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Analysis of Financial Statement Fraud Using the Fraud Triangle Approach (Study on Transportation and Logistics Sector Companies Listed on the Indonesia Stock Exchange for the Period 2017-2023)

Pedi Kurnia[1], Rita Yuniarti[2].
[1]Faculty of Economics and Business, Universitas Widyatama, pedi.kurnia@widyatama.ac.id.
[2]Faculty of Economics and Business, Universitas Widyatama, Rita.yuniarti@widyatama.ac.id.

Corresponding Author: pedi.kurnia@widyatama.ac.id[1]

Abstract: Financial statement fraud is a critical issue that threatens corporate transparency and accountability. This study analyzes the factors influencing financial statement fraud in transportation and logistics sector companies listed on the Indonesia Stock Exchange (IDX) for the period 2017-2023, using the Fraud Triangle approach, which includes pressure, opportunity, and rationalization.The research employs logistic regression analysis with a sample of 31 companies selected through purposive sampling. The results indicate that pressure, proxied by leverage, and opportunity, measured by the accounts receivable-to-sales ratio, have a significant impact on financial statement fraud. Meanwhile, rationalization, measured by auditor turnover, does not show a significant effect. This study highlights the importance of strict supervision and strong internal control systems to prevent financial statement manipulation. The implications for regulators, auditors, and investors emphasize the need for early detection of fraud-triggering factors to maintain the integrity of financial markets.

Keyword: Financial Statement Fraud, Fraud Triangle, Pressure, Opportunity, Rationalization, Indonesia Stock Exchange.

INTRODUCTION

Financial statements serve as the primary source of information for stakeholders to evaluate a company's financial performance and position. Reliable and transparent financial reporting is essential in maintaining investor confidence, supporting decision-making, and enhancing market efficiency (Tuanakotta, 2013). However, financial statement fraud remains a major issue that threatens the integrity of financial information and can cause substantial economic losses. Fraudulent financial reporting not only misleads investors and regulators but also distorts the overall financial market landscape (Rezaee, 2005).

One of the industries with a high risk of financial statement fraud is the transportation sector. This sector requires significant capital investments for fleet maintenance, infrastructure, and technology development. Consequently, companies in this industry often face high financial leverage, complex operational transactions, and immense pressure to maintain

profitability (Albrecht et al., 2011). The complexity of cross-border transactions, asset leasing, and revenue recognition provides opportunities for financial statement manipulation.

A notable example is the financial fraud case of PT Garuda Indonesia (Persero) Tbk in 2018, where the company allegedly manipulated its revenue recognition to alter its financial position from a loss to a profit. The fraud was detected when investigations revealed that the company prematurely recognized revenue from transactions that had not yet been completed. This case highlights corporate governance weaknesses and the lack of effective financial oversight, which ultimately enabled fraudulent activities to occur. Another case involved PT Kereta Api Indonesia (PT KAI) in 2005, where the company misreported VAT (Value Added Tax) as revenue, resulting in a distorted financial statement. Such fraudulent practices demonstrate the vulnerabilities within the transportation sector, emphasizing the need for improved fraud detection and prevention mechanisms.

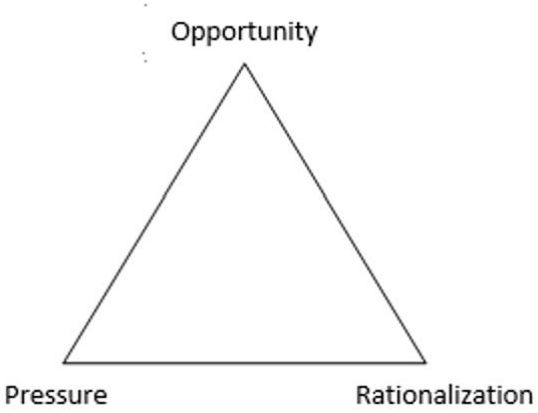


Figure 1.Fraud Triangle

To understand and detect financial statement fraud, researchers and practitioners have adopted the Fraud Triangle Theory, introduced by Donald R. Cressey (1953) in his study Other People's Money: A Study in the Social Psychology of Embezzlement. This theory suggests that fraud occurs when three key elements are present:

1. Pressure (Motivation)
   a. Pressure refers to financial or non-financial burdens that push individuals toward fraudulent behavior.
   b. Companies in the transportation sector often experience financial distress due to high debt levels (leverage), intense market competition, and regulatory pressures (Albrecht et al., 2011).
   c. A study by Tessa, Muda, and Rafika (2021) found that external pressure, particularly from financial obligations, significantly influences the likelihood of financial statement fraud.
   d. Other studies indicate that companies with high leverage ratios are more inclined to manipulate earnings to present a more stable financial outlook (Fitriyani & Arisandi, 2020).
2. Opportunity
   a. Opportunity arises from weak internal controls, ineffective corporate governance, and regulatory loopholes, which create conditions favorable for fraud (Rahmanti & Daljono, 2015).

b. The transportation sector involves complex financial structures, extensive asset management, and high-value transactions, making it susceptible to manipulation (Putri & Anugerah, 2022).
c. According to Skousen et al. (2009), companies with ineffective monitoring systems have a higher probability of engaging in fraudulent activities.
d. Receivable management and revenue recognition practices are commonly exploited in the industry, enabling fraudulent activities to remain undetected (Pratiwi & Januarti, 2020).

3. Rationalization
   a. Rationalization is the cognitive justification used by fraud perpetrators to legitimize unethical actions.
   b. Common justifications include:
      1) "I am only borrowing the money and will return it later."
      2) "No one is getting harmed."
      3) "This is necessary to save the company." (Wells, 2017).
      4) Westervelt (2020) highlights that management often rationalizes fraud by manipulating earnings to meet investor expectations.
      5) Prawira et al. (2023) found that companies frequently change auditors (auditor switching) as a means to obscure fraudulent financial practices.

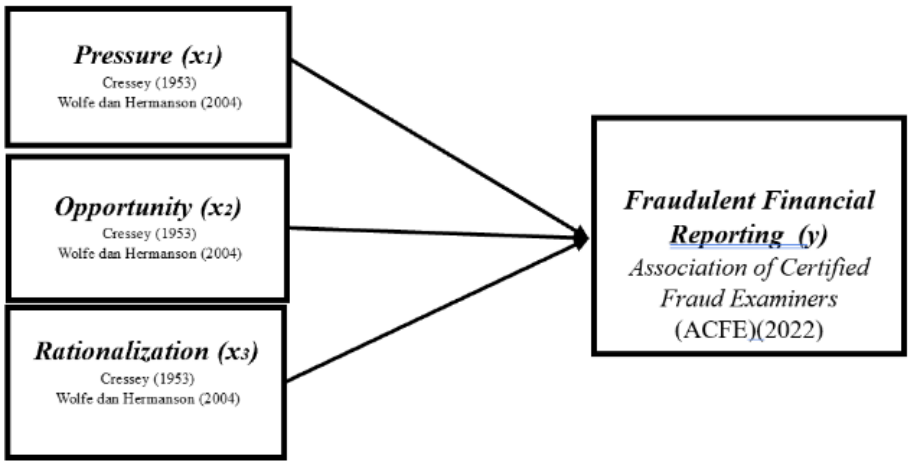
Cressey's Fraud Triangle Theory was later expanded into the Fraud Diamond Model by Wolfe and Hermanson (2004), introducing an additional element:

c. Capability (The ability to commit fraud successfully)
   1) Fraud perpetrators must possess the necessary knowledge, skills, authority, and access to manipulate financial records without detection.
   2) In the transportation sector, senior executives with financial expertise and control over reporting systems can exploit weaknesses to execute fraud effectively.

Based on the Fraud Triangle Theory, this study examines the three primary fraud determinants and their influence on financial statement fraud within the transportation sector. The key variables include:

1. Pressure (Financial Pressure)
   a. Measured using Leverage Ratio (Total Liabilities/Total Assets)
   b. Companies with higher financial leverage face greater pressure to manipulate earnings.
2. Opportunity (Weak Internal Controls and Industry Complexity)
   a. Measured using the Receivables-to-Sales Ratio
   b. Firms with higher receivables relative to sales are more likely to engage in earnings manipulation.
3. Rationalization (Ethical Justification for Fraudulent Activities)
   a. Proxied through Auditor Switching
   b. Frequent auditor changes indicate potential attempts to conceal financial fraud.

4. Financial Statement Fraud (Dependent Variable)
   a. Measured using Beneish M-Score, a predictive model that detects fraudulent financial reporting.



Conceptual Framework

METHOD

This study employs a quantitative approach with a causal-associative method to analyze the influence of the Fraud Triangle (Pressure, Opportunity, and Rationalization) on financial statement fraud in transportation and logistics sector companies listed on the Indonesia Stock Exchange (IDX) for the period 2017–2023.

The population consists of transportation and logistics companies listed on the IDX. The sample is selected using purposive sampling, resulting in 37 companies that meet the criteria of publishing complete annual reports.

econdary data is obtained from annual financial reports. The measurement of variables is as follows:

1. Financial Statement Fraud (Y): Measured using the Beneish M-Score to detect indications of financial statement manipulation.
2. Pressure (X1): Proxied by Leverage Ratio (Total Debt / Total Assets) to measure financial pressure.
3. Opportunity (X2): Proxied by Receivables to Sales Ratio (Receivable/Sales) to identify manipulation opportunities.
4. Rationalization (X3): Proxied by Auditor Switching as an indicator of fraud justification.

The analysis is conducted using logistic regression, including:

1. Descriptive Statistical Analysis – Provides an overview of data characteristics.
2. Goodness of Fit Test – Assesses the suitability of the model.
3. Coefficient of Determination Test (Nagelkerke R Square) – Measures the contribution of independent variables to the model.
4. Partial Test (Wald Test) – Examines the effect of each Fraud Triangle variable.

The logistic regression equation used is:

$$Logit(Y) = \beta 0 + \beta 1(Leverage) + \beta 2(Receivable) + \beta 3(AUDChange) + \epsilon$$

This study aims to provide insights for regulators, auditors, and investors in detecting and preventing financial statement fraud in the transportation sector.

The independent variable (X1) in this study is pressure proxied with external pressure. A company's capacity to pay off debt and fulfill commitments may put it under external pressure. The metric used to determined external pressure is the leverage ratio.

$$Leverage = \frac{Total\ liabilities}{Total\ Asset}$$

The second variable in the research is opportunity (X2), and this variable proxied by the industry. To measure the nature of the industry, we can use a proxy change in the estimated receivables received on sales. Receivables are associated with subjective assessments of bad debts. Management may utilize the account as a means to modify financial statements for their own benefit. Here is the formula for calculating the nature of industry:

$$\text{NOI} = \frac{\text{Receivable}_{t}}{\text{Sales}_{t}} - \frac{\text{Receivable}_{t-1}}{\text{Sales}_{t-1}}$$

The auditor change serves as a proxy for rationalization, which is the third independent variable (X3) in this study. Changes in auditors (AUDCHANGE) are assessed utilizing dummy variables for AUDCHANGE alter within the 2017–2023 period, it is given a score of 1. Otherwise, if there has not been a change in auditors in the 2017-2023 period, a zero score is given.

RESULTS AND DISCUSSION

Descriptive statistics are used to provide a general overview of the characteristics of the data in this study. Descriptive statistics include the minimum, maximum, mean, and standard deviation values for each variable used in the research. According to Ghozali (2018:21), descriptive statistics aim to provide a summary or description of the data obtained from the study results.

In this research, the independent variables consist of Pressure, Opportunity, and Rationalization, while the dependent variable is Fraudulent Financial Statement. The results of the descriptive statistical analysis for each variable are presented in the following table:

Table 1.Results of Descriptive Statistical Analysis

	Minimum	Maximum	Mean	Std. Deviation
Pressure	0,01	8,10	0,6461	1,17078
Opportunity	-9,27	-1,01	-4.2395	1,56171

Valid N (listwise)	217

Source: Data Processing Results, 2024

Descriptive statistical analysis is conducted to understand the characteristics of the variables in this study. Based on the results of the descriptive test, the Pressure (X1) variable has a mean value of 0.6461 with a standard deviation of 1.17078. The minimum value of 0.01 and the maximum value of 8.10 indicate variations in pressure within the research sample.

Meanwhile, the Opportunity (X2) variable has a mean value of -4.2395 with a standard deviation of 1.56171. The minimum value of -9.27 and the maximum value of -1.01 indicate varying levels of opportunity within the research sample.

Tabel 2.Analysis of the Rationalization Variable

Rationalization					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	No Change of Auditor	119	54,8	54,8	54,8
	There is a Change of Auditor	98	45,2	45,2	100.0
	Total	217	100.0	100.0	

Source: Data Processing Results, 2024

Based on frequency analysis, the Rationalization (X3) variable shows that 54.8% of the total sample did not experience auditor switching, while 45.2% did. This indicates that more than half of the companies in the sample retained the same auditor, while the remaining companies changed auditors within a certain period.

Additionally, regarding the Fraudulent Financial Reporting (Y) variable, it was found that 76.6% of the total sample did not have financial statement violations, while 23.4% did. These findings suggest that most companies in the sample have financial statements free from fraud indications, although some still show signs of violations.

Tabel 3.Fraudulent Financial Reporting

		Frequency	**Percent**	**Valid Percent**	**Cumulative Percent**
Valid	No Violation	135	62,2	62,2	62,2
	There is a Violation	82	37,8	37,8	100.0
	Total	217	100.0	100.0	

Source: Data Processing Results, 2024

Based on the analysis of 217 samples, it was found that 135 companies (62.2%) did not commit financial statement violations, while 82 companies (37.8%) were indicated to have engaged in financial statement fraud. This shows that although most companies in the sample comply with financial reporting standards, there is still a significant percentage involved in violations.

According to the Financial Services Authority (OJK), financial statement fraud can occur due to weak internal control and lack of managerial oversight. These findings align with Cressey's Fraud Triangle Theory (1953), which states that the three primary factors causing fraud are Pressure, Opportunity, and Rationalization. If any of these factors exist within a company, the risk of fraud increases.

The results of this study indicate that while the majority of companies in the sample follow financial reporting regulations, the risk of fraud remains a concern. Therefore,

companies must strengthen internal controls, enhance transparency, and tighten auditing systems to prevent potential fraud. Additionally, regulators such as OJK must improve supervision and law enforcement to maintain the integrity of financial statements and investor confidence in the market.

Hypothesis Testing

Hosmer and Lemeshow's Goodness of Fit Test

The Hosmer and Lemeshow's Goodness of Fit test is used to measure the suitability of the logistic regression model with the observed data. This test is conducted by comparing the predicted values from the model with the actual values from the research data.

If the significance value (ρ) obtained is greater than 0.05, the model is considered to have a good fit and can be used for further analysis. Based on the results of the analysis, the findings are as follows:

Table 4.Results of Hosmer and Lemeshow's Goodness of Fit Test

Test Type	Chi-square value	Significance Value
Uji Hosmer and Lemeshow's Goodness of Fit	11,180	0,192

Source: Data Processing Results, 2024

Overall Model Fit Test

The Overall Model Fit Test aims to assess how well the logistic regression model used in this study explains the variation in the dependent variable. One commonly used method for evaluating the overall model is by examining the results of the Omnibus Tests of Model Coefficients.

Table 5.Overall Model Fit Test Results

Test Type	Value -2 LL at block number = 0	Value -2 LL at block number = 1
Uji Overall Fit Model	12,435	0,006

A significance value of 0.006 indicates that the logistic regression model, as a whole, is significant in explaining the dependent variable. In other words, at least one independent variable has a significant influence on the likelihood of Fraudulent Financial Reporting.

This result supports the assumption that the model used is suitable for further analysis, and the independent variables in this study contribute to explaining the phenomenon being investigated.

Coefficient of Determination Test (Nagelkerke R Square)

The coefficient of determination test uses the Nagelkerke R Square value to assess how much variation in the dependent variable can be explained by the independent variables in the logistic regression model. Based on the analysis results, the following value was obtained:

Table 6.Results of the Coefficient of Determination Test (Nagelkerke R Square

Test Type	Nagelkerke R Square Value
Coefficient of Determination (Nagelkerke R Square)	0,076

Source: Data Processing Results, 2024

The Nagelkerke R Square value of 0.076 indicates that the independent variables in this logistic regression model can only explain 7.6% of the variation in the dependent variable. Meanwhile, the remaining 92.4% is influenced by other factors that are not included in this study model.

Although the Nagelkerke R Square value is relatively low, it still suggests that the model has limited predictive power but still provides useful information in explaining the investigated phenomenon. Therefore, this result indicates that other factors not included in the model may have a greater influence on the likelihood of Fraudulent Financial Reporting occurring.

WALD TEST

The Wald test is used to examine the significance of each regression coefficient in the logistic model. This test determines whether an independent variable has a significant effect on the dependent variable by evaluating the significance value of the Wald statistic. Based on the logistic regression analysis results, the following values were obtained:

Table 7.Wald Test Results

Variables in the Equation		B	S.E.	Wald	df	Sig.	Exp(B)
Step 1[a]	Pressure	-.268	.209	1.658	1	.198	.765
	Opportunity	.192	.097	3.896	1	.048	1.211
	Rationalization	.596	.290	4.211	1	.040	1.815
	Constant	.169	.442	.146	1	.703	1.184

Source: Data Processing Results, 2024

Here is the interpretation of Table 8 based on the provided data:

a. External Pressure (Leverage) and Fraudulent Financial Statement

Leverage does not significantly affect fraudulent financial statements (p = 0.198). Although high debt levels can pressure management, companies often manage obligations through new stock issuance or debt restructuring instead of financial manipulation. This aligns with Evana et al. (2019) and Beasley et al. (2000) but contradicts Fitri & Sulistyowati (2024), who found that highly leveraged firms are more prone to fraud. Differences may arise due to sample variations, industry characteristics, and analytical methods.

b. Opportunity (Nature of Industry) and Fraudulent Financial Statement

Industry-related opportunities, especially accounts receivable flexibility, significantly influence fraudulent financial statements (p = 0.048). Companies with high receivables can manipulate earnings through revenue recognition and expense deferral. This supports Lou & Wang (2011) and Rezaee (2005) but contrasts with

Amara et al. (2013), who argue that strong internal controls mitigate fraud risks. The impact of competition, regulations, and governance needs further study

c. Rationalization (Auditor Change) and Fraudulent Financial Statement

Frequent auditor changes significantly increase fraud risk (p = 0.039), as companies may seek auditors who provide more favorable opinions. This is consistent with Hennes et al. (2008) and Lennox (2000) but contradicts Carey & Simnett (2006), who argue that auditor changes may improve audit quality. Regulatory and governance factors may moderate this relationship, requiring further exploration.

Table 8.Logistic Regression Test Results

Variabel	Nilai B
Pressure (X1)	-0.268
Opportunity (X2)	0.192
Rationalization (X3)	0.596
Constant	0.169

Source: Data Processing Results, 2024

Based on Table 9 the logistic regression equation can be formulated as follows:

$Y=0.169-0.268X1+0.192X2+0.596X3$

The interpretation of the regression analysis results is as follows:

a) Constant (0.169): If all independent variables are zero, the probability of fraudulent financial statements is 0.169.
b) Pressure (Leverage) (-0.268): A higher external pressure (leverage) decreases the likelihood of fraud, indicating that companies under financial pressure do not necessarily engage in fraud.
c) Opportunity (Receivable) (0.192): A higher opportunity (receivables) increases the likelihood of fraud, meaning that companies with more receivables have greater flexibility to manipulate earnings.
d) Rationalization (0.596): Rationalization has the most significant impact, where stronger managerial justification increases the risk of fraudulent financial reporting.

CONCLUSION

This study on consumer goods manufacturing companies listed on the IDX (2017–2023) finds that factors within the Fraud Triangle influence fraudulent financial reporting differently. Pressure (leverage) does not significantly impact fraud, as companies facing financial stress often choose alternative strategies such as debt restructuring or issuing new shares instead of manipulating financial statements. Additionally, external oversight and regulatory compliance reduce incentives for fraud. Opportunity (nature of industry) plays a significant role in fraud risk, particularly in companies with high accounts receivable. These firms have more flexibility in revenue recognition and bad debt provisions, making them more vulnerable to manipulation.

Accounting flexibility in the manufacturing sector increases the risk of fraudulent report ing.Rationalization (auditor change) emerges as a key driver of financial fraud, as companies frequently change auditors to avoid strict scrutiny and obtain favorable audit opinions. This suggests that management may justify fraudulent behavior by seeking more lenient auditors.

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