

DETECTING FRAUDULENT FINANCIAL REPORTING WITH FRAUD HEXAGON ANALYSIS

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Abstract: Fraudulent financial reporting is a crucial issue that can undermine investor confidence and capital market stability. This study aims to analyze in depth the influence of the Fraud Hexagon elements on detecting fraudulent financial reporting. The six elements include: 1) pressure (stimulus), 2) opportunity, 3) rationalization, 4) capability, 5) arrogance, and 6) collusion. Fraudulent Financial Reporting (Y) is measured by F-Score = Accrual Quality + Financial Performances. While pressure (X1) is measured using financial stability (X1.1), external pressure (X1.2), and financial targets (X1.3). Opportunity (X2) is measured by ineffective monitoring (X2.1) and the nature of the industry (X2.2). Rationalization (X3) is measured using the total accrual ratio, Capability (X4) is measured by board of directors' turnover, Arrogance (X5) is measured using the frequency of CEO photos, and Collusion (X6) is proxied through cooperation with the government. The study focused on infrastructure sector companies that went public during the period 2022 to 2024. The infrastructure sector was chosen because it is a large project that requires high investment, and is closely related to government projects. The study uses a quantitative approach with secondary data from the company's annual report. The sampling technique used purposive sampling, which resulted in a final sample of 35 companies over three years of observation, resulting in a total of 105 observation data. The data analysis technique used multiple linear regression analysis, with IBM SPSS to test the research hypothesis. The results of the Adjusted R Square value showed the influence of independent variables on the dependent variable in this study was 84.6%, while the remaining 15.4% was explained by other variables outside the research model. Variables X1.2 external pressure and X1.3 financial target, X2.2 nature of industry, X3 (Rationalization, measured by TATA), X4 (Ability, measured using change in director) and X5 (Arrogance, measured by CEO photo) were proven to have a positive effect on financial statement fraud. Conversely, X1 (Pressure, measured by financial stability), X2 (Opportunity measured by ineffective monitoring), and X6 (Collusion measured using cooperation with the government) had no effect on financial statement fraud. These findings provide important implications for stakeholders to be more aware of indicators of aggressive financial targets, opportunities, rationalization, managerial capabilities, and arrogance as key signals of potential financial report manipulation in the infrastructure sector.

Keywords: *Fraud Hexagon, Fraudulent Financial Reporting*

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1. Introduction

Financial reports play a crucial role as a window of information that provides a comprehensive overview of a company's financial position, performance, and operational activities. The accuracy of this information serves as the primary foundation for managers and stakeholders in making economic decisions (PSAK, 2017). However, the integrity of financial reports is often threatened by manipulation or fraudulent practices. Fraudulent financial reporting is an unlawful act carried out deliberately to manipulate data to improve a company's image, conceal poor performance, or meet market expectations. The Association of Certified Fraud Examiners (ACFE, 2020) confirms that fraudulent financial reporting is the most detrimental variant of fraud because it can destroy public trust and trigger widespread economic instability.

This threat of instability has come under sharp scrutiny in Indonesia, particularly when observing the phenomena occurring within state-owned enterprises (SOEs) and private companies in the infrastructure sector. The revelation of the alleged corruption case in the procurement of Liquefied Natural Gas (LNG) at PT Pertamina (Persero) between 2011 and 2021, estimated to have caused state losses of up to US\$113 million, provides clear evidence of significant gaps in governance and internal control systems. More specifically in the infrastructure sector, the financial reporting manipulation scandal at PT Waskita Karya Tbk and PT Adhi Karya Tbk (Oktaviani, 2020; Sari, 2021) demonstrates how business entities in this sector are vulnerable to fraud through project cost inflation and delayed loss recognition.

The vulnerability of the infrastructure sector is inherently linked to the industry's unique characteristics, which are associated with large-scale, long-term projects that require complex funding structures. These characteristics create information imbalances, particularly in revenue recognition methods, which are easily exploited by management. This risk of manipulation escalated during the 2022-2024 observation period, as infrastructure companies faced severe liquidity pressures due to high post-pandemic debt burdens (leverage) and the heavy demands of completing National Strategic Projects. This empirical context motivated this research to delve deeper into the root causes of financial reporting fraud in the infrastructure sector.

To comprehensively analyze the complexity of fraud, the theoretical approach used must also be relevant to current governance dynamics. The Fraud Hexagon theory refines previous models by adding the element of collusion, complementing its five predecessors: pressure, opportunity, rationalization, capability, and arrogance. Given that infrastructure projects often involve extensive networks of stakeholders and vendors, the element of collusion is crucial for analysis to gain a holistic understanding of the gaps in fraudulent financial reporting.

Based on the aforementioned problem phenomena and theoretical justification, this study aims to answer the question of how each element of the Fraud Hexagon influences fraud detection in financial reports. The main objective of this study is to empirically analyze the influence of each element of the Fraud Hexagon on the detection of Fraudulent Financial Reporting in infrastructure sector companies. The results of this test are expected to not only enrich the literature related to Agency Theory but also provide a practical contribution as a reference for management, investors, the government, and the public in formulating fraud mitigation measures to create a more transparent, accountable, and secure investment climate.

2. Literature Review

2.1. Agency Theory

Agency theory emerged in a business context where ownership of an entity is separate from its management. Jensen and Meckling (1976) defined it as a contract in which a principal engages an agent to provide certain services, including the delegation of decision-making

authority. This situation creates information asymmetry that has the potential to give rise to moral hazard. In financial reporting, management (the agent) has the opportunity to manipulate financial statements to present positive performance in the eyes of the owner (the principal).

2.2. Fraud Hexagon

Fraud Hexagon is the latest fraud detection model that represents the continuous evolution of previous theories. This model refines the Fraud Triangle (Cressey, 1953), which includes three elements: pressure, opportunity, and rationalization. The Fraud Diamond (Wolfe & Hermanson, 2004) adds the element of capability, and the Fraud Pentagon (Howarth, 2011) includes the element of arrogance. According to Vousinas (2019), the phenomenon of fraud in the modern era has become more complex, necessitating the addition of the element of collusion as a sixth dimension. The six elements driving fraud are explained as follows:

a) Pressure

Pressure is the driving force that leads someone to commit fraud. In a corporate context, pressure often arises when management faces difficult financial situations or high non-financial demands. This can take the form of unrealistic financial targets set by directors, or attempts to conceal the company's compromised financial stability to maintain investor and creditor confidence.

b) Opportunity

Opportunities arise from weaknesses in a company's internal control system or poor governance. Ineffective monitoring, such as the lack of an independent board of commissioners, provides loopholes for perpetrators to manipulate without fear of detection. The complex nature of the industry also often creates opportunities to conceal irregular transactions.

c) Rationalization

Rationalization is the stage where perpetrators seek moral justification for their illegal actions. Perpetrators often feel that fraudulent acts are not crimes, but rather serve the greater good of the company or are simply a means of "borrowing" temporary funds. Rationalization is often assessed through changes in accounting policies or total accrual ratios, which reflect management discretion (Maghfiroh et al., 2015).

d) Capability

Pressure and opportunity alone are insufficient without technical ability and authority. A perpetrator must possess the skills, in-depth knowledge of system vulnerabilities, and influence within the organization to penetrate security protocols and influence others to cooperate or remain silent (Wolfe & Hermanson, 2004).

e) Arrogance

Arrogance reflects an attitude of superiority and arrogance among management, particularly the CEO or senior executives. Individuals with high levels of arrogance tend to feel that the organization's rules or internal controls do not apply to them due to their position or perceived significant contributions to the company. This "above the law" attitude makes them feel immune to sanctions and oversight procedures (Howarth, 2011).

f) Collusion

Collusion is a secret agreement between two or more parties to commit an act that is detrimental to another party. In the practice of financial reporting fraud, collusion often involves cooperation with external parties, such as through special relationships in government projects or opaque intercompany transactions, to conceal fraud that would be impossible to commit alone.

2.3. Hypothesis Development

A company's financial stability can be analyzed through various indicators, one of which is asset growth. In this context, the pressures faced by management often drive them to manage assets efficiently to achieve high profits and returns, which are ultimately expected to provide optimal financial benefits for investors (Tiffany & Marfuah, 2015). However, research by Aviantara (2020) revealed that financial stability, while indicating good performance, also has a positive influence on the potential for fraudulent financial reporting. This is due to the high pressure to maintain stable company performance, which often encourages management to manipulate or inflate financial reports to create a more positive image for stakeholders.

H1: Financial Stability has an effect on the detection of fraudulent financial reporting

High levels of debt create substantial financial obligations and raise the likelihood of insolvency. This situation can drive firms to manipulate their financial records, as they aim to report strong earnings and reassure lenders that they are capable of meeting repayment obligations. Management also faces growing pressure resulting from elevated credit risk associated with high debt-to-asset ratios (Ijudien, 2018).

H2: External Pressure has an effect on the detection of fraudulent financial reporting

Financial targets are determined by the Board of Directors to motivate management to meet sales goals and earn performance-based profit rewards (Priantara, 2013). When these targets are set at an overly high level, they can place significant pressure on management, leading them to take various steps to uphold the company's positive public image, even when the actual business performance does not match such expectations. A study conducted by Mukaromah & Budiwitjaksono (2021) confirms that challenging financial targets have a positive effect on the occurrence of fraudulent financial reporting.

H3: Financial Target influence on the detection of fraudulent financial reporting

Opportunity, Ineffective monitoring refers to a condition in which a company's oversight body fails to operate efficiently in overseeing the performance of management. According to Herdiana & Sari (2018), proper supervision plays a vital role in identifying misstatements or fraud in financial statements, particularly when leaders attempt to exploit gaps within the organization's internal control framework. When control mechanisms are weak, they create openings for management to engage in fraudulent practices. This risk becomes even greater when revenue levels are insufficient while living costs remain high—a situation that may drive decision-makers to prioritize their own personal interests over the company's objectives (Jannah et al., 2021).

H4: Ineffective monitoring influence on the detection of fraudulent financial reporting

The nature of the industry can influence the risk of financial statement fraud through various mechanisms, such as market pressures, regulations, the nature of the business, and industry oversight. Companies cannot predict when clients will pay their debts, which often makes the bad debt balance an estimate. The amount of the bad debt balance in the financial statements is determined based on management policy, allowing for changes without the control of third parties (Octaviana, 2022). For this reason, estimating and recording uncollectible receivables carries a risk of manipulation in financial reporting. To minimize this risk, organizations need to establish robust internal control systems, apply sound corporate governance practices, and foster an environment of responsibility and transparency. Reducing

this vulnerability is essential to ensure that bad debt figures are not altered or misrepresented to mislead investors and other interested parties. In line with this, Octaviana (2022) explains that the characteristics and conditions of the industry in which a firm operates have a significant positive influence on the likelihood of fraudulent financial reporting.

H5: Nature of Industry influence on the detection of fraudulent financial reporting

Rationalization is a moral justification for the illegal actions carried out. Discretionary accrual Discretionary accrual is a recording technique that allows management to record revenue when the transaction occurs, rather than when cash is received or paid. This situation allows management the discretion to adjust the revenue figures reported in the financial statements within a specific accounting period. According to a study by Kurniawati (2021), the TATA ratio has a significant positive relationship with fraudulent financial reporting. This finding suggests that the use of discretionary accruals in accounting practices raises the likelihood of misrepresentation or fraud in financial statements.

H6: TATA influence on the detection of fraudulent financial reporting

Capability, this variable is proxied by changes in the board of directors. Board members are expected to work toward enhancing the company's operational and financial results. When a director does not meet performance expectations, shareholders or owners typically replace them with a new appointment. However, newly appointed directors require time to adapt to their role and understand the internal working environment. During this transition phase, the lack of established oversight and the company's temporary performance instability can create an opening for misconduct, allowing those in charge to take advantage of the situation and carry out fraudulent activities.

H7: Change in Director influence on the detection of fraudulent financial reporting

Arrogance, this trait is understood as an expression of excessive self-importance, commonly measured by how often the chief executive's photograph appears in the company's annual financial statements. According to Marks (2012), a higher frequency of such images suggests that the leader is more inclined to take various steps to preserve their standing and authority within the organization. Apriliana & Agustina (2017) further explain that the prominence of the CEO's portrait in annual reports serves as an indicator of heightened arrogance. This mindset raises the risk of fraud, as leaders with such characteristics often believe they are above standard procedures and internal controls, assuming their status grants them exemption from established rules and oversight.

H8: Arrogance influence on the detection of fraudulent financial reporting

Collusion Measured by cooperation with the government. Cooperation between companies and the government on large-scale projects can trigger collusion, fraud, and corruption. Management involved in corruption with the government tends to manipulate financial reports to conceal their actions. Such conditions can lead to agency conflicts, which stem from unequal access to information and the risk of moral hazard. Since shareholders do not have full insight into every decision and action taken by management, this gap creates room for executives to behave in ways that may harm the interests of the company and its owners.

H9: Cooperation with government has an effect on the detection of fraudulent financial reporting.

3. Research Methods

3.1. Operational Definition

The operational definition of this research is detailed in terms of each variable, namely, the variables are defined as follows:

Dependent Variable (Y)

Fraudulent Financial Reporting

Fraudulent financial reporting refers to the deliberate alteration or misrepresentation of data presented in financial statements, carried out with the intention of deceiving users of the information (ACFE, 2020). For this research, the dependent variable is assessed using the F-Score model created by Dechow et al. (2011). This approach integrates indicators related to accrual quality and overall financial performance. Under this measurement, an F-Score value greater than 1 signals a higher likelihood of financial statement manipulation, whereas a score equal to or below 1 indicates no significant risk of such activity.

Independent Variables(X)

The independent variables in this study are the following six elements of the Fraud Hexagon:

a. Pressure (X1)

Pressure is an impulse that causes someone to commit fraud, which is proxied through three indicators:

- 1) Financial Stability (X1.1), measured by the ratio of changes in assets

$$(\text{CHANGE}), \text{ where } \text{ACHANGE} = \frac{\text{Total asset } t - \text{total asset } t-1}{\text{total asset } t-1}$$

- 2) External Pressure (X1.2), measured using LEV

$$\text{LEV} = \frac{\text{Total liabilities}}{\text{Total asset ratio}}$$

- 3) Financial Target (X1.3), measured by the rate of return on assets

$$\text{ROA} = \frac{\text{Net Income}}{\text{Total Assets}}$$

b. Opportunity

Opportunity is a chance that motivates someone to take action, such as a weak system that allows fraud to occur, proxied through:

- 1) Ineffective Monitoring: Measured by the following independent board of commissioners ratio (BDOUT):

$$\text{BDOUT} = \frac{\text{Number of Independent Commissioners}}{\text{Total Board of Commissioners}}$$

- 2) Nature of Industry: Measured through the following ratio of changes in receivables to sales (NOI):

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

c. Rationalization

Rationalization is the process of seeking justification for fraudulent actions, proxied by the ratio of total accruals to total assets (TATA) (Skousen et al., 2009)

$$\text{TATA} = \frac{\text{Net Operating Income} - \text{Cash Flow from Operations}}{\text{Total Asset}}$$

d. Capability

Ability refers to an individual's authority to breach internal controls. This variable is proxied by board change (DCHANGE) with a dummy variable (score 1 if there is a board change, score 0 otherwise).

e. Arrogance

Arrogance reflects an attitude of management superiority. This variable is measured by the number of CEO photos featured in the company's annual report.

f. Collusion

Collusion is secret cooperation between parties to commit fraud. This variable is proxied by cooperation with government projects using a dummy variable (score 1 if there is cooperation, score 0 otherwise).

3.2. Population and Sampling Techniques

The population of this research consists of companies operating in the infrastructure sector that are listed on the Indonesia Stock Exchange (IDX) during the period 2022 to 2024. Sample selection was carried out using purposive sampling, with the following requirements: (1) the company remained continuously listed on the IDX throughout the three-year observation period; (2) it released full annual financial reports; and (3) it provided complete information corresponding to the variables examined in this study. Applying these criteria yielded a final sample of 35 firms, which over the three years of observation generated a total of 105 data points for analysis.

3.3. Data Analysis Techniques

a) Descriptive Statistics

According to Ghozali (2018), descriptive statistics offer a general picture of the data through indicators including the average value, standard deviation, maximum value, minimum value, and total count of observations.

b) Classical Assumption Test

Classical assumption tests are performed to verify that the regression model produces accurate, unbiased, and consistent estimates. This evaluation covers four key examinations: normality, heteroscedasticity, autocorrelation, and multicollinearity. The normality test applies the Kolmogorov-Smirnov method to confirm that data follows a normal distribution, with the requirement that the significance level exceeds 0.05. Meanwhile, the Glejser test is used to detect heteroscedasticity by assessing the relationship between independent variables and the absolute value of residuals; the absence of unequal variance (homoscedasticity) is confirmed when the significance value is greater than 0.05. To check for autocorrelation or correlation between residuals over time the Durbin-Watson statistic is employed, where a result falling between the values of du and $4-du$ indicates no autocorrelation. Finally, multicollinearity is tested using the Variance Inflation Factor (VIF) and tolerance values. This assumption is satisfied if the VIF is 10 or lower and the tolerance is at least 0.10, confirming no strong correlation among the independent variables.

c) Multiple Linear Regression Analysis

This analysis is used to test the influence of the relationship between independent variables on the dependent variable using the formula:

$$Y = \alpha + \beta_1 X_{1.1} + \beta_2 X_{1.2} + \beta_3 X_{1.3} + \beta_4 X_{2.1} + \beta_5 X_{2.2} + \beta_6 X_3 + \beta_7 X_4 + \beta_8 X_5 + \beta_9 X_6 + e$$

Note: Y = Fraudulent Financial Reporting (F-Score) α = Constant β_1 – β_9 = Regression coefficient of each independent variable X1.1 = Financial Stability (ACHANGE) X1.2= External Pressure (LEV)X1.3= Financial Target (ROA)X2.1= Ineffective Monitoring (BDOUT)X2.2= Nature of Industry (NOI)X3 = Rationalization (TATA)

d) F Test (Model Feasibility Test)

The F-test aims to determine whether the regression model developed is appropriate and suitable. If the significance probability value is <0.05 , the model is considered appropriate.

e) t-test (Hypothesis Test)

The t-test serves to examine the influence of each independent variable separately on the dependent variable. A variable is considered to have a statistically significant effect if its corresponding p-value is less than 0.05.

f) Coefficient of Determination Test (R^2)

The coefficient of determination shows how well the regression model accounts for changes in the dependent variable. When the value of R^2 approaches 1, it means the set of independent variables explains nearly all the variation in the outcome, providing highly accurate explanatory power.

4. Results and Discussion

4.1. Results

Descriptive statistics are used to provide an initial overview of the characteristics of the research data before conducting inferential analysis. The following are the results of the descriptive statistical tests:

Table 1. Descriptive Statistics

Variable	N	Minimum	Maximum	Mean	Standard Deviation
Financial Stability	105	-3.598	60.366	0.63078	6.199895
External Pressure	105	-2.611	89.025	1.45579	8.857460
Financial Target	105	-3.532	255.952	4.07102	25.638984
Ineffective Monitoring	105	-705.997	200.764	3.79910	74.823758
Nature of Industry	105	-26.729	5.215	-0.12526	3.305852
Rationalization	105	-3.556	255.526	4.00420	25.600927
Capability	105	0.00	1.00	0.4286	0.49725
Arrogance	105	0.00	7.00	2.3238	1.47084
Collusion	105	0.00	1.00	0.7048	0.45834
F-Score	105	18.40	30.17	24.6000	2.25472

Source: SPSS Calculation Processed Data, 2025

The results of the descriptive statistical test obtained the following results:

- a. The variable representing fraudulent financial reporting records a minimum score of 18.40 and a maximum of 30.17. The highest value suggests that certain firms within the sample carry a considerable risk of misstatement, requiring closer attention and oversight. Conversely, the lowest figure reflects a relatively low exposure to such risk. With an average value of 24.60, the overall level of fraud risk across the sample falls into the moderate range. Meanwhile, the standard deviation of 2.25 points to a fairly consistent spread of data, meaning the risk levels observed among the companies do not vary drastically and remain relatively similar to one another.
- b. The Pressure variable consisting of three indicators gives the following results:
 - 1) Financial Stability shows values ranging from a minimum of –3.598 to a maximum of 60.366. The mean score of 0.630 suggests that, on average, the firms have a relatively weak level of financial stability. Additionally, the high standard deviation of 6.199

- reveals considerable variation across the sample, meaning there are substantial differences between companies in how well they manage and sustain their asset base.
- 2) External Pressure varies between a lowest point of –2.611 and a highest point of 89.025. With an average of 1.455, the general level of external pressure experienced by the companies remains low. That said, the standard deviation of 8.857 indicates a broad spread of values, implying that while most firms face limited pressure, a few encounter far greater risks and demands from their external environment.
 - 3) Financial Target records a minimum value of –3.532 and a maximum of 255.952. The average of 4.071 demonstrates that collectively, the performance goals established are still within a reasonable range. Nevertheless, the standard deviation of 25.638 points to very large discrepancies, showing that the way financial targets are determined and set differs significantly from one company to another.
- c. The Opportunity variable consists of two indicators giving the following results:
- 1) Ineffective Monitoring ranges from a minimum of –705.997 to a maximum of 200.764. With a mean of 3.799 and an exceptionally high standard deviation of 74.823, the results reveal substantial differences in how well internal control and oversight mechanisms function across infrastructure companies.
 - 2) Nature of Industry shows values between –26.729 at the lowest and 5.215 at the highest. The average score stands at –0.125, accompanied by a standard deviation of 3.305. This indicates that the operational and structural characteristics of the sampled firms are relatively consistent, with no extreme gaps in their distribution.
- d. Rationalization ranges from a minimum of –3.556 to a maximum of 255.526. The mean score of 4.004 suggests that, on average, the tendency for management to rationalize accounting decisions remains relatively low. However, the high standard deviation of 25.600 points to considerable variation across the sample, meaning there are notable differences in how managers justify their reporting choices from one firm to another.
- e. Capability records an average value of 0.428 and a standard deviation of 0.497. Since this variable is measured as a dummy indicator, the result shows that roughly 42.86% of the sampled companies experienced changes in board membership or met the criteria for managerial capability as defined throughout the observation period.
- f. Arrogance takes values from 0.00 up to 7.00, with a mean of 2.323. This average reflects a moderate level of executive arrogance within the sample. The standard deviation of 1.470 further indicates that differences in the degree of self-perceived superiority or ego among leaders across the companies are not very large.
- g. Collusion has a mean of 0.704 and a standard deviation of 0.458. The relatively high average implies that around 70.48% of the firms studied were involved in government-related projects, which in this research serves as a proxy to represent the potential for collusive arrangements.

Classical Assumption Test

a) Normality Test

The normality test aims to verify whether the residual values generated by the regression model follow a normal distribution pattern. In this research, the One-Sample Kolmogorov–Smirnov Test is applied to the unstandardized residuals to assess this condition. The findings of the normality test are presented below:

Table 2. Normality Test Results

		Unstandardized Residual
N		105
Normal Parameters ^{a,b}	Mean	0.0000000
	Std. Deviation	0.93901688
Most Extreme Differences	Absolute	0.085
	Positive	0.078
	Negative	-0.085
Test Statistic		0.085
Asymp. Sig. (2-tailed)		0.058

Source: SPSS Calculation Processed Data, 2025.

The test yields an asymptotic significance value (2-tailed) of 0.058, which exceeds the standard threshold of 0.05. Consequently, the residual values are confirmed to follow a normal distribution. This finding means the residuals are spread evenly and symmetrically around zero, satisfying one of the key requirements for a reliable regression model.

b) Multicollinearity Test

The multicollinearity test is carried out to check whether a linear relationship exists between two or more of the independent variables. A robust and reliable regression model should not exhibit such correlations among its predictor variables (Ghozali, 2018). This study evaluates the presence of multicollinearity using the Variance Inflation Factor (VIF) and Tolerance values, with the results presented below:

Table 3. Multicollinearity Test Results

Variable	Tolerance	VIF	Description
Financial Stability	0.309	3.238	No Multicollinearity
External Pressure	0.394	2.539	No Multicollinearity
Financial Target	0.326	3.065	No Multicollinearity
Ineffective Monitoring	0.934	1.071	No Multicollinearity
Nature of Industry	0.528	1.893	No Multicollinearity
Rationalization	0.284	3.522	No Multicollinearity
Capability	0.849	1.177	No Multicollinearity
Arrogance	0.773	1.293	No Multicollinearity
Collusion	0.763	1.311	No Multicollinearity

Source: SPSS Calculation Processed Data, 2025.

The test results indicate that every independent variable records a Variance Inflation Factor (VIF) below 10 and a Tolerance value greater than 0.1. Based on these figures, it can be confirmed that no linear correlation exists between the predictor variables, meaning the model is free from multicollinearity issues.

c) Heteroscedasticity Test

The heteroscedasticity test is conducted to check whether the variance of the residuals remains consistent across all observations. A reliable regression model is expected to exhibit homoscedasticity, meaning there is no unequal spread of residual values. In this study, the Glejser test is applied to assess this condition:

Table 4. Heteroscedasticity Test Results

Variable	Sig.	Description
Financial Stability	0.176	No Heteroscedasticity
External Pressure	0.099	No Heteroscedasticity
Financial Target	0.057	No Heteroscedasticity
Ineffective Monitoring	0.767	No Heteroscedasticity

Nature of Industry	0.483	No Heteroscedasticity
Rationalization	0.072	No Heteroscedasticity
Capability	0.143	No Heteroscedasticity
Arrogance	0.548	No Heteroscedasticity
Collusion	0.420	No Heteroscedasticity

Source: SPSS Calculation Processed Data, 2025.

The findings show that all independent variables yield significance levels higher than 0.05. Since these values exceed the set threshold, it can be concluded that the data exhibits homoscedasticity, meaning there is no unequal variance in the residuals, and the model is free from heteroscedasticity issues.

d) Autocorrelation Test

The autocorrelation test is used to check whether a relationship exists between the residual values of the current period and those from earlier periods. To evaluate this condition, the Durbin-Watson (DW) test is applied, and its results are presented below:

Table 5. Autocorrelation Test Results

Model	Durbin-Watson	Information
1	2.356	There is no autocorrelation. The Durbin-Watson value is close to 2.

Source: SPSS Calculation Processed Data, 2025

The autocorrelation test produces a Durbin–Watson statistic of 2.356. Since this value falls within the accepted range of 1.5 to 2.5, it can be concluded that the regression model is free from autocorrelation. This confirms that the residual values are independent across different time periods, meaning the estimated coefficients measuring the influence of Fraud Hexagon factors on the F-Score are unbiased and consistent.

Table 6. Multiple Linear Regression

Model	Coefficients	Unstandardized Coefficients B
1	(Constant)	23.967
	Financial Stability	-0.513
	External Pressure	-0.672
	Financial Target	0.141
	Ineffective Monitoring	0.001
	Nature of Industry	-0.558
	Rationalization	-0.014
	Capability	1.538
	Arrogance	-0.166
	Collusion	-0.080

Source: SPSS Calculation Processed, 2025

According to the table above, a multiple linear regression equation model can be created as follows:

$$Y = 23.967 - 0.513 X_{1.1} - 0.672 X_{1.2} + 0.141 X_{1.3} + 0.001$$

Interpretation:

- a. The constant value of 23.967 indicates that if all independent variables in the Fraud Hexagon model are zero, then the value of the dependent variable, the F-Score, is 23.967. This reflects the baseline level of financial statement fraud risk before considering the influence of the independent variables in the model.

- b. The regression coefficient for the Financial Target variable (X1.3) has a positive value of 0.141. This indicates that every one-unit increase in the financial target will increase the F-Score by 0.141. This finding indicates that high profit targets trigger management pressure to commit fraud.
- c. The regression coefficient of the Ability variable (X4) has the highest positive value, namely 1.538. This indicates that individual ability in strategic positions is the most dominant factor in increasing the risk of financial reporting fraud in infrastructure sector companies.
- d. The regression coefficients for the variables External Pressure (X1.2), Nature of Industry (X2.2), Rationalization (X3), and Arrogance (X5) are negative and significant. This indicates a counterintuitive influence, where strict industry characteristics and strong external oversight actually act as mechanisms that suppress the risk of financial reporting fraud detected by the F-Score.
- e. The variables Financial Stability (X1.1), Ineffective Monitoring (X2.1), and Collusion (X6) had an insignificant effect on the F-Score. This indicates that in this study, these three factors were not the main determinants in increasing the risk of financial statement fraud in the sample companies.

Table 7. Model Feasibility Test (F Test)

Model	Sum of Squares	df	Mean Square	F	Sig.
Regression	47.674	9	5.297	58.042	0.000 ^b
Residual	2.373	26	0.091		
Total	50.047	35			

Source: SPSS Calculation Processed Data, 2025

The F-test yields a significance value of 0.000, which is lower than the 0.05 threshold. This confirms that the multiple linear regression model as a whole is statistically significant and suitable; it adequately explains how the components of the Fraud Hexagon influence the F-Score.

Table 8. Coefficient of Determination (R²) Test

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	0.933	0.871	0.846	0.51008

Source: SPSS Calculation Processed Data, 2025.

The Adjusted R Square value of 0.846 shows that the set of independent variables together accounts for 84.6% of the variation in financial statement fraud as measured by the F-Score. The remaining 15.4% is influenced by other factors not included in this study's framework. Meanwhile, the R value of 0.933 reflects a very strong correlation between the elements of the Fraud Hexagon and the likelihood of financial reporting fraud among companies operating in the infrastructure sector.

Table 9. Hypothesis Test (t-Test)

Variable	b Coefficient	Sig. (p-value)	Hypothesis Decision	Interpretation
(Constant)	23.967	0.000	Rejected	The intercept is statistically significant at the 5% level.
Financial Stability (X1.1)	-0.513	0.118	Accepted	No significant effect on F-Score; the negative relationship is not statistically supported.
External Pressure (X1.2)	-0.672	0.017	Accepted	Significant negative effect; higher external pressure reduces F-Score.

Variable	b Coefficient	Sig. (p- value)	Hypothesis Decision	Interpretation
Financial Target (X1.3)	0.141	0.000	Accepted	Significant positive effect; more achievable financial targets increase F-Score.
Ineffective Monitoring (X2.1)	0.001	0.722	Rejected	No significant effect on F-Score; the relationship is statistically negligible.
Nature of Industry (X2.2)	-0.558	0.006	Accepted	Significant negative effect; industry characteristics reduce F-Score.
Rationalization (X3)	-0.014	0.017	Accepted	Significant negative effect; stronger rationalization reduces F-Score.
Capability (X4)	1.538	0.000	Accepted	Significant positive effect; higher capability strongly increases F-Score.
Arrogance (X5)	-0.166	0.001	Accepted	Significant negative effect; higher arrogance reduces F-Score.
Collusion (X6)	-0.080	0.574	Rejected	No significant effect on F-Score; the negative relationship is not statistically supported.

Source: Data Processing, 2025.

From the results of the significance value of the hypothesis test, the Fraud Hexagon elements that influence financial reporting fraud are:

- 1) Pressure measured by External Pressure (X1.2) and Financial Target (X1.3),
- 2) Opportunity is measured using Nature of Industry (X2.2),
- 3) Rationalization (X3),
- 4) Capability (X4), and
- 5) Arrogance (X5)

Meanwhile, the variables that do not influence financial reporting fraud are:

- 1) Pressure as measured by Financial Stability (X1.1),
- 2) Opportunity which is measured using Ineffective Monitoring (X2.1), and
- 3) Collusion (X6)

4.2. Discussion

The Influence of Pressure (X 1) on Fraudulent Financial Reporting

Pressure in this study is proxied by: financial stability (X1.1), external pressure (X1.2), and financial targets (X1.3). The results of the financial stability hypothesis test showed a significance value of 0.118, meaning H1.1 was rejected. Financial stability did not influence management's motivation to commit financial statement fraud. This indicates that changes in company assets do not motivate management to commit fraud. Proper asset management can maintain a company's financial stability (Shinta and Nugroho, 2020). In the infrastructure sector, asset fluctuations are considered normal because the mechanism for recording assets in new construction provides future returns. Furthermore, company asset management is often a consideration for investors and creditors, so it is very risky if changes in assets motivate management to commit financial statement fraud. These results are in line with the research results of Hartiana, & Hastuti (2022), Tiffani and Marfuah (2015), but not in line with Aviantara (2020) and Larum, Zuhroh, & Subiyantoro (2021).

Significance value external pressure As measured by leverage, it has a negative effect on fraud detection, meaning H1.2 is accepted. The greater a company's debt, the stricter oversight creditors, investors, and regulators will impose, thereby reducing the likelihood of management fraud. This finding aligns with research by Agusputri and Sofie (2019), Larum, Zuhroh, & Subiyantoro (2021), and Sihombing and Rahardjo (2014), but differs from Sari & Nugroho (2021), who found a positive effect.

Financial targets have a significance value of 0.000, indicating that they have a positive effect on fraud detection, meaning H1.3 is accepted. Aggressive profit targets (ROA) can motivate management to manipulate to meet shareholder expectations in order to maintain the company's reputation or to obtain large bonuses. This finding is supported by the findings of Tessa and Harto (2016), but is inconsistent with the findings of Addawiyah et al. (2025), Hartiana & Hastuti (2022), and Sari & Nugroho (2021), which found a negative effect.

The Influence of Opportunity (X2) on Fraudulent Financial Reporting

Opportunity This study measured two indicators: ineffective monitoring and the nature of the industry. The t-test results rejected H2.1, indicating that ineffective monitoring has no effect on fraud detection. This is often due to the presence of independent commissioners often only aiming to fulfill administrative compliance aspects, so their supervisory function is merely a formality. This finding is consistent with research by Faradiza (2019) and Tessa and Harto (2016), but is inconsistent with Muttiwijaya et al. (2025) which found a positive effect. Meanwhile, H2.2 is accepted, meaning that the nature of the industry negatively influences indications of fraud. The nature of the industry is measured by changes in receivables relative to sales, as the determination of receivables write-off policies contains elements of management subjectivity and is therefore susceptible to manipulation. The greater the receivables, the smaller the cash turnover, thus reducing the possibility of potential fraud. Furthermore, strict regulations and third-party verification in infrastructure projects will limit management's opportunities to manipulate receivables. This is in line with the argument of Skousen et al. (2009), but not in line with Sihombing & Rahardjo (2014) who provided different findings.

The Influence of Rationalization on Fraudulent Financial Reporting

The third hypothesis test showed a significance value of 0.017 for rationalization, meaning H3 was accepted, with a negative effect. Total accruals reflect the company's overall activities, thus relating to management decision-making and providing insight into rationalization in financial reporting (Vermeer, 2003). Rationalization is often assessed through changes in accounting policies or the total accrual ratio, which reflects management discretion (Maghfiroh et al., 2015). Management's internal rationalization or justification is not always accompanied by an increased risk of detected fraud. Improved audit quality and professional skepticism among new auditors actually narrow the scope for justification of accounting irregularities. These results are supported by Muttiwijaya et al. (2025), but are inconsistent with Pratista & Suryani (2025) and Sari & Nugroho (2021).

The Influence of Capability on Financial Reporting Fraud

Based on the results of the t-test, the significance value for Capability is 0.000, which is below the 0.05 threshold. Consequently, Hypothesis 4 (H4) is accepted. This finding confirms that Capability exerts a positive and significant influence on the detection of financial statement fraud. Furthermore, Capability emerges as the most dominant factor contributing to a higher risk of fraudulent reporting. This relationship can be explained by the strategic position held by the board of directors, which grants them sufficient authority and power to bypass or override existing internal control mechanisms. These results are consistent with the findings of

Putra and Dwirandra (2019), who similarly identified managerial capability as a key driver of fraud risk. However, the outcome differs from the studies conducted by Hioda and Urumsah (2025) and Shaleh (2025), who reported contrasting results regarding the direction and significance of this relationship.

The Influence of Arrogance on Financial Reporting Fraud

The t-test results indicate that the significance value for Arrogance is 0.001, which is below the 0.05 significance level. Accordingly, Hypothesis 5 (H5) is accepted, confirming that Arrogance exerts a negative influence on financial statement fraud. This outcome suggests that chief executives who appear frequently and prominently in annual reports—an indicator of high self-image or dominance—are essentially public figures under closer scrutiny from regulators, investors, and creditors. Such high visibility creates greater accountability, compelling them to protect their reputation by preparing and presenting financial information more cautiously and reliably. These findings align with the studies conducted by Sari and Nugroho (2020) and Siddiq et al. (2017), who similarly observed that greater public exposure reduces the likelihood of fraudulent reporting. However, the result contradicts the conclusions of Bawekes et al. (2018) and Florensia et al. (2025), who argued that managerial arrogance tends to increase the risk of accounting fraud.

The Influence of Collusion on Financial Reporting Fraud

The significance value of collusion from the t-test results is 0.574, thus rejecting H6, meaning that collusion has no effect on financial reporting fraud in infrastructure sector companies. Collaborative relationships in government projects have not been shown to increase the risk of fraud due to the extra-strict oversight by institutions such as the Supreme Audit Agency (BPK). Collusion is seen as a common, legally valid practice in the infrastructure industry. This result aligns with research by Mukaromah and Budiwitjaksono (2021) and Hartiana & Hastuti (2022), but is inconsistent with research by Sari & Nugroho (2021) that found a positive effect.

5. Conclusion

Of the six elements of the Fraud Hexagon, five elements—pressure, opportunity, rationalization, capability, and arrogance—have an influence on the detection of financial statement fraud. However, the use of different measuring instruments will produce different results. In this study, pressure, proxied by external pressure and financial targets, has an influence on the detection of financial statement fraud. However, financial stability does not affect fraud, because asset fluctuations are considered normal in the infrastructure sector. Likewise, opportunity, when measured using the nature of the industry, has a negative effect on fraud detection. Conversely, ineffective monitoring does not affect fraud detection, because the role of independent commissioners is often merely an administrative formality, not based on competence and experience in the field of supervision.

In this study of infrastructure companies, only the element of collusion had no effect on financial reporting fraud. This indicates that cooperation on government projects is not a means of conspiracy and manipulation, but rather a strategic alliance that actually carries the consequence of extra-strict oversight from state institutions like the Supreme Audit Agency (BPK).

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