

## THE INFLUENCE OF CASH FLOW AND EARNINGS QUALITY ON FINANCIAL DISTRESS IN IDX TRANSPORTATION-LOGISTICS COMPANIES



Larasati Gadis Budi Lestari<sup>1</sup>  
Universitas Telkom, Bandung, Indonesia  
[larasatigadis@student.telkomuniversity.ac.id](mailto:larasatigadis@student.telkomuniversity.ac.id)

Dudi Pratomo<sup>2\*</sup>  
Universitas Telkom, Bandung, Indonesia  
[dudipratomo@telkomuniversity.ac.id](mailto:dudipratomo@telkomuniversity.ac.id)

### Abstract

Financial distress is a condition of financial difficulty that may disrupt a company's operational continuity and business sustainability. This condition is an important concern, particularly for companies in the transportation and logistics subsector, as it may affect their ability to meet financial obligations, including debt payments and routine operational expenses. Cash flow and earnings quality are key indicators that can be used to assess a company's financial health and the risk of financial distress. This study aims to analyze and examine the effect of cash flow and earnings quality on financial distress in transportation and logistics subsector companies listed on the Indonesia Stock Exchange during the 2020–2024 period. This research employs a quantitative method with a causal approach to examine the cause-and-effect relationship between the independent and dependent variables. The research sample consists of 27 companies with a total of 135 observations selected using a purposive sampling technique. Data analysis was conducted using panel data regression with the assistance of EViews 12 software, which enables both simultaneous and partial evaluation of the variables. The results indicate that cash flow and earnings quality simultaneously have a significant effect on financial distress. However, partially, each variable does not show a significant effect on financial distress. These findings contribute to the development of literature related to financial distress and may serve as a consideration for company management and investors in evaluating corporate financial conditions. Future research is recommended to include other variables that may potentially affect financial distress in order to provide a more comprehensive analysis.

**Keywords:** Cash Flow, Earnings Quality, Financial Distress, Transportation and Logistics

## INTRODUCTION

The increasingly dynamic business environment requires companies to maintain business continuity to avoid financial distress. Financial distress is understood as a phase in which a company's ability to meet its financial obligations declines and may potentially lead to bankruptcy if not addressed promptly (Hariyanto, 2024). This condition affects both internal and external stakeholders, such as creditors, investors, and the government, as it can reduce firm value, increase the risk of default, and disrupt operational activities (Bisnis et al., 2022; Damayanti et al., n.d.). Empirical studies indicate that financial distress is associated with weakened market performance and declining firm value, making early identification crucial for informed financial decision-making.

Theoretically, financial distress can be analyzed through Signaling Theory, which explains the information asymmetry between management and external parties (Herfi Sutanto et al., 2024). Management possesses more comprehensive information regarding the company's condition and prospects, making financial statements a signal for investors and creditors. Financial ratios, cash flow, and earnings quality serve as key instruments to convey the company's risk and stability. Positive signals are reflected in strong operating cash flow and high-quality earnings, whereas negative signals arise from weak cash flow, high leverage, or declining earnings quality. The discrepancies between theoretical predictions and empirical findings, which are not always consistent, highlight the need for further research on the role of financial signals in explaining financial distress (Aljughaiman et al., 2023).

The transportation and logistics subsector in Indonesia experienced significant dynamics during 2020–2024, where the COVID-19 pandemic and subsequent recovery phases led to a decline in passenger volume, route restrictions, changes in mobility patterns, as well as a surge in e-commerce demand and supply chain disruptions (Nurhidayah et al., 2024). These impacts are reflected in weakened operating cash flow, increased reliance on external financing, and the need for financial obligation restructuring in several companies listed on the Indonesia Stock Exchange. Although this sector continues to make an important contribution to the national economy, structural challenges such as high logistics costs and limited infrastructure increase the risk of financial distress (Ministry of Finance of the Republic of Indonesia, 2023), while the mismatch between growth prospects and financial pressures highlights a relevant research gap (Anjeli Putri & Isnawaty Pakaya, 2025). Research by Dewi & Rikumahu (2024) indicates that this subsector is particularly vulnerable to financial distress, especially when facing economic fluctuations before, during, and after the pandemic, thereby reinforcing the urgency of examining financial factors influencing corporate financial difficulties in the transportation and logistics sector.

In this study, financial distress is positioned as the dependent variable representing the level of financial difficulty faced by companies in the transportation and logistics subsector. Previous research in Indonesia indicates that companies within this sector exhibit considerable variation in financial distress conditions, with some operating in a safe zone while others approach a high-risk zone according to bankruptcy prediction models (Sasi et al., 2023). Studies on service, transportation, and manufacturing companies have also found that financial ratios and distress conditions do not always align. Therefore, mapping financial distress in the transportation and logistics subsector on the Indonesia Stock Exchange is essential to provide an updated overview of corporate financial vulnerability.

One of the key variables within the Signaling Theory framework is cash flow, particularly operating cash flow. Operating cash flow reflects a company's ability to generate cash from core activities to fund daily operations, meet short-term obligations, and fulfill part of its long-term liabilities (Huang et al., 2022). From a signaling perspective, positive and stable operating cash flow indicates strong liquidity capacity and low dependence on external financing, thereby reducing the likelihood of financial distress. Conversely, negative or highly volatile operating cash flow may signal potential liquidity crises and increase the probability of distress. Empirical studies in Indonesia have shown inconsistent findings: some studies report that operating cash flow affects financial distress, whereas others find no significant impact, including in the manufacturing, service, and transportation-logistics sectors. This inconsistency highlights the need to re-examine the role of operating cash flow as a signal of financial distress in the transportation and logistics subsector.

Another important variable within the Signaling Theory framework is earnings quality, which reflects the extent to which reported earnings represent the company's true and sustainable economic performance. The accrual-based approach is often used to measure earnings quality, as a high level of accruals indicates a large difference between earnings and operating cash flow, making earnings more sensitive to accounting policies and earnings management practices (Aljughaiman et al., 2023). International and emerging market studies indicate that companies in financial distress often engage in earnings management to influence market perception, making earnings quality a critical signal of distress risk. However, empirical findings are mixed; some studies report a significant effect of earnings quality on financial distress, while others show no significant effect or a differing direction, depending on the sector and institutional context (Aljughaiman et al., 2023).

## REVIEW OF LITERATURE

### *Signaling Theory*

Signaling Theory (Spence, 1973) explains that companies transmit financial information as signals for investors to assess the firm's condition. Annual reports and non-financial disclosures help reduce uncertainty and reflect financial health. Positive signals increase investor interest, whereas negative signals indicate distress, as reflected in declining cash flows or poor earnings quality. The quality of reporting plays a critical role as an indicator of corporate risk and stability (Dwi Rara Al Munawaroh et al., 2025; Putra & Mardiaty, 2024).

### *Financial Distress*

According to Giarto and Fachrurrozie (2020), financial distress is a pre-bankruptcy condition that occurs when a company is unable to meet its financial obligations or experiences a significant decline in performance. This condition may be reflected in the company's inability to cover its expenses, declining revenues, consecutive losses, low operating cash flow, and reduced operational efficiency. Financial distress also indicates that a company has begun to experience difficulties in fulfilling both its short-term and long-term obligations. Therefore, early detection is essential to enable management to implement appropriate corrective measures and maintain business continuity.

From the perspective of Signaling Theory, deteriorating financial conditions may serve as negative signals to investors, creditors, and other users of financial statements. Such signals can influence stakeholders' assessments of the company's financial health and future

prospects. Financial distress may arise from general factors, such as technological developments and economic changes, external pressures related to market conditions, or internal factors resulting from management policies and decisions. These factors may ultimately affect the company's financial stability, investor and creditor perceptions, and broader economic stability (Putra & Mardiaty, 2024; Kristanti et al., 2025). Understanding the causes and indicators of financial distress is therefore important for strengthening risk management and improving the company's financial resilience.

#### *Cash Flow*

Cash flow is a key indicator of a company's ability to generate cash from operational, investing, and financing activities, reflecting effective financial resource management and the capacity to meet short- and long-term obligations (Sugiana & Hidayat, 2023). It provides a more accurate picture than accounting profit, serving as a primary tool to evaluate liquidity, financial flexibility, and potential financial distress. Cash flow statements cover operating, investing, and financing activities, with operating cash flow considered the most critical for sustaining operations without external financing (PSAK No. 2; Putri et al., 2025).

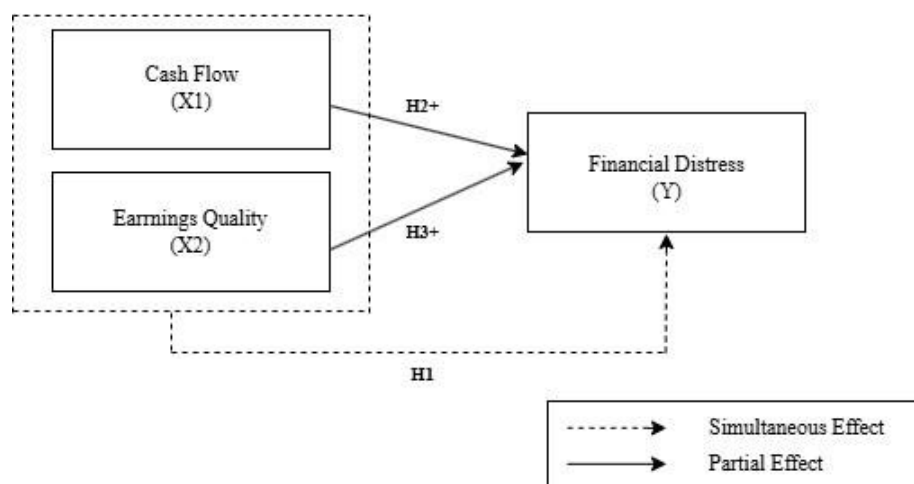
Research by Aninda Fitri & Juliana Dillak (2020) indicates that operating cash flow, while theoretically a signal of financial health, does not have a significant partial effect on financial distress measured by the Altman Z-Score. This suggests that cash flow alone is insufficient to assess financial distress and should be analyzed alongside other financial indicators for a more accurate evaluation.

#### *Earnings Quality*

Earnings quality is a key indicator of how well reported earnings reflect a company's actual economic performance. High-quality earnings are consistent, relevant, predictable, and reliable, aiding stakeholders in assessing financial condition, while low-quality earnings can distort decisions (Zedan et al., 2023). It is typically measured by the relation between net income and operating cash flow, with higher cash-supported earnings indicating better quality, and high non-cash accruals indicating lower quality (Santika et al., 2023; Maharani & Suryanto, 2024). Earnings quality reflects earnings sustainability; consistent earnings supported by strong cash flow are high-quality, whereas large fluctuations may signal earnings management (Handayani & Fathurrahman, 2023). This is especially relevant for the transportation and logistics sector, which has seasonal revenues and high operational costs.

#### *Conceptual Framework*

This study positions financial distress as the dependent variable, with operating cash flow and earnings quality as independent variables used to evaluate the company's financial condition, forming the basis of the conceptual framework.



**Figure 1**  
**Conceptual Framework**

Source: Processed by the author (2026)

The hypotheses in this quantitative study are derived from Signalling Theory, prior research, and the preceding synthesis. Operating cash flow indicates liquidity and a company's ability to prevent financial distress, while earnings quality reflects the reliability of financial information and perceived corporate risk. Accordingly, the hypotheses are:

H1: Operating Cash Flow affects Financial Distress.

H2: Earnings Quality affects Financial Distress.

## RESEARCH METHOD

This study employs a quantitative approach with a causal-explanatory design to examine the effect of operating cash flow and earnings quality on financial distress in transportation and logistics companies listed on the Indonesia Stock Exchange (IDX) during the 2020–2024 period. The research utilizes archival data from annual financial statements, employing secondary data collection methods including literature review and documentation. A purposive sampling technique was used to select 27 companies with complete financial records, resulting in 135 observations. Data analysis was conducted using panel data regression with EViews 12, including descriptive statistics, multicollinearity and heteroskedasticity tests, and both F-test and t-test to examine the simultaneous and partial effects of independent variables on financial distress. The panel data model was selected through Chow and Hausman tests to ensure the most appropriate estimation method. The dependent variable, financial distress, was measured using Z-Score indicators, while operating cash flow and earnings quality served as independent variables, providing a robust framework to assess the relationship between liquidity, earnings reliability, and financial health.

## RESULTS AND DISCUSSION

### Descriptive Statistics

**Table 1**  
**Descriptive Statistics**

|              | Y        | X1       | X2       |
|--------------|----------|----------|----------|
| Mean         | 4,05E+08 | 5,25E+08 | 2,13E+09 |
| Median       | 1,22E+08 | 86595900 | 60720000 |
| Maximum      | 6,24E+09 | 8,45E+09 | 4,36E+10 |
| Minimum      | 1439320  | 2046660  | 3027000  |
| Std Dev      | 1,14E+09 | 1,53E+09 | 6,70E+09 |
| Skewness     | 4,644675 | 4,350572 | 4,263734 |
| Kurtosis     | 23,40784 | 20,72945 | 22,40535 |
| Jarque-Bera  | 2828,092 | 2193,993 | 2527,230 |
| Probability  | 0,000000 | 0,000000 | 0,000000 |
| Sum          | 5,47E+10 | 7,09E+10 | 2,88E+11 |
| Sum Sq Dev   | 1,75E+20 | 3,13E+20 | 6,01E+21 |
| Observations | 135      | 135      | 135      |

Source: Eviews 12 Data Processed by the author (2026)

#### *Financial Distress*

Based on descriptive statistics of panel data from 27 companies during 2020–2024 (135 observations), Financial Distress (Y) shows a mean of  $4.05 \times 10^8$  and a median of  $1.22 \times 10^8$ , indicating an uneven, right-skewed distribution. Values range from 1,439,320 to  $6.24 \times 10^9$ , reflecting high heterogeneity across companies and periods. A standard deviation of  $1.14 \times 10^9$ , skewness of 4.645, and kurtosis of 23.41 indicate substantial variation and outliers. The Jarque–Bera test ( $p = 0.000$ ) confirms non-normality, which is common in panel data due to differing company characteristics.

#### *Cash Flow*

The Cash Flow ( $X_1$ ) variable has a mean of  $5.25 \times 10^8$  and a median of 86,595,900, indicating a right-skewed, non-symmetrical distribution. Values range from 2,046,660 to  $8.45 \times 10^9$ , reflecting substantial variation across companies and periods. A standard deviation of  $1.53 \times 10^9$ , skewness of 4.351, and kurtosis of 20.73 indicate high fluctuations and many outliers. The Jarque–Bera test ( $p = 0.000$ ) confirms non-normality, likely due to heterogeneity in company characteristics and sizes.

#### *Earnings Quality*

The Earnings Quality ( $X_2$ ) variable has a mean of  $2.13 \times 10^9$  and a median of 60,720,000, indicating a right-skewed, uneven distribution. Values range from 3,027,000 to  $4.36 \times 10^{10}$ , with a standard deviation of  $6.70 \times 10^9$ , skewness of 4.264, and kurtosis of 22.41, reflecting high variability and many outliers. The Jarque–Bera test ( $p = 0.000$ ) confirms non-normality, which is common in financial panel data due to differences in scale, operations, and performance across companies over time.

## Classical Assumption Test Multicollinearity Test

**Table 2**  
**Multicollinearity Test**

|    | X2         | X1         |
|----|------------|------------|
| X2 | 1          | -0,0516903 |
| X1 | -0,0516903 | 1          |

Source: Eviews 12 Data Processed by the author (2026)

Multicollinearity was examined by analyzing the correlation between the independent variables  $X_1$  and  $X_2$ . The results show that the correlation between Cash Flow ( $X_1$ ) and Earnings Quality ( $X_2$ ) is  $-0.0517$ , well below the tolerance threshold of  $0.85$ . This very low correlation indicates a weak linear relationship and does not present multicollinearity issues. Therefore,  $X_1$  and  $X_2$  are free from multicollinearity symptoms and are suitable for simultaneous use in panel data regression analysis.

## Heteroskedasticity Test

**Table 3**  
**Heteroskedasticity Test Result**

| <b>Dependent Variable : ABS (RESID)</b>  |             |           |              |        |
|------------------------------------------|-------------|-----------|--------------|--------|
| Method: Panel Least Squares              |             |           |              |        |
| Date : 05/03/26 Time : 01:52             |             |           |              |        |
| Sample : 2020 2024                       |             |           |              |        |
| Periods Included: 5                      |             |           |              |        |
| Cross Sections Included: 27              |             |           |              |        |
| Total Panel (Balanced) Observations: 135 |             |           |              |        |
| Variable                                 | Coefficient | Std Error | T-Statistics | Prob   |
| C                                        | 59365286    | 8838856   | 6,716400     | 0,0000 |
| X2                                       | -0,001809   | 0,0011992 | -0,908065    | 0,3659 |
| X1                                       | 0,004703    | 0,009784  | 0,480680     | 0,6317 |

Source: Eviews 12 Data Processed by the author (2026)

Heteroskedasticity was tested by regressing the absolute residuals (ABS(RESID)) on the variables  $X_1$  and  $X_2$  using the Panel Least Squares method. The results show probabilities of  $0.6317$  for Cash Flow ( $X_1$ ) and  $0.3659$  for Earnings Quality ( $X_2$ ), both greater than  $0.05$ . This indicates that  $X_1$  and  $X_2$  do not significantly affect the absolute residuals, suggesting that the model does not exhibit heteroskedasticity. Therefore, the assumption of homoskedasticity is satisfied, the residual variance is considered constant, and the regression estimates are valid for drawing conclusions.

## Panel Data Regression Analysis

### Panel Data Regression Model Selection

#### Chow Test

**Table 3**  
**Chow Test Result**

|                                      |
|--------------------------------------|
| <b>Redundant Fixed Effects Tests</b> |
| Equation: Untitled                   |

| Test cross section fixed effects |            |          |        |
|----------------------------------|------------|----------|--------|
| Effects Tests                    | Statistic  | d.f.     | Prob   |
| Cross Section F                  | 87,001505  | (26,106) | 0,0000 |
| Cross Section Chi-Square         | 419,361088 | 26       | 0,0000 |

Source: Eviews 12 Data Processed by the author (2026)

The Chow test was used to determine whether the more appropriate model is the common effect or the fixed effect model. The results of the Redundant Fixed Effects Test show an F-value of 87.001505 and a Chi-square of 419.361088, both with probabilities of 0.0000, which are less than 0.05. Therefore, the null hypothesis ( $H_0$ ) stating that the common effect model is sufficient is rejected, indicating that the appropriate model is the Fixed Effect Model (FEM), which accommodates company-specific characteristics.

#### Hausman Test

**Table 4**  
**Hausman Test Result**

| Correlated Random Effects – Hausman Test |                  |            |        |
|------------------------------------------|------------------|------------|--------|
| Equation: Untitled                       |                  |            |        |
| Test Cross section random effects        |                  |            |        |
| Test Summary                             | Chi Sq Statistic | Chi Sq d.f | Prob   |
| Cross Section Random                     | 318,961062       | 2          | 0,0000 |

Source: Eviews 12 Data Processed by the author (2026)

The Hausman test was conducted to determine the appropriate model between the Fixed Effect and Random Effect models. The results of the Correlated Random Effects–Hausman Test show a Chi-square value of 318.961062 with 2 degrees of freedom and a probability of 0.0000, which is less than 0.05. Therefore, the null hypothesis ( $H_0$ ) stating that the random effect model is more efficient is rejected, indicating that the selected and used model is the Fixed Effect Model (FEM), making the Lagrange Multiplier test unnecessary.

#### Panel Data Regression (FEM)

**Table 5**  
**Panel Data Regression (FEM)**

| Dependent Variable : Y                   |             |           |              |        |
|------------------------------------------|-------------|-----------|--------------|--------|
| Method: Panel Least Squares              |             |           |              |        |
| Date : 05/03/26 Time : 02:10             |             |           |              |        |
| Sample : 2020 2024                       |             |           |              |        |
| Periods Included: 5                      |             |           |              |        |
| Cross Section Included: 27               |             |           |              |        |
| Total Panel (Balanced) observations: 135 |             |           |              |        |
| Variable                                 | Coefficient | Std Error | T-Statistics | Prob   |
| C                                        | 4,16E+08    | 16311667  | 25,49761     | 0,0000 |
| X1                                       | 0,001299    | 0,018056  | 0,071936     | 0,9428 |
| X2                                       | -0,005446   | 0,003676  | -1,481716    | 0,1414 |
| Effects Spesifications                   |             |           |              |        |

| Cross Section Fixed (Dummy Variables) |          |                    |           |
|---------------------------------------|----------|--------------------|-----------|
| Root MSE                              | 1,08E+08 | R-Squared          | 0,990910  |
| Mean dependent Var                    | 4,05+08  | Adjusted R squared | 0,988509  |
| S.D. dependent Var                    | 1,14E+09 | S.E. of Regression | 122E+08   |
| Akaike info criterion                 | 40,27018 | Sum squared resid  | 1,59E+18  |
| Schwarz criterion                     | 40,89428 | Log likelihood     | -2689,237 |
| Hannan Quinn Criter                   | 40,52380 | F-statistics       | 412,7012  |
| Durbin Watson Stat                    | 1,377192 | Prob(F-statistics) | 0,000000  |

Source: Eviews 12 Data Processed by the author (2026)

Based on panel data regression estimation using the Panel Least Squares method with a fixed effect specification, the regression equation is obtained as:

$$Y = 4,16 \times 10^8 + 0,001299X_1 - 0,005446X_2.$$

The constant  $4.16 \times 10^8$  indicates that when Cash Flow ( $X_1$ ) and Earnings Quality ( $X_2$ ) are zero, Financial Distress ( $Y$ ) is estimated to be at a baseline level of approximately 415.9 million units. The coefficient of Cash Flow ( $X_1$ ) of 0.001299 suggests that every one-unit increase in Cash Flow tends to increase Financial Distress by 0.001299 units, ceteris paribus, although the effect is very small. In contrast, the coefficient of Earnings Quality ( $X_2$ ) of  $-0.005446$  indicates that every one-unit increase in Earnings Quality reduces Financial Distress by 0.005446 units, assuming Cash Flow remains constant, which is theoretically consistent with the notion that higher earnings quality lowers the risk of financial distress.

### Hypothesis Testing

#### Coefficient of Determination ( $R^2$ )

The Adjusted R-squared value of 0.988509 indicates that approximately 98.85% of the variation in Financial Distress ( $Y$ ) can be explained by Cash Flow ( $X_1$ ) and Earnings Quality ( $X_2$ ) after adjusting for the number of variables in the model. The remaining 1.15% is explained by other factors outside the model or the error component. This very high value demonstrates that the fixed effect model has an excellent explanatory power for the variation in Financial Distress among transportation and logistics subsector companies during the study period.

#### Simultaneous Test (F-Test)

The results of the simultaneous test (F-test) show an F-statistic of 412.7012 with a probability of 0.000000, which is less than 0.05. This indicates that the null hypothesis ( $H_0$ ) is rejected and the alternative hypothesis ( $H_1$ ) is accepted, meaning that Cash Flow ( $X_1$ ) and Earnings Quality ( $X_2$ ) simultaneously have a significant effect on Financial Distress ( $Y$ ). These results also demonstrate that the panel regression model used is valid and significant in explaining the variation in Financial Distress in the research sample.

### Partial Test (t-Test)

Partially, Cash Flow ( $X_1$ ) has a t-statistic of 0.071936, which is smaller than the critical t-value of  $\pm 1.977961$ , with a probability of  $0.9428 > 0.05$ . This means that the null hypothesis ( $H_0$ ) is not rejected and the alternative hypothesis ( $H_1$ ) is rejected, indicating that Cash Flow does not have a significant effect on Financial Distress. Although the coefficient of  $X_1$  is positive, the relationship is not supported by strong statistical evidence.

Meanwhile, Earnings Quality ( $X_2$ ) has a t-statistic of  $-1.481716$ , which is still within the non-significant range, with a probability of  $0.1414 > 0.05$ . Therefore,  $H_0$  is not rejected and  $H_1$  is rejected, indicating that Earnings Quality also does not have a significant effect on Financial Distress. Although the coefficient of  $X_2$  is negative and theoretically consistent with the notion that higher earnings quality can reduce distress risk, this effect is not statistically significant.

### The Effect of Cash Flow on Financial Distress

Based on the partial test (t-test), Cash Flow ( $X_1$ ) has a t-value of 0.071936, which is smaller than the critical t-value of 1.977961264, with a significance of  $0.9428 > 0.05$ . This indicates that Cash Flow does not have a significant partial effect on Financial Distress.

Although the regression coefficient is positive at 0.001299, its effect is very small and statistically insignificant. This implies that changes in Cash Flow alone are insufficient to explain variations in the company's financial distress in this study. This condition may occur because financial distress is influenced not only by cash flow but also by other factors such as debt burden, efficiency in financial management, and external factors. Therefore, Cash Flow is not the primary factor affecting Financial Distress in the research model.

### The Effect of Earnings Quality on Financial Distress

Based on the partial test (t-test), Earnings Quality ( $X_2$ ) has a t-value of 1.481716, which is smaller than the critical t-value of 1.977961264, with a significance of  $0.1414 > 0.05$ . This indicates that Earnings Quality does not have a significant partial effect on Financial Distress.

The regression coefficient for Earnings Quality is negative at  $-0.005446$ , suggesting that an increase in earnings quality tends to reduce the level of financial distress. Theoretically, the better the earnings quality, the lower the likelihood that a company will experience financial distress. However, since the result is not statistically significant, this relationship is not sufficiently strong in empirical terms.

The insignificance of Earnings Quality may be caused by earnings management practices, differences in company characteristics, or other factors outside the model that have a more dominant effect. Therefore, Earnings Quality alone does not adequately explain the variation in Financial Distress in this study.

## CONCLUSION

This study aims to analyze the effect of operating cash flow and earnings quality on financial distress in transportation and logistics subsector companies listed on the Indonesia Stock Exchange during 2020–2024, using panel data regression with a fixed effect model. Descriptive analysis shows that the variables of financial distress, operating cash flow, and earnings quality exhibit high data variation, right-skewed distributions, and high kurtosis. This indicates substantial differences in financial conditions across companies and periods.

The fixed effect model estimation results show that the regression model is significant overall and has very high explanatory power. The F-statistic is significant at the 5% level, while the Adjusted R-squared of 0.988509 indicates that 98.85% of the variation in financial distress can be explained by operating cash flow, earnings quality, and company-specific fixed effects. Therefore, the model is deemed suitable for explaining variations in financial distress within the research sample.

However, the partial tests indicate that operating cash flow and earnings quality do not have a significant effect on financial distress. The probability values are 0.9428 for operating cash flow and 0.1414 for earnings quality, both exceeding 0.05. Although the coefficients of operating cash flow are positive and earnings quality negative, consistent with theoretical expectations, the effects of both variables are not statistically strong.

These findings suggest that financial distress in the transportation and logistics subsector during 2020–2024 is more influenced by a combination of financial factors and company-specific characteristics than by operating cash flow and earnings quality individually. Consequently, the role of these variables as financial signals has not been fully empirically validated.

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