



Research Article

Financial Factor Analysis of the Performance of Transportation and Logistics Companies on the IDX (2019-2023)

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Abstract: This study aims to investigate the effects of liquidity, financial leverage, capital structure, and operating cash flow on financial performance, with financial distress serving as a mediating variable. The population comprises transportation and logistics companies listed on the Indonesia Stock Exchange (IDX) from 2019 to 2023, totaling 37 companies. The sample includes 20 companies, with quarterly financial reports yielding 400 observations. Secondary data were employed, and purposive sampling was utilized for sample selection. The analysis was conducted using panel data analysis at a 5% significance level, facilitated by STATA Version 17 software. Mediation was tested utilizing the Sobel test with a critical value of 1.96. The results reveal that liquidity significantly impacts both financial distress and financial performance; financial leverage significantly affects both financial distress and financial performance; capital structure significantly influences financial distress but does not significantly affect financial performance; operating cash flow does not significantly impact financial distress but significantly affects financial performance. Collectively, liquidity, financial leverage, capital structure, and operating cash flow significantly influence financial distress. Furthermore, liquidity, financial leverage, capital structure, operating cash flow, and financial distress together have a significant effect on financial performance. Mediation analysis indicates that financial distress significantly mediates the relationships between liquidity, financial leverage, capital structure, and financial performance, whereas financial distress does not significantly mediate the effect of operating cash flow on financial performance. It is recommended that transportation and logistics companies listed on the IDX actively enhance liquidity, optimally manage leverage and capital structure, and strengthen operational cash flow management to minimize financial distress risk and sustain financial performance.

Keywords: capital structure, financial distress, financial leverage, financial performance, liquidity.

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1. Introduction

The Covid-19 pandemic that has affected the world over the past several years has had a significant impact on various industrial sectors, including the transportation and logistics services sectors (Vilko & Hallikas, 2024). International, regional, and local travel restrictions imposed to suppress the spread of the virus have led to a drastic decline in demand within these sectors. This has directly affected the financial performance of companies in transportation and logistics, reflected in a decrease in Return on Assets (ROA) that has not reached the ideal standard of 5.98% (Jang & Ahn, 2021). This decline in performance is influenced not only by external factors such as the pandemic but also by internal company factors, including asset management and financial indicators such as liquidity, financial leverage, capital structure, and operating cash flow (Nguyen et al., 2023).

Liquidity refers to a company's ability to meet short-term obligations and provide sufficient working capital for operations (Yenni et al., 2021). The ideal current ratio is at least 2:1; however, empirical data shows that companies in this sector have not achieved this level during the 2019-2023 period (Aslamiah et al., 2023). Financial leverage, which reflects the use of debt in company financing, has a dual role: on one hand, it can increase

potential profits, but on the other, it can raise the risk of financial distress if excessively used (Kalash, 2023). An optimal capital structure, which balances equity and debt, is crucial for maintaining a company's financial stability. The ideal Debt to Equity Ratio (DER) is below 1, meaning the total debt does not exceed equity (Susilawati et al., 2022). Operating cash flow is also an important indicator that reflects a company's ability to generate cash from its operations, which has a significant influence on business sustainability (Arifaj et al., 2023).

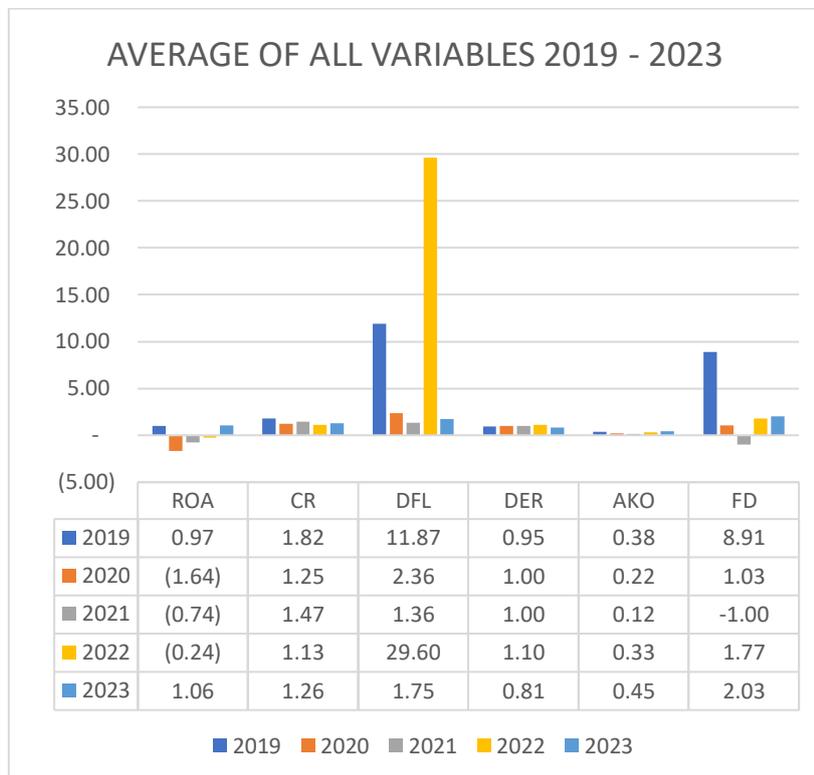


Figure 1. AVERAGE OF ALL VARIABLES 2019 - 2023

The average values of financial variables from 2019 to 2023 reveal several interesting patterns. In 2019, Return on Assets (ROA) was positive at 0.97 but experienced a significant decline in 2020 and 2021 with negative values of -1.64 and -0.74, respectively, before returning to a positive figure of 1.06 in 2023 (Prajapati, 2024). The Current Ratio (CR) remained relatively stable, peaking at 1.82 in 2019 and reaching its lowest value of 1.13 in 2022. The Degree of Financial Leverage (DFL) showed considerable fluctuations, particularly in 2022 when it surged sharply to 29.60, far exceeding values in other years. The Debt to Equity Ratio (DER) tended to remain stable around 1.00, except for a slight decline to 0.81 in 2023. Operating Cash Flow (OCF) maintained relatively small and consistent values, with the highest recorded at 0.45 in 2023. Financial Distress (FD) experienced a drastic decline from 8.91 in 2019 to a negative -1.00 in 2021 but then rose again to 2.03 in 2023. Overall, these data illustrate a period of financial instability mainly during 2020-2022, with an indication of improvement in 2023.

However, previous research results on the effects of liquidity, financial leverage, capital structure, and operating cash flow on financial performance have been inconsistent (Nam & Tuyen, 2024). Some studies report significant positive influences, while others find no significant effect. This situation necessitates further investigation considering the mediating variable of financial distress (Nugroho et al., 2021). Financial distress is a condition in which a company faces severe financial difficulties that can threaten business continuity and reduce financial performance (Musa, 2024). Financial distress measurement can be performed using Altman's Z-Score, which classifies companies into healthy, grey, or distressed zones (Mattio, 2024).

This study aims to investigate the influence of liquidity, financial leverage, capital structure, and operating cash flow on financial performance, mediated by financial distress (Risman & Sulaeman, 2021), in transportation and logistics companies during the 2019-2023 period. This approach is expected to provide a more comprehensive understanding of the factors affecting company financial performance amid complex external and internal challenges (Smoliarov, 2024). Furthermore, this research aims to fill existing gaps and contribute to company management and stakeholders in strategic decision-making to enhance company performance and sustainability (Hristov & Appolloni, 2022).

2. Literature Review

Return on Assets (ROA) is a profitability ratio used to measure a company's ability to generate profit from its total assets. ROA indicates management's efficiency in utilizing all company assets to achieve profit (Supriyadi & Terbuka, 2021). A higher ROA value reflects better company performance in asset utilization. A decline in ROA is often associated with an early indication of financial distress, as it signals reduced operational effectiveness (Musa, 2024).

Current Ratio is a liquidity ratio used to assess a company's capability to meet its short-term obligations using current assets. States that this ratio is an important indicator for measuring a company's liquidity safety level (Lalithchandra & Rajendhiran, 2021). A low Current Ratio may signify liquidity problems and increase the risk of financial distress, especially if the company cannot fulfill its short-term liabilities (Gunawan, 2023).

Degree of Financial Leverage (DFL) measures the sensitivity of net income changes to operating income fluctuations due to the use of debt in the firm's capital structure (Odhiambo et al., 2025). A high DFL indicates the company carries a substantial fixed cost burden, making small changes in revenue significantly impact net income (Gulomov, 2025). In the context of financial distress, a high DFL raises the company's financial risk, particularly when revenue declines.

Debt to Equity Ratio (DER) compares total debt to shareholders' equity. A high DER suggests the company relies more on borrowed funds than equity, increasing financial risk (Nukala & Prasada Rao, 2021). A continual increase in DER can deteriorate the company's financial condition and serves as a primary indicator of financial distress due to rising interest burdens and debt obligations (Musa, 2024).

Operating Cash Flow (OCF) is the cash generated from the company's core operating activities. Positive operating cash flow indicates the company's ability to generate cash from its main activities to support operations and business growth (Sugiana & Hidayat, 2023). Conversely, consistently negative operating cash flow is a strong signal of financial distress, implying the company is unable to meet cash needs from its operations (Setiyan, 2021).

Financial distress (FD) is defined as a condition in which a company experiences severe financial difficulties and is unable to meet its financial obligations (Isayas, 2021). Financial distress can be predicted using a combination of financial ratios such as ROA, Current Ratio, DER, DFL, and operating cash flow. One widely used financial distress prediction model is Altman's Z-Score, which integrates these ratios to identify potential bankruptcy risks (Wu et al., 2022).

Empirical research shows that decreases in ROA, current ratio, and operating cash flow, along with increases in DER and DFL, are common patterns preceding financial distress in companies (Sugiana & Hidayat, 2023).

3. Methodology

This study employed a quantitative research method emphasizing the collection and statistical analysis of data to test hypotheses. The research data were secondary data obtained from the annual financial reports of transportation and logistics service companies listed on the Indonesia Stock Exchange (IDX) from 2019 to 2023 (Hani & Sugiyono, 2025).

The population consisted of all companies in this sector listed on the IDX during the period, while the sample included 20 companies that met the criteria of having complete financial reports throughout the observation period, selected using purposive sampling (Mappadang et al., 2021).

The variables in this study comprised four independent variables: liquidity, financial leverage, capital structure, and operating cash flow; one mediating variable, financial distress; and one dependent variable, financial performance measured by the Return on Assets (ROA) ratio (Risman & Sulaeman, 2021). Data analysis was conducted using parametric inferential statistical methods with STATA version 17 software to examine the relationships between variables in accordance with the study objectives.

Quantitative research aims to study populations or samples by collecting and statistically analyzing data to test hypotheses (Ghanad, 2023). This approach enables objective and systematic measurement of relationships among variables.

The secondary data analyzed were sourced from annual financial reports obtained from the IDX and official websites of transportation and logistics companies over the 2019-2023 period (Hani & Sugiyono, 2025). The sample selection applied purposive sampling based on the main criterion of complete financial reporting for the entire period. This resulted in 20 companies selected out of a total 37 companies in the sector (Akinadewo et al., 2023). Quarterly financial reports were observed each year, yielding a total of 400 data samples for analysis.

The four independent variables were liquidity, measuring the company's ability to meet short-term obligations; financial leverage (Runis et al., 2021), indicating the proportion of financing sourced from debt; capital structure, representing the composition of debt and equity; and operating cash flow, reflecting the operational liquidity level of the company. The mediating variable, financial distress, was measured using Altman's Z-Score model, while the dependent variable, financial performance (Elewa, 2022), was measured using Return on Assets (ROA) as the primary indicator of the company's effectiveness in generating profit from its assets.

Parametric inferential statistical methods were chosen for data analysis due to the ratio-scale nature of the variables studied (Cerin, 2024). Data processing and analysis were performed using STATA version 17 software, enabling comprehensive and valid hypothesis testing on the relationships among variables as well as the mediating role of financial distress (Farooq et al., 2023).

4. Results and Discussion

Results

This study utilized data from the transportation and logistics industry companies listed on the Indonesia Stock Exchange (IDX) during the 2019-2023 period, involving variables: Liquidity (Current Ratio - CR), Degree of Financial Leverage (DFL), Capital Structure (Debt to Equity Ratio - DER), Operating Cash Flow (OCF), Financial Distress (FD), and Financial Performance (Return on Assets - ROA). The descriptive statistics presented in Table 1 indicate that the variables such as Liquidity (CR), Degree of Financial Leverage (DFL), Capital Structure (DER), Operating Cash Flow (OCF), Financial Distress (FD), and Financial Performance (ROA) exhibit varied ranges and means. Several indicators fail to meet the ideal standards; for example, the industry's average current ratio remains below 2, some companies experienced financial distress, and there were instances of poor financial performance.

Table 1 Descriptive Statistics

Variable	Minimum	Maximum	Mean	Std. Deviation
CR	0.0251	13.0345	1.6187	2.0917
DFL	-43.0953	190.8223	2.5285	11.4534
DER	-160.6386	474.4182	4.7574	41.7333
OCF (AKO)	-0.9153	5.5340	0.2887	0.6837
FD	-57.8225	112.4771	-5.0046	16.8816
ROA	-74.1633	207.1767	-0.2139	14.5605

Source: Output from STATA Version 17 (2025)

The average values of the variables are as follows: Current Ratio (CR) = 1.6187 (below the ideal standard of 2), Degree of Financial Leverage (DFL) = 2.5285, Debt to Equity Ratio (DER) = 4.7574 (ideal DER < 1, but many companies exceed this threshold), Operating Cash Flow (OCF) = 0.2887 (ideal OCF > 1), Financial Distress (FD) score = -5.0046 (ideal FD > 2.6), and Return on Assets (ROA) = -0.2139% (ideal ROA > 5.98%).

Most companies do not meet the ideal financial standards in terms of liquidity, leverage, cash flow, and profitability. Based on the descriptive statistical analysis, it is evident that the average liquidity of these companies remains below the ideal standard, registering approximately 1.6 instead of 2. Similarly, the average Degree of Financial Leverage (DFL) and Debt to Equity Ratio (DER) show significant variation, with DER far exceeding the ideal limit, indicating suboptimal debt management. Moreover, Operating Cash Flow (OCF) averages remain below the ideal threshold. Financial Distress (FD) scores and ROA averages reveal that many companies continue to face substantial challenges in maintaining financial health and profitability.

This study also conducted a series of classical assumption tests to ensure the validity of the regression model employed. Normality, multicollinearity, autocorrelation, and heteroscedasticity tests indicated that the data met the fundamental assumptions of regression analysis, affirming the reliability of the chosen model. After conducting model selection tests including Chow, Hausman, and Lagrange Multiplier tests, the most suitable model for these data was determined to be the Common Effect Model (CEM).

Table 2. Statistical Values of Determination Coefficient, F-Test, and t-Test (Selected Model: Common Effect Model - CEM) Structure I: Effects of Current Ratio (CR), Degree of Financial Leverage (DFL), Debt to Equity Ratio (DER), and Operating Cash Flow (OCF) on Financial Distress (FD)

Source	SS	df	MS	Number of obs	=	400
Model	130.708869	4	32.6772173	F(4, 395)	=	25.21
Residual	511.930599	395	1.29602683	Prob > F	=	0.0000
				R-squared	=	0.2034
				Adj R-squared	=	0.1953
Total	642.639469	399	1.61062523	Root MSE	=	1.1384

InnFD	Coef.	Std. Err.	t	P> t	[95% Conf. Interval]	
CR	-.167564	.0280735	-5.97	0.000	-.2227562	-.1123718
DFL	-.0278884	.0049885	-5.59	0.000	-.0376957	-.0180812
DER	.0074878	.001369	5.47	0.000	.0047964	.0101791
AKO	-.0279192	.085691	-0.33	0.745	-.1963866	.1405483
_cons	.3452977	.0757371	4.56	0.000	.1963994	.494196

Source: Output from STATA Version 17 (2025)

Hypothesis Testing

This study found that, partially, liquidity, degree of financial leverage, and capital structure have a significant effect on financial distress, whereas operating cash flow does not have a significant effect. Furthermore, financial distress, liquidity, degree of financial leverage, and operating cash flow have significant effects on financial performance (Return on Assets - ROA), while capital structure does not show a significant influence on financial performance. Simultaneously, all independent variables have been proven to significantly affect both financial distress and financial performance. However, the coefficient of determination indicates that the constructed model only explains a small portion of the variance in financial distress and financial performance, suggesting that many other factors outside the model influence these two variables.

Table 3: Statistical Values of Determination Coefficient, F-Test, and t-Test (Selected Model: Common Effect Model - CEM) Structure II: Effects of Current Ratio (CR), Degree of Financial Leverage (DFL), Debt to Equity Ratio (DER), Operating Cash Flow (OCF), and Financial Distress (FD) on Return on Assets (ROA)

Source	SS	df	MS	Number of obs	=	400
Model	75.383795	5	15.076759	F(5, 394)	=	14.19
Residual	418.683237	394	1.06264781	Prob > F	=	0.0000
				R-squared	=	0.1526
				Adj R-squared	=	0.1418
Total	494.067032	399	1.23826324	Root MSE	=	1.0308

InnROA	Coef.	Std. Err.	t	P> t	[95% Conf. Interval]
InnFD	-.2195285	.0455606	-4.82	0.000	-.3091008 -.1299563
CR	.1055982	.0265422	3.98	0.000	.0534163 .1577802
DFL	.0111204	.0046924	2.37	0.018	.0018952 .0203456
DER	.0015717	.0012857	1.22	0.222	-.0009559 .0040994
AKO	-.2480256	.0776035	-3.20	0.002	-.4005943 -.0954569
_cons	-.1735246	.0703612	-2.47	0.014	-.3118548 -.0351943

Source: Output from STATA Version 17 (2025)

Panel Data Regression Model Equations

- Structure 1 : CR, DFL, DER, OCF on Financial Distress (FD)

$$FD = 0.3452 - 0.1675CR - 0.0278DFL + 0.00748DER - 0.0279OCF + e$$
- Structure 2 : CR, DFL, DER, OCF, FD on Return on Assets (ROA)

$$ROA = -0.1735 - 0.2195FD + 0.1055CR + 0.01112DFL + 0.0015DER - 0.248OCF + e$$

From these regression equations, it can be concluded that an increase in liquidity (CR) and degree of financial leverage (DFL) reduces the level of financial distress (FD), whereas an increase in capital structure (DER) tends to increase financial distress. In contrast, increases in financial distress (FD) and operating cash flow (OCF) tend to decrease financial performance (ROA), while increases in liquidity, degree of financial leverage, and capital structure have the potential to enhance financial performance, although the effect of capital structure on ROA is not statistically significant.

Additionally, mediation testing using the Sobel test indicates that financial distress significantly mediates the relationship between liquidity, degree of financial leverage, and capital structure on financial performance. However, financial distress does not mediate the relationship between operating cash flow and financial performance.

Thus, it can be concluded that improving liquidity, leverage, and capital structure will more optimally impact company financial performance if the company is also capable of managing financial distress risk effectively. However, direct management of operating cash flow alone does not significantly influence financial performance through financial distress in this sector.

Discussion

Based on the analysis results, the influence of liquidity, financial leverage, capital structure, and operating cash flow on financial distress and financial performance—both partially and simultaneously—can be explained as follows (Kalash, 2023).

First, liquidity has a significant negative effect on financial distress, indicating that higher company liquidity reduces the risk of financial distress (Runis et al., 2021). This is supported by agency theory, signaling theory, and pecking order theory, which explain that high liquidity reflects good managerial management and the company's ability to meet obligations on time. This finding aligns with previous studies (Rodriguez, 2024).

Next, financial leverage also has a significant negative effect on financial distress (Kalash, 2023). Wisely used leverage can discipline management and reduce distress potential, consistent with agency, signaling, trade-off, and pecking order theories

(Odhiambo et al., 2025). Conversely, capital structure has a significant positive effect on financial distress, indicating that an inefficient or overly debt-heavy capital structure increases distress risk due to ballooning financial costs and default risk, in line with firm theory and trade-off theory.

Operating cash flow negatively affects financial distress but not significantly, suggesting that although operating cash flow reflects operational efficiency (Sugiana & Hidayat, 2023), in practice companies have not yet been able to manage it as a primary tool to avoid distress. Increased cash flow may stem from tactical maneuvers such as asset sales or short-term borrowing, which actually increase financial pressure (Barnabas & Oloyede, 2024).

Financial distress itself has a significant negative effect on financial performance because distress sends negative signals that lower investor and creditor confidence, adversely affecting company performance (Musa, 2024). Liquidity positively and significantly affects financial performance because high liquidity indicates operational efficiency and good financial management, supported by firm, agency, signaling, and pecking order theories (Kerongo, 2022). Financial leverage also positively and significantly affects financial performance, as effective leverage can increase capital efficiency and promote managerial discipline.

However, capital structure has a positive but not significant effect on financial performance, possibly because the positive effect on performance stems more from management quality and debt-funded investment projects rather than the capital structure itself (Raalte, 2021). Operating cash flow has a significant negative effect on financial performance, contradicting signaling and pecking order theories, possibly because internal funds are not used productively (Rodriguez, 2024).

Simultaneously, liquidity, financial leverage, capital structure, and operating cash flow significantly affect financial distress, explaining only about 20.34% of distress variation, with the remainder influenced by other factors (Njoroge, 2024). Likewise, these variables together with financial distress simultaneously significantly affect financial performance, contributing about 15.26%.

Regarding mediation, financial distress significantly mediates the influence of liquidity, financial leverage, and capital structure on financial performance (Kalash, 2023). Conversely, financial distress does not mediate the effect of operating cash flow on financial performance, as operating cash flow has a direct impact on performance without passing through financial distress (Sugiana & Hidayat, 2023). This is explained by various theories such as agency, trade-off, signaling, and pecking order, as well as empirical company conditions (Rodriguez, 2024), which may have good cash flows but still encounter non-operational financial problems such as interest burdens or litigation.

Overall, these results comprehensively outline the relationship and mechanism of financial variables' influence on financial distress and company performance, backed by relevant theories and previous research findings (Yousaf et al., 2024).

5. Conclusion

Based on the research findings and previous discussions, it can be concluded that liquidity has a significant negative effect on financial distress in transportation and logistics service companies listed on the Indonesia Stock Exchange (IDX) during the period 2019 to 2023. In other words, the higher the company's liquidity level, the lower the risk of financial distress faced, as the company is able to meet its short-term obligations effectively. Additionally, financial leverage also shows a significant negative effect on financial distress, indicating that optimal use of leverage can reduce the risk of financial pressure, provided debt management is carried out carefully and efficiently. Meanwhile, capital structure significantly and positively affects financial distress, meaning that the greater the proportion of debt in the capital structure, the higher the company's risk of experiencing financial pressure. On the other hand, operating cash flow has a negative effect although not significant on financial distress, indicating that the operational cash

flow efficiency has not fully succeeded in significantly reducing distress risk within these companies. Furthermore, financial distress has a significant negative effect on financial performance, meaning that the higher the level of distress, the lower the company's financial performance. Conversely, liquidity and financial leverage have a significant positive effect on financial performance, indicating that optimal management of these two aspects can enhance corporate profitability. Capital structure, although positively related, does not show a significant effect on financial performance, indicating that increasing debt proportion does not always lead to improved financial performance. Operating cash flow has a significant negative effect on financial performance, indicating that increases in operating cash flow do not necessarily translate into improved profitability, possibly due to unproductive use of internal funds. Simultaneously, all independent variables, namely liquidity, financial leverage, capital structure, and operating cash flow, significantly affect both financial distress and financial performance. However, the impact of these variables on financial distress and performance is relatively small, suggesting that other factors outside the model also influence these aspects. This study also finds that financial distress significantly mediates the effect of liquidity, financial leverage, and capital structure on financial performance, but does not mediate the effect of operating cash flow on financial performance. Therefore, managing financial distress risk is a crucial key to strengthening the relationship between liquidity, leverage, and capital structure on financial performance, whereas operating cash flow influences financial performance more directly without passing through financial distress.

Recommendations

Recommendations based on this study include that future researchers should consider adding other relevant independent variables, expanding the research objects, and extending the study period for more accurate and comprehensive results. For companies, it is advisable to improve liquidity, optimally manage leverage and capital structure, and strengthen operating cash flow management systems to minimize the risk of financial distress and maintain stable financial performance. For investors, it is recommended to carefully observe financial indicators such as liquidity, operating cash flow, and the level of financial distress before making investment decisions in the transportation and logistics service sectors.

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