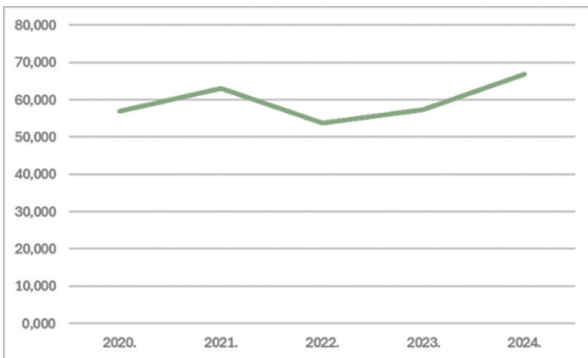


Figure 7. Receivables turnover (Kolaric, 2025)

Conversely, supplier turnover (Figure 8) improved, with days payable decreasing from 34.18 to 25.16 days, suggesting more efficient management of payables. Inventory turnover exhibited extreme variability, consistent with the minimal stockholding typical of logistics companies.

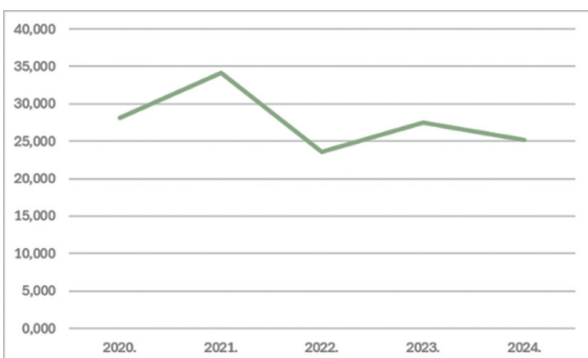


Figure 8. Supplier turnover (Kolaric, 2025)

Profitability indicators for company A show substantial fluctuations. Net profit margin decreased from 1.6% in 2020 to -3.8% in 2023 before recovering to 1.3% in 2024. Gross margin and ROA (Figure 9) followed similar trends, with a sharp decline in 2023 (-16.22%) and a subsequent rebound in 2024 (2.66%). ROE (Figure 9) was particularly volatile, peaking at 19.32% in 2021, dropping dramatically to -107.97% in 2023, and recovering to 17.23% in 2024. These trends indicate periods of significant financial stress, likely due to high leverage and operational pressures, followed by stabilization in the final year.

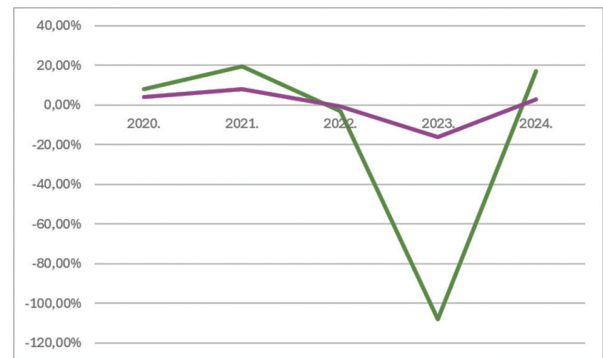


Figure 9. ROA (purple line) and ROE (green line) (Kolaric, 2025)

In 2020, the BEX indicator (Figure 10) was 0.19, indicating a solid level of business excellence. Component EX3 was particularly strong at 0.48, while EX1 and EX2 showed satisfactory operational efficiency, and EX4 was moderate at 0.11. In 2021, BEX increased to 0.22, the highest during the analyzed period, with growth in EX1, EX2, and EX4, although EX3 decreased slightly to 0.25, suggesting a minor decline in financial stability. In 2022, a sharp decline was observed, with BEX dropping to 0.05, primarily due to EX2 turning negative (-0.01), reflecting reduced asset profitability. Despite positive EX1 and EX3 values, low scores indicated weaker operational performance and financial structure deterioration. The most critical deterioration occurred in 2023, with BEX at -0.21, signaling severe operational challenges. All components except EX3 (0.07) were negative, highlighting losses, inefficient asset utilization, and reduced economic efficiency. A slight recovery occurred in 2024, with BEX returning to a positive 0.05. EX1 (0.06), EX2 (0.03), and EX4 (0.08) indicate modest improvement in profitability and economic efficiency; however, EX3 remained negative (-0.08), showing continued financial instability. Overall, the BEX trends suggest an unstable operational trajectory, peaking in 2021, facing crisis in 2023, and initiating tentative recovery in 2024.

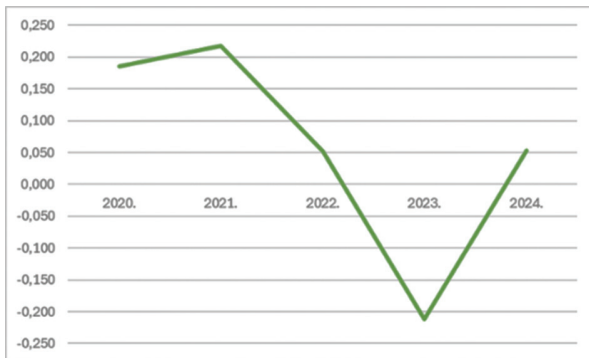


Figure 10. BEX indicator (Kolaric, 2025)

The EMS model (Figure 11) combines four key indicators providing a holistic measure of efficiency. In 2020, company achieved a high EMS of 8.31, with particularly strong asset turnover. In 2021, a minor decline to 6.81 was observed, maintaining positive results but showing slight decreases in operational efficiency and turnover. In 2022, EMS further declined to 5.76, mainly due to decreased asset profitability and turnover. The most significant deterioration occurred in 2023, with EMS dropping to 2.98, reflecting negative asset profitability and reduced operational efficiency, signaling heightened risk and weakened business sustainability. In 2024, the EMS index slightly recovered to 3.09, with positive trends in profitability and turnover, though operational efficiency remained below optimal levels.

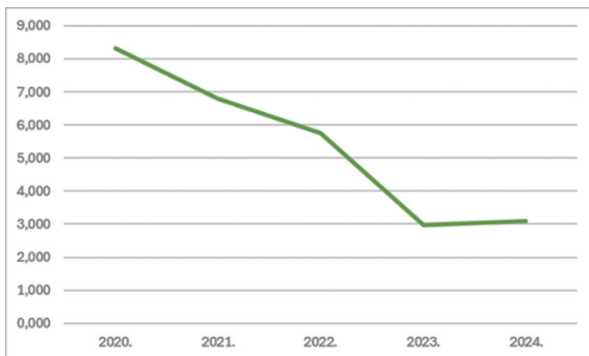


Figure 11. EMS model (Kolaric, 2025)

The analysis indicates a period of initial strong performance followed by financial and operational challenges, particularly in 2023. While a modest recovery is observed in 2024, key indicators such as financial stability and operational efficiency remain below optimal levels. These findings highlight the need for strategic interventions to strengthen profitability, liquidity, and long-term sustainability. Overall, the results provide a clear picture of the company's fluctuating performance and offer a basis for informed managerial and investment decisions.

4.2. Financial analysis of company B

The horizontal and vertical analysis of company B for the period 2020-2024 reveals a stable yet selectively fluctuating trend in the structure of assets and revenues, while maintaining a high level of liquidity. Non-current assets show modest growth until 2023, followed by a significant decline of 28.6% in 2024 compared to 2020, which may indicate the end of an investment cycle and reduced capital expenditures. The value of tangible assets increased from €270.814 in 2020 to a peak of €302.635 in 2022, before falling to €205.135 in 2024. This downward trend suggests reduced capital investment and a possible shift toward asset leasing, a common practice in the logistics sector. Intangible assets display a sharp decline, dropping from €13.544 in 2020 to only €1.149 in 2024, reflecting depreciation of software licenses and limited new digital investments. Meanwhile, current assets show an opposite pattern, increasing from €4.219.020 in 2020 to €5.659.439 in 2024. This increase, alongside the high share of current assets in total assets, indicates a strong liquidity position and operational flexibility, consistent with logistics companies that rely on rapid cash flow turnover and short-term receivables. On the revenue side, company B demonstrates continuous growth, from €13.788.942 in 2020 to €22.663.524 in 2024. The largest share comes from sales outside the corporate group, while intragroup account for up to 22%, signaling increased collaboration within the company's global network. This upward trend reflects the company's strengthened market position and expanded operational capacity. Operating expenses have increased in line with revenue growth, increasing from €13.571.499 in 2020 to €22.017.482 in 2024. The expense structure is dominated by material costs (73-78%), directly tied to transport and logistics operations. A notable increase in other expenses of over 120% warrants closer examination, as it may indicate higher administrative or outsourcing costs. Financial income and expenses remain a minor component of total operation, but exhibit pronounced exchange rate variations in 2024, contributing to earnings volatility. Profits before taxation remain positive throughout the period analyzed, peaking in 2021, the company's most profitable year. The vertical analysis confirms that company B maintains a highly operational and liquid asset structure, emphasizing short-term assets while keeping fixed investments minimal. This configuration allows for rapid market adaptability and reduced liquidity risk but limits potential for long-term strategic investment. Overall, company B demon-

strates steady revenue growth, strong liquidity, and sustainable cost efficiency. Despite declining investments in non-current assets, the company maintains operational strength and adaptability. For the upcoming period, it is recommended to enhance investment activities in both tangible and intangible assets and tighten control over other operating expenses, thereby reinforcing profitability and ensuring long-term financial stability.

The quick ratio (Figure 12), which excludes inventories from current assets, shows a more pronounced improvement throughout the observed period. Starting at approximately 1.4 in 2020 and 2021, the ratio increases to above 2 from 2022 onwards, indicating that the company possesses sufficient liquid resources, primarily receivables and cash, to cover short-term obligations without relying on inventory sales. This trend highlights the company's ability to maintain strong liquidity stability, even under potential fluctuations in inventory levels.

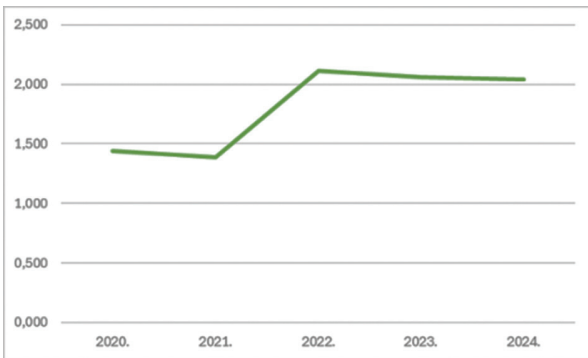


Figure 12. Quick ratio (Kolaric, 2025)

The current ratio (Figure 13) further confirms this positive liquidity trend. With values consistently above 1.8 and reaching 2.3 in 2024, the company successfully maintains a level of current assets that significantly exceeds short-term liabilities. This performance reflects good financial stability and solvency, suggesting that the company is effectively managing its working capital and maintaining operational flexibility.

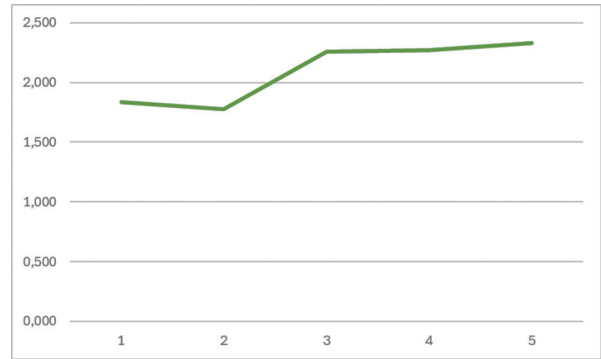


Figure 13. Current ratio (Kolaric, 2025)

However, the financial stability ratio (Figure 14), which measures the share of equity in total assets, shows a declining trend, dropping from 0.13 in 2020 to 0.05 in 2024. This reduction indicates a lower proportion of equity financing, which may pose a potential long-term financial risk, as greater dependence on external financing increases the company's financial exposure.

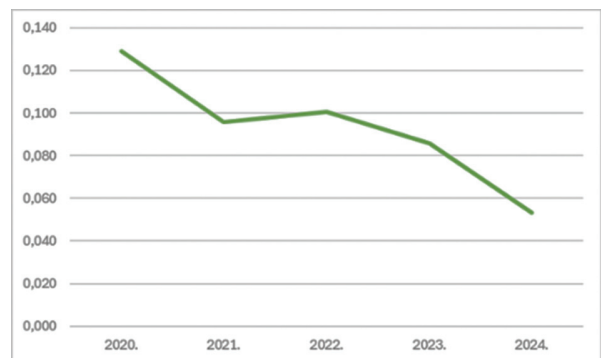


Figure 14. Financial stability ratio (Kolaric, 2025)

Overall, the liquidity indicators of company B reveal a significant improvement in short-term financial position since 2022, while long-term stability remains somewhat weakened due to the declining share of equity. The company maintains adequate liquid resources to meet its obligations on time, demonstrating strong financial discipline and the ability to preserve operational stability. The debt indicators from 2020 to 2024 show a positive downward trend in total indebtedness and an increase in equity participation in financing. The debt ratio (Figure 15) fell from 0.51 in 2020 to 0.43 in 2024, reflecting a lower share of total liabilities in the company's capital structure. Simultaneously, the equity ratio increased from 0.49 to 0.57, suggesting that the company increasingly relies on internal financing sources, thereby reducing financial risk and dependency on external debt.

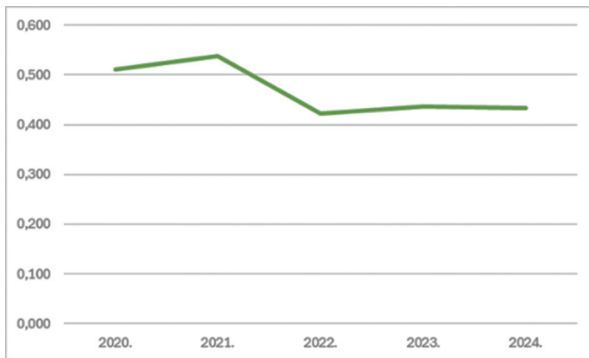


Figure 15. Debt ratio (Kolaric, 2025)

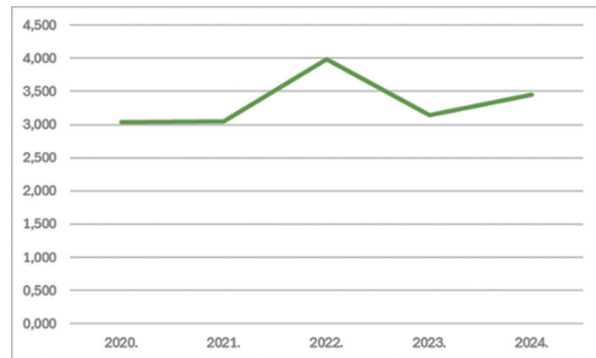


Figure 17. Total asset turnover ratio (Kolaric, 2025)

The debt-to-equity ratio (Figure 16) supports this pattern, falling from 1.04 in 2020 to 0.76 in 2024, indicating a marked improvement in capital structure and greater financial resilience. The debt factor fluctuates moderately, from 8.41 in 2020 to 4.54 in 2022, followed by a slight increase and stabilization at 4.78 in 2024. These changes indicate some variation in financial structure management, yet the overall trend of declining leverage remains favorable for long-term sustainability.

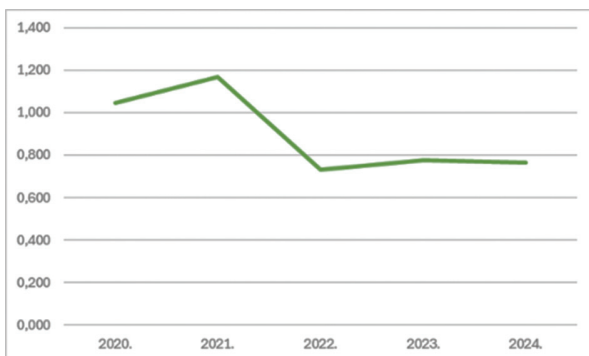


Figure 16. Debt-to-equity ratio (Kolaric, 2025)

The activity ratio (Figure 17) for the 2020-2024 period provides insight into the company's asset utilization efficiency. The total asset turnover ratio, representing the number of times total assets generate revenue per year, ranged from 3.04 in 2020 to 3.45 in 2024, peaking at 3.98 in 2022, which signifies optimal asset utilization that year. Despite a minor decline in 2023, the ratio recovered in 2024, reflecting sustained operational efficiency.

The account receivable collection period (Figure 18) decreased from 49 days in 2020 to 34 days in 2024, indicating improved receivables management and stronger client relationships. Overall, activity indicators point to enhanced operational efficiency, optimized asset use, and stronger control over the company's business cycle.

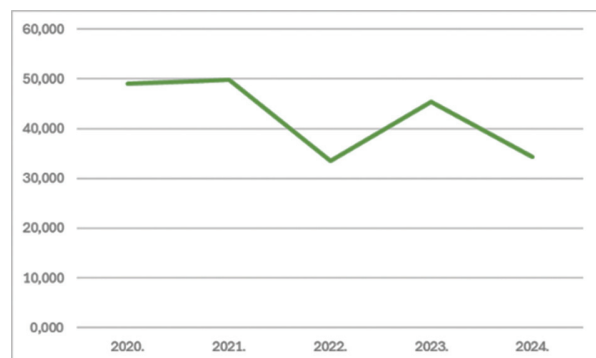


Figure 18. Account receivable collection period (Kolaric, 2025)

The net profit margin increased from 2% in 2020 to 2.9% in 2021, reflecting better cost control and operational efficiency. A mild decrease followed in 2022 (2.4%), and a sharper drop in 2023 (1.7%), before climbing again to 3% in 2024, the highest in the observed period. This suggests increased profitability through revenue growth or cost optimization. The gross profit margin follows a similar pattern, 2.2% in 2020, increasing to 3.5% in 2021, dipping slightly to 2.8% in 2022, and reaching 2% in 2023, before rebounding to 3.5% in 2024. This indicates a restored ability to generate gross profit before interest and taxes, confirming improved operational performance. ROA (Figure 19) increased from 3.96% in 2020 to 7.8% in 2021, decreasing to 6.9% in 2022, before decreasing to 4.05% in 2023 and recovering to 6.95% in 2024, suggesting efficient asset utilization in profit generation. The gross return on assets mirrors this trend, increasing to 11.2% in 2022 and reaching

12% in 2024, confirming strong asset productivity. ROE (Figure 19) indicates the profitability for shareholders, from 8.09% in 2020 to a high 16.89% in 2021, followed by a decrease to 7.2% in 2023, and a rebound to 12.26% in 2024. Although fluctuating, ROE remains at a satisfactory level, suggesting solid value creation for owners.

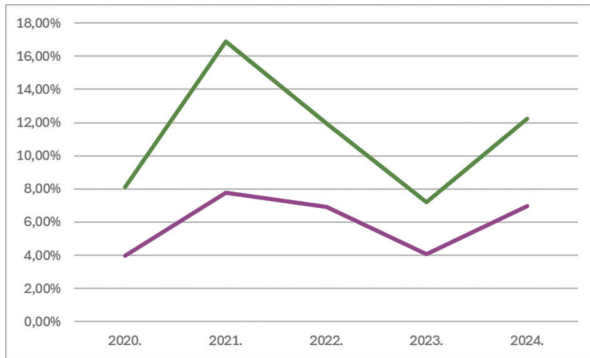


Figure 19. ROA (purple line) and ROE (green line) (Kolaric, 2025)

Company B demonstrates a robust liquidity position, a decreasing debt burden, and a recovery in profitability by 2024. While short-term stability is strong, the company should focus on strengthening its equity base and sustaining investment growth to ensure long-term financial resilience and continued competitive advantage. The EX1 component increased from 0.07 in 2020 to 0.12 in 2024. This growth highlights the company's improved ability to generate returns on total investments, reflecting more efficient asset utilization throughout the observed period. Despite a slight decrease in 2023, the overall upward trend suggests enhanced operational efficiency and optimized resource management. The EX2 component shows an even more pronounced increase, from 0.78 in 2020 to 0.16 in 2024. A particularly strong improvement was recorded between 2020 and 2022, indicating higher profitability and more effective use of equity capital. This upward trend suggests that the company is consistently generating value for its shareholders. The EX3 component remained stable with slight growth, from 0.43 in 2020 to 0.55 in 2024. This consistency demonstrates reliable asset utilization and efficient revenue generation, confirming strong operational control and adaptability to market conditions. The EX4 component increased from 0.12 to 0.21 over the same period. This growth indicates a reduced dependence on external financing sources and stronger financial autonomy, thereby lowering debt-related risks and enhancing long-term stability. The combined effect of all components is

reflected in the growth of the BEX index (Figure 20), which increased from 0.17 in 2020 to 0.29 in 2024. Although a temporary decrease to 0.21 was observed in 2023, the company recovered in the following year, achieving its highest value in the period analyzed. Considering that BEX values above 0.25 indicate above-average performance, the company demonstrated superior efficiency in 2022 and 2024, confirming successful financial management and adaptability to market fluctuations.

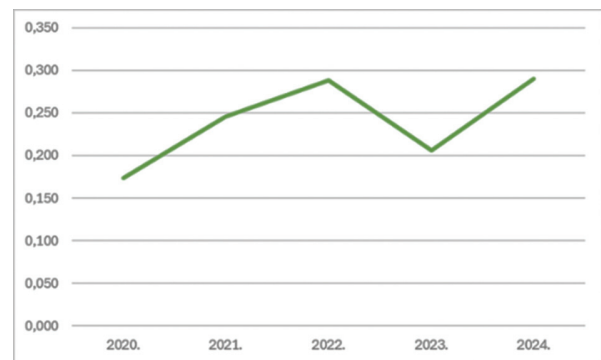


Figure 20. BEX indicator (Kolaric, 2025)

The EMS model (Figure 21) analysis further supports the conclusion of strong financial stability for company B. X1 increased from 0.43 in 2020 to 0.55 in 2024, while X2 grew from 0.38 to 0.45. These results point to an increasing return on total resources and continuous profit growth. X3 improved significantly, from 0.07 in 2020 to 0.12 in 2024, demonstrating the company's growing ability to meet short-term obligations efficiently. X4 also recorded positive values, increasing from 0.96 to 1.31, which suggests that the company effectively manages its debt level and maintains a healthy financial structure. The overall EMS indicator remained well above the reference threshold of 5 throughout the entire period, ranging from 8.74 in 2020 to 10.53 in 2024. These results clearly show that the company maintained excellent financial stability and operated far from the risk of insolvency during all the years observed.

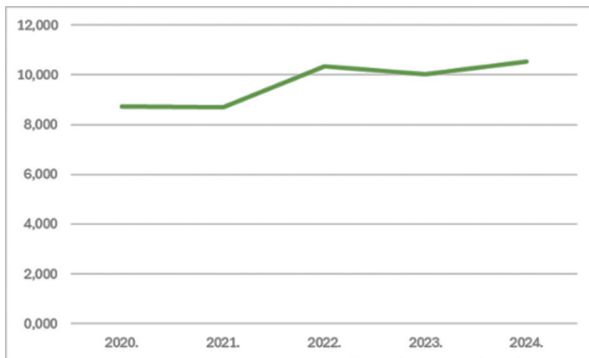


Figure 21. EMS model (Kolaric, 2025)

The results of the BEX and EMS model analyses confirm that company B achieved continuous growth in profitability, liquidity, and self-financing between 2020 and 2024. The upward trend in key financial indicators and the stable EMS indicator demonstrate effective asset and capital management, as well as the company's resilience to market fluctuations. These findings confirm the success of its financial strategy and position the company as one of the most financially stable entities in the logistics and freight forwarding sector in Croatia.

5. Discussion

During the period from 2020 to 2024, the analysis of financial indicators for company A and company B provides a comprehensive insight into the stability, efficiency, and profitability of logistics companies. Profitability indicators such as ROA and ROE clearly reflect the financial strength and the ability of a company to effectively use its resources. For company B, ROA increased from 3.96% in 2020 to 6.95% in 2024, while ROE increased from 8.09% to 12.26% over the same period, with a temporary dip in 2023. In contrast, company A recorded slightly lower values, with ROA ranging from 4.15% to 2.66% and ROE from 8.04% to 17.23%. These figures indicate that company B achieves better cost control and more efficient use of assets and equity, which is reflected in a higher BEX index, confirming that profitability directly contributes to the assessment of financial stability according to the EMS model. According to Vuković et al. (2020), their panel-data study of 748 logistics companies across the Balkan region demonstrates that liquidity, asset turnover, and company size significantly determine profitability. Regarding liquidity, company B demonstrates significant advantages. Its current ratio ranged from 1.8 in 2020 to 2.3 in 2024, while the quick ratio increased from 1.4 to over 2, indicating that the company has sufficient liquid resources to cover

short-term obligations without relying on inventory sales. Company A, with a current ratio of 0.9-1.9 and a quick ratio of 1-2, shows a slightly weaker position, implying a higher dependence on inventory sales or external financing to maintain operational capability. These differences in liquidity and solvency directly affect the BEX efficiency index, where company B consistently achieves higher values, reflecting superior financial performance and operational stability. These observations mirror conclusions in recent literature on liquidity risk management. For instance, a study by Omedo and Wanjala (2023) found that logistics companies that actively manage liquidity risk, especially in crisis contexts such as the COVID-19 pandemic, tend to show better financial performance, with liquidity risk management being a major contributor to improving ROA.

The analysis of leverage also highlights notable differences. Company B's total debt ratio decreased from 0.51 in 2020 to 0.43 in 2024, while the equity ratio increased from 0.49 to 0.57. The debt-to-equity ratio fell from 1.04 to 0.76, indicating reduced financial risk and higher resilience to potential shocks. Company A maintains a slightly higher leverage ratio, with total debt ranging from 0.48 to 0.85 and equity from 0.15 to 0.52, suggesting somewhat greater long-term financial risk. The combination of high liquidity and controlled leverage in company B indicates better preparedness for long-term sustainability and lower exposure to external financial pressures. These dynamics echo studies on capital structure in logistics, Nquyen, Hoang and Huynh (2021) investigated logistics service providers on the Ho Chi Minh Stock Exchange and found that their capital structure (i.e., leverage) had a negative impact on ROA, underlining how excessive debt can erode profitability in the logistics sector. Activity ratios further emphasize operational efficiency, with company B showing a clear advantage. Its total asset turnover ranged from 3.04 in 2020 to 3.45 in 2024, peaking at 3.98 in 2022, whereas company A recorded values from 3.67 to 4. Company B's current asset turnover reached 4.23 in 2022, while company A peaked at 5.56, indicating more efficient conversion of assets into revenue at company B. Additionally, company B reduced its accounts receivable collection period from 49 days in 2020 to 34 days in 2024, compared to company B's average of 40-45 days, reflecting faster cash flow and better management of receivables. These results suggest that company B operates with more efficient working capital management and faster conversion of assets into cash. Such efficiency is critical in logistics, a finding supported by Vuković



et al.'s Balkan-region research, which pointed to asset turnover as a significant factor influencing profitability.

Profitability, liquidity, and leverage indicators combined with activity ratios confirm that company B has a more stable financial structure and higher operational efficiency than company A. Simultaneous analysis of these factors enables the prediction of long-term business sustainability; high profitability, stable liquidity, and controlled leverage indicate the potential for continuous growth and resilience to market fluctuations. Despite occasional declines in certain years, company B maintains positive trends, while company A exhibits greater performance fluctuations, which may limit its capacity for long-term self-financed growth. Overall, the comparison of the two companies shows that a combination of high profitability, liquidity, and controlled leverage leads to stronger financial stability and a higher BEX efficiency index. Company B stands out through better operational and financial discipline, more effective asset management, and faster receivables collection, ensuring long-term sustainability and adaptability to market conditions. Company A, while stable, demonstrates lower key indicator values, suggesting the need for improvements in liquidity, profitability, and debt management to achieve comparable financial security and efficiency. Bringing profitability, liquidity, leverage, and asset management together, we observe that company B demonstrates a more stable and resilient financial structure compared to company A. Indeed, empirical evidence from the transportation-logistics literature suggests that these dimensions are not independent. For example, a study on Indonesian logistics firms (Choirunisa & Takarini, 2024) found that liquidity, leverage, company size, and activity simultaneously and positively influence profitability. In addition, another recent study (Fadilah & Novitasari, 2025) found that cash flow and profitability significantly influence liquidity, while the relationship between ROA and liquidity was negative. This suggests that logistics companies may face a trade off, prioritizing profitability through asset-heavy investments (e.g., in fixed assets) might reduce immediate liquidity, which aligns with some of the patterns observed in company B, especially if reinvesting into growth rather than holding cash.

In this part of the study, the focus is directed towards the analysis and interpretation of the research questions arising from the previous financial analyses of company A and company B. The aim is to examine in detail how key financial indicators, profitability, liquidity, and leverage,

affect the assessment of stability, efficiency, and long-term sustainability of logistics companies. By using the EMS model and the BEX index, it is possible to quantitatively compare the financial position of both companies and identify the factors that most significantly influence performance. Below, answers to the research questions are provided with concrete data from the period 2020–2024.

Research question 1: How do profitability indicators, such as ROA and ROE, affect the assessment of financial stability of logistics companies according to the EMS model?

The analysis of ROA and ROE indicators shows that increased profitability directly contributes to financial stability according to the EMS model. For company B, ROA increased from 3.96% in 2020 to 6.95% in 2024, while ROE increased from 8.09% to 12.26% over the same period, with a temporary decline in 2023. These figures indicate that company B efficiently uses its total and equity assets to generate profit, reflecting a strong financial position. In comparison, company A recorded lower values: ROA ranged from 4.15% to 2.66%, and ROE from 8.04% to 17.23%, indicating moderate profitability and a lower ability to generate returns from resources. Higher ROA and ROE values for company B result in a higher BEX index (0.17-0.29) compared to company A (-0.21-0.22), confirming that profitability significantly contributes to stability and efficiency assessment according to the EMS model.

Research question 2: What are the differences in liquidity and solvency between company A and company B, and how do these differences affect the BEX efficiency index?

Company B demonstrates high liquidity and solvency. The current ratio ranged from 1.8 in 2020 to 2.3 in 2024, while the quick ratio increased from 1.4 to over 2. This indicates that the company can cover short-term liabilities without relying on inventory sales. Company A shows lower values, with a current ratio of 0.9-2 and a quick ratio of 0.8-1.9, suggesting slightly higher dependence on external sources or inventory sales to cover short-term obligations. When observing the BEX index, company B's stronger liquidity contributes to higher index values, confirming greater efficiency and business stability compared to company A, whose lower liquidity and solvency indicators result in a lower BEX index.

Research question 3: How can the simultaneous analysis of liquidity and leverage indicators predict the long-term sustainability of logistics companies?



The simultaneous analysis of liquidity and leverage provides insight into a company's ability to maintain stable operations in the long term. Company B reduced total debt from 0.51 in 2020 to 0.43 in 2024, while the equity ratio increased from 0.49 to 0.57, and the debt-to-equity ratio decreased from 1.04 to 0.76. At the same time, liquidity remains high, with a quick ratio above 2 in 2024 and a shorter accounts receivable collection period (34 days). These data indicate strong long-term sustainability and the ability to finance growth from internal resources. Company A, with slightly lower liquidity and higher leverage ratios, exhibits higher financial risk and lower resilience to market fluctuations, indicating more limited long-term sustainability. Therefore, the combination of liquidity and leverage indicators allows for a precise assessment of logistics companies' capacity to maintain stable operations and financial resilience over time.

6. Conclusion

The analysis of financial indicators for company A and company B from 2020 to 2024 has provided a comprehensive understanding of efficiency, stability, and sustainability in the logistics sector. The results clearly demonstrate company B's superiority across all key business dimensions. The BEX efficiency index for company B shows a continuous increase from 0.17 in 2020 to 0.29 in 2024, indicating that the company systematically improves its overall performance and operational excellence. In contrast, company A achieves significantly lower index values, ranging between -0.21 and 0.22, reflecting lower efficiency and a more limited capacity to generate stable business value. Profitability analysis further confirms these differences. Company B achieved an increase in ROA from 3.96% in 2020 to 6.95% in 2024, while ROE increased from 8.09% to 12.26% over the same period, despite a temporary decline in 2023 (ROA 4.05%, ROE 7.2%). These results indicate a strong ability to efficiently utilize total assets and equity to generate profit. Company A, with lower ROA (4.2-2.7%) and ROE (8.04-17.2%) values, shows moderate profitability and reduced capacity to generate returns from existing resources, directly affecting its lower BEX index and limiting financial stability according to the EMS model. Liquidity and solvency are crucial factors for business sustainability. Company B maintains high levels of current liquidity (1.8-2.3) and quick liquidity (1.4-2), ena-

bling the company to meet short-term obligations without relying on inventory sales. Conversely, company A reports lower current liquidity (0.9-2) and quick liquidity (1-1.9), indicating a higher dependence on external financing or asset sales to cover short-term liabilities. These differences in liquidity directly impact the BEX index, with company B's superior liquidity contributing to higher index values, confirming greater operational and financial stability compared to company A.

Simultaneous analysis of liquidity and leverage provides additional insight into the long-term sustainability of operations. Company B reduced total leverage from 0.51 in 2020 to 0.43 in 2024, while equity share increased from 0.49 to 0.57, and the debt-to-equity ratio decreased from 1.04 to 0.76. This capital structure, combined with high liquidity and shorter receivables collection periods (from 49 days in 2020 to 34 days in 2024), indicates strong capacity for self-financed growth and high long-term sustainability. Company A, with somewhat lower liquidity indicators and higher leverage ratios, shows greater financial risk and sensitivity to market fluctuations, limiting its ability to maintain stable operations over the long term. Based on the results, it is recommended that company A implement strategies to increase profitability, such as optimizing operational costs, improving receivables management, and rationalizing its debt structure. Company B should continue enhancing operational efficiency, including controlling personnel and material costs, while further reducing exposure to exchange rate fluctuations affecting financial results. The research limitations include the relatively short five-year observation period, focus on only two companies, and reliance on available financial statements without detailed insights into internal operational processes and macroeconomic conditions that could significantly impact business performance. Recommendations for future research include expanding the sample to include more logistics companies to better represent industry trends, analyzing the impact of macroeconomic factors such as fuel prices, regulatory changes, and logistics costs on financial stability and profitability, and applying advanced quantitative models to predict long-term sustainability and assess risk. Additionally, future studies could include comparative analysis of operational and managerial practices affecting liquidity, profitability, and financial resilience in the logistics sector.



References

- Belak, V. (2014). *Analiza poslovne uspješnosti; 130 ključnih pokazatelja performanse i mjerila za kontroling; EV/EBITDA*. RRIF Plus, Zagreb. ISBN 9789532721010
- Brigham, E. F. & Houston, J. F. (2019). *Fundamentals of Financial Management (15th ed.)*. Cengage Learning. ISBN 9780357686690
- Choirunisa, F. & Takarini, N. (2024). Profitability Analysis of Transportation and Logistics Sector Companies listed on the Indonesia Stock Exchange. *East Asian Journal of Multidisciplinary Research*, 3(8), pages 3825-3836. <https://doi.org/10.55927/eajmr.v3i8.10634>
- Christopher, M. (2016). *Logistics & Supply Chain Management (5th ed.)*. Pearson Education. ISBN 978-1-292-08381-0
- Fadilah, A. N. & Novitasari, D. (2025). The Effect of Operating Costs, Cash Flows, and Profitability on Corporate Liquidity in The Transportation and Logistics Sector (2021-2023). *Proceeding of International Conference on Economics, Technology, Management, Accounting, Education, and Social Science (ICETEA)*, 1(1), pages 162-72. <https://conference.unita.ac.id/index.php/icetea/article/view/364>
- Fridson, M. S. & Alvarez, F. (2011). *Financial Statement Analysis: A Practitioner's Guide (4th edition)*. Wiley finance. ISBN 978-0-470-63560-5
- Gulin, D., Tušek, B. & Žager, L. (2004). *Poslovno planiranje, kontrola i analiza*. Zagreb: HZRFD. ISBN 953-6480-66-2
- Herold, D. M. & Marzantowicz, Ł. (2023). Supply chain responses to global disruptions and its ripple effects: an institutional complexity perspective. *Operations Management Research*, Springer, 16(4), pages 2213-2224. <https://doi.org/10.1007/s12063-023-00404-w>
- Higgins, R. C. (2012). *Analysis for Financial Management (10th edition)*. McGraw-Hill Education. ISBN 9780078034688
- Horvat Jurjec, K. (2011). *Analiza financijskih izvještaja pomoću financijskih pokazatelja*. Računovodstvo, revizija i financije 7.2011.
- Kolaric, D. (2025). *Analiza i usporedba financijskog poslovanja odabranih međunarodnih logističkih poduzeća*. Retrieved November 18th, 2025, from: <https://repozitorij.unin.hr/theses/unin:7831/show-file/0>
- Mamić Sačar, I., Žager, K., Žager, L., Ježovita, A. & Sever Mališ, S. (2021). *Analiza financijskih izvještaja: načela-postupci-slučajevi (5. izdanje)*. Hrvatska zajednica računovođa i financijskih djelatnika, Zagreb. ISBN 978-953-277-136-7
- McKinnon, A. C., Browne, M., Piecyk, M. & Whiteing, A. E. (2015). *Green Logistics: Improving the Environmental Sustainability of Logistics (3rd ed.)*. Kogan Page. ISBN 9780749471859
- Ministry of the Sea, Transport and Infrastructure (2017). *Strategija prometnog razvoja Republike Hrvatske (2017.-2030.)*. Retrieved October 1st, 2025, from: https://mmpi.gov.hr/UserDocsImages/dokumenti/Djelokrug/STRATACT/Strategija%20prometnog%20razvoja%20Republike%20Hrvatske%202017.-2030%2030-7_24.pdf
- Nguyen, M. M., Nguyen, H. T. & To, H. T. (2021). The impact of capital structure on financial performance of logistic service providers listed on Ho Chi Minh City Stock Exchange. *Palarch's Journal of Archaeology of Egypt/Egyptology*, 18(2), pages 688-719. ISSN 1567-214x
- Omedo, W. N. & Wanjala, M. (2023). Influence of Financial Risk Management on the Financial Performance of Logistics Companies in the Coastal Region. *The Strategic Journal of Business & Change Management*, 10 (2), pages 1084-1103. ISSN 2312-9492
- Rushton, A., Croucher, P. & Baker, P. (2021). *The Handbook of Logistics and Distribution Management: Understanding the Supply Chain (6th ed.)*. Kogan Page. ISBN 9780749457143
- Tintor, Ž. (2020). Analiza financijskih izvještaja u funkciji donošenja kvalitetnijih upravljačkih odluka. *Obrazovanje za poduzetništvo*, 10(1), 84-103. <https://doi.org/10.38190/ope.10.1.4>
- Vidučić, Lj., Pepur, S. & Šimić Šarić, M. (2015). *Financijski menadžment (9. izmijenjeno i dopunjeno izdanje)*. Zagreb: RRiF. ISBN 978-953-272-122-5
- Vuković, B., Milutinović, S., Mirović, V. & Milićević, N. (2020). Analiza profitabilnosti logističkih kompanija u zemljama Balkana. *Promet - Traffic&Transportation*, 32 (4), 497-511. <https://doi.org/10.7307/ptt.v32i4.3311>
- World Bank. (2023). *Logistics Performance Index*. Retrieved October 1st, 2025, from: https://lpi.worldbank.org/sites/default/files/2023-04/LPI_2023_report_with_layout.pdf