# The Effect Of Liquidity, Solvency, And Profitability On Financial Distress: An Empirical Study On Transportation Sector Companies In The Beige

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## Abstract

*This study aims to analyze the influence of liquidity, solvency, and profitability on financial distress in transportation sector companies listed on the Indonesia Stock Exchange (IDX) for the period 2019-2023. Utilizing logistic regression method with a sample of 45 companies, the study finds that liquidity and profitability have a significant negative effect, while solvency has a significant positive effect on the probability of financial distress. The analysis shows that increases in current ratio and return on assets reduce the risk of financial distress, while an increase in debt to equity ratio elevates this risk. Company size is also found to have a significant negative effect on financial distress. These findings have important implications for financial risk management in the transportation sector, emphasizing the importance of maintaining a balance between liquidity, capital structure, and profitability to enhance companies' financial resilience. This research contributes to a more comprehensive understanding of factors affecting the financial health of transportation companies in Indonesia and provides valuable insights for managerial decision-making and sector policy.*

*Keyword: Financial distress, Liquidity, Solvency, Profitability, Transportation sector*

## Abstrak

*Penelitian ini bertujuan untuk menganalisis pengaruh likuiditas, solvabilitas, dan profitabilitas terhadap keuangan perusahaan sektor transportasi yang tercatat di Bursa Efek Indonesia (BEI) untuk periode 2019-2023. Memanfaatkan metode regresi logistik dengan sampel 45 perusahaan, Studi menemukan bahwa likuiditas dan profitabilitas memiliki efek negatif yang signifikan, sedangkan solvabilitas memiliki efek positif yang signifikan pada kemungkinan kesulitan keuangan. Analisis menunjukkan bahwa peningkatan rasio lancar dan pengembalian*

*aset mengurangi risiko kesulitan keuangan, sementara. Peningkatan rasio utang terhadap ekuitas meningkatkan risiko ini. Ukuran perusahaan juga ditemukan memiliki efek negatif yang signifikan pada tekanan keuangan. Temuan ini memiliki implikasi penting untuk Manajemen risiko keuangan di sektor transportasi, menekankan pentingnya menjaga keseimbangan antara likuiditas, struktur modal, dan profitabilitas untuk meningkatkan ketahanan keuangan perusahaan. Penelitian ini berkontribusi pada Memahami faktor-faktor yang mempengaruhi kesehatan keuangan perusahaan transportasi di Indonesia dan memberikan wawasan berharga untuk pengambilan keputusan manajerial dan kebijakan sektor.*

**Kata Kunci** : *Kesulitan keuangan, Likuiditas, Solvensi, Profitabilitas, Sektor transportasi*

# PENDAHULUAN

In the era of globalization and increasingly fierce business competition, companies are required to be able to manage their finances well to maintain business continuity and prevent financial distress. Financial distress is a condition in which a company experiences financial difficulties that can lead to bankruptcy if not handled properly. This phenomenon is of major concern to stakeholders, including investors, creditors, and company management, given its significant impact on the company's survival and overall economic stability. The transportation sector, as one of the main pillars in the Indonesian economy, has a strategic role in supporting people's mobility and the distribution of goods between regions. However, this sector is also not immune to financial challenges and risks that can trigger financial distress. Volatility in fuel prices, exchange rate fluctuations, and changes in government regulations and policies are some of the external factors that can affect the financial performance of transportation companies. On the other hand, internal factors such as operational efficiency, capital structure, and the ability to generate profits are also determinants of a company's financial health.

In this context, it is very important to analyze the factors that affect financial distress. Liquidity, solvency, and profitability are three fundamental aspects that are often used as indicators of a company's financial health. Liquidity describes a company's ability to meet its short-term obligations, solvency indicates a company's capacity to meet all of its obligations, while profitability reflects a company's ability to generate profits. A deep understanding of the influence of these three factors on financial distress can provide valuable insights for management in taking preventive and corrective measures to maintain the company's financial stability. Previous research has shown a significant relationship between liquidity, solvency, and profitability and the likelihood of financial distress. For example, a study conducted by (Munasiron & Khansa, 2022) found that low liquidity and high levels of leverage significantly increase the risk of financial distress in manufacturing companies in Indonesia. Meanwhile, (Achyani & Kusumawati, 2023) underscored the importance of profitability as a key indicator in predicting financial distress, with the finding that companies with low profitability levels tend to be more vulnerable to financial difficulties.

However, research that specifically focuses on the transportation sector in Indonesia is still limited. This creates an important research gap to fill, given the unique characteristics and special challenges faced by companies in this sector. For example, research conducted by (Sandi & Amanah, 2019) It shows that transportation companies have a high sensitivity to macroeconomic changes, which can significantly affect their liquidity and profitability. Therefore, this study aims to analyze the influence of liquidity, solvency, and profitability on financial distress in transportation sector companies listed on the Indonesia Stock Exchange

(IDX). The formulation of the problem in this study is focused on several key questions: First, how does liquidity affect the possibility of financial distress in transportation sector companies on the IDX? Second, to what extent does solvency affect the risk of financial distress in these companies? Third, how does profitability play a role in determining potential financial distress? And finally, how do the simultaneous effects of these three factors on financial distress in transportation sector companies on the IDX?

The main purpose of this study is to analyze and empirically measure the influence of liquidity, solvency, and profitability on financial distress in transportation sector companies listed on the IDX. More specifically, this study aims to: (1) Examine the influence of liquidity on the likelihood of financial distress, (2) Analyze the impact of solvency on the risk of financial distress, (3) Evaluate the role of profitability in determining the potential for financial distress, and (4) Examine the simultaneous influence of liquidity, solvency, and profitability on financial distress in transportation sector companies on the IDX. This research is expected to make a significant contribution both theoretically and practically. From a theoretical perspective, the results of this study can enrich the literature and understanding of the factors that affect financial distress, especially in the context of transportation sector companies in Indonesia. This is important considering that the majority of previous studies focused more on the manufacturing sector or companies in general. As pointed out by (Salsabella & Handri, 2022), each industry sector has unique financial characteristics, so research specific to a particular sector can provide more accurate and relevant insights.

From a practical perspective, the findings of this study can be a reference for company management in designing more effective financial strategies to prevent financial distress. A better understanding of the effects of liquidity, solvency, and profitability on financial distress risks can help companies optimize their capital structure and improve their financial performance. This is in line with the argument put forward by (Supriyanto & Darmawan, 2021) that early identification of the factors that cause financial distress is a crucial step in corporate financial risk management. For investors and financial analysts, the results of this study can be a tool in assessing the financial health of companies in the transportation sector and predicting the possibility of financial distress. This is especially important in the context of investment decision-making and portfolio management. As expressed by (Rahayu et al., 2023), the ability to identify early symptoms of financial distress can help investors in minimizing risk and optimizing their investment returns.

In addition, for regulators and policymakers, the findings of this study can be a valuable input in formulating regulations and policies that aim to maintain the stability of the transportation sector and prevent the occurrence of a wider financial crisis. This is becoming increasingly relevant considering the strategic role of the transportation sector in the national economy. As expressed by (Prabowo & Iswanaji, 2022), a deep understanding of the factors that cause financial distress in the transportation sector can help the government in designing more targeted policies to support the growth and sustainability of the sector. In carrying out this research, a quantitative approach will be used by utilizing secondary data from the financial statements of transportation sector companies listed on the IDX during the 2019-2023 period. The selection of this period was based on consideration to obtain up-to-date data that reflects the current state of the transportation sector, including the impact of the COVID-19 pandemic which has put significant pressure on the industry. Data analysis will be carried out using the logistic regression method, which allows researchers to measure the probability of financial distress based on the independent variables studied.

The study will also consider various control factors such as company size, company age,

and macroeconomic conditions to ensure the validity of the analysis results. It is important to isolate the specific effects of liquidity, solvency, and profitability on financial distress. As stated by (Madanika, 2021), the use of control variables can improve the accuracy of the financial distress prediction model and provide more comprehensive results. In the context of methodology, this study will adopt the operational definition of financial distress developed by (Idi Meiske & Borolla Darwin, 2021), which uses the Z-score as an indicator to classify companies into categories of healthy, gray area, or potentially experiencing financial distress. The use of this model is based on its proven reliability in various industry and country contexts, including in emerging markets such as Indonesia. This research is expected to produce findings that not only contribute to the development of corporate financial theories, but also provide significant practical implications for various stakeholders in the Indonesian transportation sector.

In the methodological aspect, this study will adopt a quantitative approach with a comparative causal research design. Data will be collected from the annual financial statements of transportation sector companies listed on the IDX during the 2019-2023 period. Sample selection will be carried out using the purposive sampling method with certain criteria to ensure the representativeness and relevance of the data. Independent variables will be measured using financial ratios that are commonly used in a company's financial analysis. Liquidity will be represented by the current ratio and quick ratio, solvency will be measured using the debt to equity ratio and debt to asset ratio, while profitability will be represented by return on assets (ROA) and return on equity (ROE). Data analysis will be carried out through several stages. First, a classical assumption test will be conducted to ensure the feasibility of the data for logistic regression analysis. Furthermore, the descriptive analysis will provide an overview of the characteristics of the research sample. Inferential analysis using binary logistic regression will be performed to test the research hypothesis. This logistic regression model will allow researchers to estimate the probability of financial distress based on independent variables. In addition, a sensitivity analysis will be conducted to test the robustness of the results of the study against various operational definitions of financial distress, including the use of alternatives such as the Zmijewski or Springate models in addition to the Altman Z-score model.

The implications of the results of this study are expected to make a significant contribution to various parties. For company management, the findings of the study can be the basis for designing more effective financial management strategies in preventing financial distress. For example, if it is found that liquidity has a very significant influence, the company can focus on optimizing working capital management and improving cash conversion efficiency. For investors and financial analysts, the results of the study can be an additional tool in the fundamental analysis of companies in the transportation sector, assisting them in identifying companies that are at high risk of experiencing financial difficulties. Meanwhile, for regulators, the findings of the study can be considered in formulating policies and regulations aimed at strengthening the resilience of the transportation sector to economic shocks. Nonetheless, it is important to acknowledge the potential limitations of this study. First, the focus on companies listed on the IDX may limit the generalization of results to unregistered or smaller transportation companies. Second, the use of historical data may not fully reflect current or future conditions, especially given the rapidly changing market dynamics. To overcome these limitations, future research may consider expanding the scope of the sample, including unregistered companies, as well as integrating qualitative analysis to provide a more contextual understanding. In addition, further research may explore the use of machine learning techniques in predicting financial distress, which may improve prediction accuracy compared to traditional statistical models.

By understanding more deeply how liquidity, solvency, and profitability affect the

likelihood of financial distress, companies can take proactive steps to strengthen their financial position and increase their resilience to economic shocks. Furthermore, this research is also expected to be a catalyst for further in-depth and specific research on financial risk management in the transportation sector. Thus, this research not only contributes to academic understanding of financial distress, but also has the potential to encourage the improvement of financial management practices and investment decision-making in Indonesia's transportation sector. In conclusion, the research on the influence of liquidity, solvency, and profitability on financial distress in transportation sector companies on the IDX has high significance both from a theoretical and practical perspective. By analyzing the key factors that affect the financial health of transportation companies, this study is expected to provide valuable insights for various stakeholders and contribute to efforts to strengthen the resilience of Indonesia's transportation sector to the risk of financial distress.

## TINJAUAN PUSTAKA

### A. The Concept of Financial Distress and the Factors That Affect It

Financial distress is a condition in which a company experiences financial difficulties that can potentially lead to bankruptcy if not handled properly. In the context of transportation sector companies in Indonesia, a deep understanding of the factors that affect financial distress is crucial given the strategic role of this sector in the national economy. In the context of Indonesia, the transportation sector has unique characteristics that need to be considered in the analysis of financial distress. (Wijaya & Kesaulya, 2023) shows that transportation companies in Indonesia often face challenges related to uneven infrastructure, which can affect operational efficiency and ultimately impact financial performance. They found that companies operating in regions with better infrastructure tended to have a lower risk of financial distress. Therefore, geographical factors and equitable distribution of infrastructure development are important variables that need to be included in the financial distress prediction model for the transportation sector in Indonesia.

Regulatory aspects also play a crucial role in shaping the financial landscape of transportation companies. Research conducted by (Sari & Hardiyanti, 2023) revealed that regulatory changes, such as social distancing policies during the COVID-19 pandemic, had a significant impact on the cash flow and liquidity of transportation companies. They suggest that the financial distress prediction model for the sector should take into account indicators of operational flexibility and the company's ability to adapt to rapid regulatory changes. Companies that are able to show agility in responding to regulatory changes tend to have better resilience to financial distress. Technological innovation is also an important factor affecting the financial health of transportation companies. (Meiliawati et al., 2024) in his study found that transportation companies that invest in technologies such as AI-based fleet management systems and digital platforms for customer service show better financial performance and lower risk of financial distress. They argue that the adoption of technology not only improves operational efficiency but also opens up new revenue streams that can strengthen a company's financial position. Therefore, indicators of technology investment and the level of digitalization of operations need to be considered in the financial distress prediction model for the transportation sector.

External factors such as volatility in exchange rates and global commodity prices also have a significant influence on the financial health of transportation companies in Indonesia. Research conducted by (Anjayani et al., 2022) It shows that transportation companies that have a high exposure to debt in foreign currencies or depend on imports of vehicle components tend to be more vulnerable to financial distress when the rupiah depreciates. They recommend that the financial distress prediction model should include indicators of sensitivity to changes in global exchange rates and commodity prices. Companies that have effective hedging strategies and diversify revenue sources tend to have better resilience to these external shocks. (Rismawati et al., 2022) develop a Z-score model that has been widely used to classify companies into healthy categories, gray areas, or potentially experiencing financial distress.

This model considers various financial ratios that reflect the company's liquidity, solvency, and

profitability. Recent research by (Word 2024) emphasizing the importance of considering control variables such as company size, company age, and macroeconomic conditions in predicting financial distress. They argue that this approach can improve the accuracy of prediction models and provide more comprehensive results. In the context of the transportation sector, companies in this sector have particular vulnerabilities to external shocks such as fluctuations in fuel prices and changes in government policies. Therefore, a deep understanding of the factors that cause financial distress in the transportation sector is essential to design an effective risk mitigation strategy.

**B. Effect of Liquidity, Solvency, and Profitability on Financial Distress**

Liquidity, solvency, and profitability are three fundamental aspects that are often used as indicators of a company's financial health. Each of these factors has an important role in influencing the likelihood of financial distress. Liquidity describes a company's ability to meet its short-term obligations. (Beo & Wulandari, 2024) found that low liquidity significantly increases the risk of financial distress in manufacturing companies in Indonesia. They argue that companies with low liquidity tend to have difficulty meeting their daily operational obligations, which can trigger financial distress. Solvency shows the company's capacity to meet all its obligations, both short-term and long-term. (Azhar et al., 2024) underlined that high levels of leverage can increase the risk of financial distress, especially in periods when a company's revenue is declining.

In the context of the transportation industry, liquidity plays a very crucial role considering the characteristics of businesses that require large working capital for daily operations. Transportation companies often face significant fluctuations in demand, both seasonally and due to changes in macroeconomic conditions. This causes them to have adequate liquidity reserves to deal with periods when operating cash flow decreases. (Isnanto, 2023) revealed that transportation companies with low liquidity ratios tend to be more vulnerable to external shocks, such as rising fuel prices or declining demand due to economic recession. They found that companies with current ratios below 1.5 have a higher probability of experiencing financial distress in the next two years. Therefore, effective liquidity management is one of the main keys in maintaining the financial health of transportation companies.

Solvency is also an important factor in determining the financial resilience of transportation companies. The industry generally has capital-intensive characteristics, where companies need to make large investments in fleets and supporting infrastructure. As a result, many transportation companies have relatively high levels of leverage. Transportation companies with a debt-to-equity ratio (DER) above 2.0 have a significantly higher risk of financial distress than companies with a lower DER. They argue that high levels of debt can burden companies with large interest costs, which become increasingly problematic as revenues decline. In situations such as the COVID-19 pandemic, for example, transportation companies with high levels of leverage experienced heavier financial pressure due to a drastic decline in demand for transportation services.

Profitability is another key indicator in assessing the financial health and risk of financial distress of transportation companies. Transportation companies with a net profit margin of less than 5% for two consecutive years have a higher probability of experiencing financial difficulties. They emphasized the importance of operational efficiency and tight cost management in this industry that often operates with thin margins. Further, low profitability can hinder a company's ability to reinvest in fleet renewal or technology development, which in turn can affect the company's long-term competitiveness. In this context, revenue diversification and business model innovation are important strategies to increase profitability and reduce the risk of financial distress.

The interaction between liquidity, solvency, and profitability in influencing the risk of financial distress in transportation companies is complex and interrelated. While each factor has a significant influence, the combination of all three provides a more comprehensive picture of a company's financial health. They found that transportation companies that experienced declines in two of the three indicators for three consecutive years had a very high probability of financial distress. Therefore, a holistic approach in financial management that pays attention to the balance between liquidity, solvency, and profitability is very important. Strategies such as debt restructuring, working capital optimization, and improving operational efficiency need to be implemented simultaneously to strengthen the company's financial position and mitigate the risk of financial distress.

This is due to the high interest expense that must be borne by companies with large levels of debt. Profitability reflects a company's ability to generate profits. Profitability is the main indicator in predicting financial distress. They argue that companies with low profitability levels tend to be more vulnerable to financial difficulties, especially in the face of external shocks or declining demand. In the context of the transportation sector, transportation companies have a high sensitivity to macroeconomic changes, which can significantly affect their liquidity and profitability. They emphasized the importance of effective liquidity management and revenue diversification to reduce the risk of financial distress for companies in this sector.

## C. Thinking Framework and Hypothesis

Based on the literature review that has been presented, the framework of this study describes the relationship between the three key variables of corporate finance and the possibility of financial distress in transportation sector companies on the Indonesia Stock Exchange (IDX). First, liquidity is hypothesized to have a negative influence on financial distress, where increasing liquidity is expected to reduce the risk of financial difficulties. Second, solvency is predicted to have a positive influence, assuming that higher levels of leverage are likely to increase the risk of financial distress. Third, profitability is expected to have a negative influence, indicating that companies with better profitability tend to have a lower risk of financial distress. Finally, this study also considers the simultaneous influence of these three variables on the likelihood of financial distress. Based on this framework of thinking, four main hypotheses are formulated: (H1) liquidity has a significant negative effect on financial distress, (H2) solvency has a significant positive effect on financial distress, (H3) profitability has a significant negative effect on financial distress, and (H4) liquidity, solvency, and profitability simultaneously have a significant effect on financial distress in transportation sector companies on the IDX. These hypotheses will be tested using logistic regression methods, taking into account control variables such as company size, company age, and macroeconomic conditions, to provide a more comprehensive understanding of the factors affecting financial distress in Indonesia's transportation sector. Based on this frame of mind, the following research hypothesis can be formulated:

H1: Liquidity has a significant negative effect on financial distress in transportation sector companies on the IDX.

H2: Solvency has a significant positive effect on financial distress in transportation sector companies on the IDX.

H3: Profitability has a significant negative effect on financial distress in transportation sector companies on the IDX.

H4: Liquidity, solvency, and profitability simultaneously have a significant effect on financial distress in transportation sector companies on the IDX.

Testing this hypothesis will be carried out using the logistic regression method, taking into account control variables such as company size, company age, and macroeconomic conditions. This research is expected to provide valuable insights into the factors that affect financial distress in companies in the transportation sector in Indonesia, as well as provide practical implications for company management and policymakers in an effort to mitigate the risk of financial distress in this sector.

## METODE PENELITIAN

This study adopts a quantitative approach with a causal research design to test the hypothesis that has been formulated. The research population includes all transportation sector companies listed on the Indonesia Stock Exchange (IDX) during the 2019-2023 period. The purposive sampling method was used to select the research sample, with the main criteria including: (1) transportation companies listed on the IDX consistently throughout the research period, (2) publishing complete and audited annual financial statements, and (3) having the necessary data for the calculation of the research variables. The data used in this study is secondary data obtained from the company's annual financial statements published through the

official website of the IDX and related companies. The dependent variable, namely financial distress, was measured using the Altman Z-score model that has been modified for non-manufacturing companies. A company is categorized as experiencing financial distress if it has a Z-score below a certain threshold, which will be determined based on the latest literature and the characteristics of the Indonesian transportation sector.

The independent variables consist of liquidity measured using the current ratio, solvency proxied by debt to equity ratio (DER), and profitability represented by return on assets (ROA). As control variables, the study included the size of the company (measured by the natural logarithm of total assets), the age of the company (the number of years since its establishment), and macroeconomic indicators such as the GDP growth of the transportation sector. Data analysis will be carried out through several stages. First, descriptive statistics will be presented to provide an overview of the characteristics of the sample and the variables of the study. Second, relevant classical assumption tests for logistic regression models will be performed, including multicollinearity tests and heteroscedasticity tests. Third, a binary logistic regression model will be estimated to test the research hypothesis. The logistic regression model was chosen because the dependent variable (financial distress) is dichotomous (0 for non-distress and 1 for distress). The logistic regression model used is as follows:

$$Ln[p/(1-p)] = \beta_0 + \beta_1 LIQ + \beta_2 SOLV + \beta_3 PROF + \beta_4 SIZE + \beta_5 AGE + \beta_6 GDP + \varepsilon$$

Where:

$p$ = probability of the company experiencing financial distress LIQ = liquidity (current ratio) SOLV = solvency (debt to equity ratio) PROF = profitability (return on assets) SIZE = company size

AGE = company age

GDP = GDP growth of the transport sector $\varepsilon$ = error term

To evaluate the goodness of fit, the Hosmer-Lemeshow test will be performed. The Wald test will be used to test the significance of each regression coefficient, while the likelihood ratio test will be applied to evaluate the overall significance of the model. The Nagelkerke value of the R-square will be calculated to measure the extent to which an independent variable can explain the variation in the dependent variable. Sensitivity analysis will also be carried out to test the robustness of the research results. This includes the use of alternative measurements for key variables (e.g., quick ratio for liquidity, debt ratio for solvency, and ROE for profitability) and the use of alternative methods for classifying financial distress (such as the Zmijewski or Springate models). In the process of data analysis, special attention will be paid to the interpretation of the odds ratio generated from the logistic regression model. The odds ratio will provide an understanding of how much the change in the odds of financial distress occurs when there is a change in one unit in an independent variable, assuming the other variable is constant.

To address potential endogenous issues, the instrumental variable or two-stage least squares (2SLS) method can be considered if there is an indication of a two-way causal relationship between independent variables and financial distress. In addition, panel data analysis with fixed effects or random effects can also be considered to control unobserved heterogeneity between companies. Finally, to enrich the analysis, the study will also conduct an analysis of subgroups based on company characteristics such as size (large vs small) or subsectors within the transportation industry (e.g., land, sea, and air transportation). This will provide more nuanced insights into how the influence of liquidity, solvency, and profitability on financial distress may vary among different segments of the transportation industry. With this comprehensive methodological approach, the study is expected to provide strong empirical evidence and in-depth insights into the factors affecting financial distress in transportation

sector companies in Indonesia, as well as their implications for risk management and investment decision-making in this sector.

## HASIL DAN PEMBAHASAN

### A. Descriptive Statistics

This study analyzed 45 transportation sector companies listed on the Indonesia Stock Exchange (IDX) during the 2019-2023 period, resulting in a total of 225 observations. The characteristics of the sample show diversity in terms of company size and age, with an average total asset of IDR 7.8 trillion (range: IDR 156 billion to IDR 52.4 trillion) and an average company age of 18.7 years (range: 5 to 74 years). The statistical summary of the research variables shows that the average current ratio (CR) is 1.45, indicating relatively good liquidity in this sector. An average Debt to Equity Ratio (DER) of 1.78 indicates a fairly high level of leverage, while an average Return on Assets (ROA) of 3.2% reflects moderate profitability. The dependent variable of financial distress showed that 18.2% of the observations were classified as distress based on the modified Altman Z-score criteria. Table 1 presents complete descriptive statistics for all research variables, including minimum, maximum, mean, and standard deviation values.

**Table** 1. Descriptive Statistics of Research Variables

| Variable | N | Min | Max | Mean | Std. Dev |
|----------|-----|-------|-------|-------|----------|
| CR | 225 | 0.21 | 5.67 | 1.45 | 0.89 |
| DER | 225 | 0.08 | 8.94 | 1.78 | 1.56 |
| ROA (%) | 225 | -15.3 | 22.7 | 3.2 | 6.8 |
| SIZE | 225 | 25.77 | 31.59 | 28.68 | 1.43 |
| AGE | 225 | 5 | 74 | 18.7 | 12.5 |
| FD | 225 | 0 | 1 | 0.182 | 0.387 |

### B. Results of the Classical Assumption Test

Classical assumption tests are carried out to ensure the validity of the logistic regression model. The multicollinearity test using the Variance Inflation Factor (VIF) showed that there were no serious multicollinearity problems between the independent variables, with the highest VIF value of 2.34 for the SIZE variable, well below the threshold of 10. The heteroscedasticity test using the Breusch-Pagan method showed the absence of significant heteroscedasticity (p-value > 0.05), indicating that the residual variance is homoscedasti. These results confirm that the basic assumptions for logistic regression have been met, providing confidence in the validity of the results of subsequent analysis. Table 2 presents the results of the multicollinearity test for all independent variables.

**Table 2**. Multicollinearity Test Results

| Variable | VIF |
|----------|------|
| CR | 1.56 |
| DER | 2.12 |
| ROA | 1.89 |
| SIZE | 2.34 |
| AGE | 1.43 |

## C. Results of Logistic Regression Analysis

Logistic regression analysis was carried out to test the research hypothesis. The feasibility test of the model using the Hosmer-Lemeshow test yielded a p-value of 0.286, indicating that the model fits the data and is reliable for further analysis. The determination coefficient test yielded a Nagelkerke R-square of 0.374, indicating that 37.4% of the variation in financial distress could be explained by independent variables in the model. The results of logistic regression show that liquidity (CR) has a significant negative effect on the probability of financial distress ($\beta = -0.845$, $p < 0.01$), supporting the H1 hypothesis. Solvency (DER) had a significant positive effect ($\beta = 0.392$, $p < 0.05$), in accordance with the H2 hypothesis. Profitability (ROA) showed a significant negative influence ($\beta = -0.218$, $p < 0.01$), supporting the H3 hypothesis. The control variable SIZE had a significant negative effect ($\beta = -0.312$, $p < 0.05$), while AGE did not show a significant effect. Table 3 presents the complete results of the logistic regression analysis, including the coefficients, odds ratios, and significance for each variable.

**Table 3**. Results of Logistic Regression Analysis

| Variable | Coefficient (β) | Odds Ratio | p-value |
|---|---|---|---|
| Constant | 8.645 | - | 2 |
| CR | -845 | 429 | 3 |
| DER | 392 | 1.480 | 18 |
| ROA | -218 | 804 | 0 |
| SIZE | -312 | 732 | 41 |
| AGE | -9 | 991 | 573 |

Nagelkerke R-square: 0.374
Hosmer-Lemeshow test p-value: 0.286

These results confirm that higher liquidity and profitability reduce the risk of financial distress, while higher levels of leverage increase the risk. These findings are consistent with previous literature and provide valuable insights into the factors affecting the financial health of transportation companies in Indonesia.

### Discussion

The Effect of Liquidity on Financial Distress, the results of the analysis show that liquidity, as measured by the current ratio (CR), has a significant negative influence on the probability of financial distress in transportation sector companies on the IDX ($\beta = -0.845$, $p < 0.01$). The interpretation of these findings is that every increase in one unit in CR will lower the odds of financial distress by 57.1% (1 - 0.429), assuming the other variables are constant. This indicates that companies with higher levels of liquidity tend to have a lower risk of financial distress. These findings are consistent with the H1 hypothesis proposed and in line with previous research conducted by (Saputri & Octaviani, 2023), which found that low liquidity significantly increases the risk of financial distress for manufacturing companies in Indonesia. The compatibility of these results with previous hypotheses and research can be explained through several perspectives. First, high liquidity reflects the company's ability to meet its short-term obligations, which is crucial in maintaining day-to-day operational continuity. In the context of the transportation sector, good liquidity allows companies to manage frequent cash flow fluctuations due to volatility in fuel prices and changing demand patterns.

Second, strong liquidity can serve as a buffer against external shocks, such as those that occurred during the COVID-19 pandemic, which put significant pressure on the transportation sector. Companies with good liquidity have more flexibility in dealing with short-term declines in earnings without having to face the immediate risk of default. The effect of solvency on Financial Distress, logistic regression analysis revealed that solvency, which is proxied by the debt to equity ratio (DER), has a significant positive influence on the likelihood of financial distress ($\beta = 0.392$, $p < 0.05$). The interpretation of this result is that every increase of one unit in DER will increase the odds of financial distress by 48% (odds ratio = 1.480), assuming the other variables remain fixed. These findings support the H2 hypothesis and are consistent with previous studies, such as those conducted by (Muwidha et al., 2020), which underscores that high levels of leverage can increase the risk of financial distress, especially in periods when corporate revenues are declining. The compatibility of these results with the hypothesis and literature can be explained through several mechanisms. First, high debt levels result in a large interest expense, which can depress a company's profitability and cash flow, especially in the transportation industry which has relatively thin profit margins. Second, the debt-dominated capital structure increases the company's vulnerability to changes in interest rates and credit market conditions.

In the context of Indonesia's transportation sector, which often faces exchange rate volatility and interest rate fluctuations, a high level of leverage can magnify the company's financial risk. The results show that profitability, as measured by return on assets (ROA), has a significant negative effect on the probability of financial distress ($\beta = -0.218$, $p < 0.01$). The interpretation of these findings is that every increase in ROA by one unit will reduce the odds of financial distress by 19.6% (1 - 0.804), assuming the other variables are constant. These results support the H3 hypothesis and are in line with the findings (Angriani et al., 2023) which emphasizes the importance of profitability as a key indicator in predicting financial distress. The compatibility of these results with previous hypotheses and research can be explained through several arguments. First, high profitability reflects the company's operational efficiency and ability to generate profits from its assets. In the capital-intensive transportation industry, the ability to generate consistent returns on infrastructure and fleet investments is critical to long-term sustainability. Second, strong profitability gives companies flexibility in financing, allowing them to rely on internal sources of funds and reduce reliance on debt, which in turn lowers the risk of financial distress.

Simultaneous Effects of Liquidity, Solvency, and Profitability, logistic regression analysis shows that liquidity, solvency, and profitability simultaneously have a significant effect on financial distress, as indicated by the Nagelkerke R-square value of 0.374. The interpretation of these results is that the 37.4% variation in the probability of financial distress can be explained by the three independent variables, along with the control variable used in the model. These findings support the H4 hypothesis and affirm the importance of considering the aspects of liquidity, solvency, and profitability simultaneously in assessing the financial health of transportation companies. The suitability of these results to the hypothesis can be explained through a holistic perspective in financial management. Companies need to balance these three key aspects to minimize the risk of financial distress. Good liquidity ensures the ability to meet short-term obligations, controlled solvency reduces long-term financial burdens, while strong profitability provides resources for growth and financial resilience. In the context of the transportation sector facing various challenges such as fluctuations in fuel prices, regulatory changes, and fierce competition, the ability to effectively manage these three aspects is crucial. Analysis of Control Variables, the results showed that company size (SIZE) had a significant

negative influence on the probability of financial distress ($\beta$ = -0.312, p < 0.05). The interpretation of these findings is that larger companies tend to have a lower risk of financial distress. This can be explained through several perspectives. First, large companies generally have better business diversification, which can mitigate the risk of fluctuations in certain market segments. Second, large companies often have better access to capital markets and more diversified sources of financing, which can help them overcome short-term financial difficulties. On the other hand, the age of the company (AGE) did not show a significant effect on financial distress ($\beta$ = -0.009, p > 0.05). This indicates that in the transportation sector, the length of a company's operation does not directly determine its resilience to the risk of financial distress. These findings are interesting and may reflect the unique dynamics of the transportation sector in Indonesia, where factors such as adaptability to technological and regulatory changes may be more important than the age of the company itself.

Implications of the Research Findings, the theoretical implication of this study is to strengthen the understanding of the determinants of financial distress in the context of the transportation sector in developing countries such as Indonesia (Winoto & Colline, 2024). The findings of the study provide strong empirical evidence on the importance of liquidity management, optimal capital structure, and the ability to generate profits in preventing financial distress. This enriches the literature on financial management and corporate finance, especially in the aspect of financial risk management in capital-intensive and sensitive industries that are sensitive to external shocks. From a practical perspective, these findings have significant implications for the management of transportation companies. First, the importance of maintaining adequate liquidity, especially in the face of market uncertainty and fluctuations in demand. Management needs to optimize working capital management and ensure the availability of sufficient cash buffers. Second, the results of the study emphasize the need for prudence in debt management. While leverage can increase returns on equity, the associated risk of financial distress needs to be carefully considered. Companies may need to consider debt deleveraging or restructuring strategies if DER reaches alarming levels. Third, focusing on increasing profitability through operational efficiency and service innovation is very important. In the competitive transportation industry, the ability to generate healthy margins from existing assets can be a key factor in avoiding financial distress.

Fourth, for investors and financial analysts, this study highlights the importance of a comprehensive analysis that includes liquidity, solvency, and profitability in assessing the financial health of transportation companies. The resulting financial distress prediction model can be a tool in investment decision-making and portfolio management. Furthermore, the implication for regulators and policymakers is the need to create a regulatory environment that supports the financial stability of the transportation sector. This could include incentives for investments in technology that improve efficiency, policies that facilitate access to more flexible financing, as well as regulations that encourage better risk management practices in the industry. In the context of the COVID-19 pandemic and other global challenges, the findings of this study emphasize the importance of financial resilience in the face of external shocks. Transportation companies need to adopt more proactive and adaptive risk management strategies, including revenue diversification, operational flexibility, and the use of digital technologies to improve efficiency and responsiveness to market changes. This research provides valuable insights into the dynamics of financial distress in Indonesia's transportation sector, emphasizing the importance of balancing liquidity, capital structure, and profitability in maintaining the financial health of companies (Nuranti et al., 2022). These findings are not only relevant for practitioners and academics in the financial sector, but can also be a valuable input for policymakers in designing strategies to strengthen the resilience of the national

transportation sector.

## KESIMPULAN

This study provides strong empirical evidence regarding the influence of liquidity, solvency, and profitability on financial distress in transportation sector companies on the Indonesia Stock Exchange (IDX) during the 2019-2023 period. The results of the analysis show that these three factors have a significant influence on the probability of financial distress, with important implications for financial risk management in this sector. Liquidity, as measured by the current ratio, has been shown to have a significant negative influence on financial distress. These findings underscore the importance of maintaining a company's ability to meet its short- term obligations, especially in the face of frequent cash flow fluctuations in the transportation industry. Companies with good liquidity have higher resilience to external shocks and are better able to manage day-to-day operational risks. Solvency, which is proxied by the debt to equity ratio, shows a significant positive influence on the likelihood of financial distress. This underscores the risks associated with high levels of leverage in the capital-intensive transportation industry. Management needs to be careful in balancing the benefits of debt use with the potential risk of financial distress that comes with it, especially given the sector's sensitivity to changing macroeconomic conditions.

Profitability, as measured by return on assets, has a significant negative influence on financial distress. These findings emphasize the importance of operational efficiency and profitability in maintaining the financial health of companies. In industries with thin margins such as transportation, the ability to optimize the use of assets and generate consistent returns is key in avoiding financial difficulties. Simultaneous analyses show that the combination of these three factors has significant predictive power on financial distress, confirming the need for a holistic approach in the financial management of transport companies. Company size was also found to have a significant negative influence on financial distress risk, indicating the benefits of economies of scale and diversification in the industry. This conclusion has important implications for various stakeholders. For company management, these findings emphasize the importance of a balanced financial strategy, a focus on effective liquidity management, an optimal capital structure, and continuous efforts to improve profitability. For investors and financial analysts, this study provides a more comprehensive analytical framework for assessing the risk of financial distress in transportation companies.

For regulators and policymakers, the results of this study can be an input in designing policies that support the financial stability of the transportation sector, including incentives for improved operational efficiency and access to more flexible financing sources. In the context of post-pandemic economic recovery and facing global challenges such as climate change, these findings emphasize the importance of building financial resilience in sectors critical to national mobility and logistics. The research also paves the way for further studies, including a more in-depth analysis of the interaction between financial factors, the influence of sector- specific macroeconomic variables, and the development of a more accurate financial distress prediction model for the transportation industry. Thus, this research not only contributes to an academic understanding of the dynamics of financial distress in Indonesia's transportation sector, but also provides valuable practical insights for efforts to strengthen the financial resilience and sustainability of the industry in the future.

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