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# Fraud Hexagon Indicators and Audit Committee in Detecting Financial Statement Fraud

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**Abstract**---Financial statement fraud remains a major challenge in maintaining the integrity of corporate financial information, particularly in the manufacturing sector, which is characterized by high operational complexity. This study aims to detect indications of financial statement fraud by applying the Fraud Hexagon framework, which includes the elements of pressure, opportunity, rationalization, capability, ego, and collusion. Additionally, the study examines the moderating role of the audit committee in this relationship. The research was conducted on manufacturing companies listed on the Indonesia Stock Exchange (IDX) during the 2019–2023 period. Using a purposive sampling technique, a total of 119 companies were selected, resulting in 595 financial observations analyzed. A quantitative approach was employed, utilizing Moderated Regression Analysis (MRA) and the Fixed Effect Model (FEM). The results indicate that pressure and opportunity have a significant positive effect on financial statement fraud, whereas rationalization and capability show a significant negative effect. Meanwhile, ego and collusion were found to have no significant effect. The audit committee was shown to strengthen the effects of pressure, rationalization, and capability, and to weaken the effect of opportunity. However, it did not moderate the influence of ego and collusion. The findings suggest that the Fraud Hexagon indicators are effective in detecting financial statement fraud within manufacturing firms. The audit committee plays a vital role as a governance mechanism, although its effectiveness needs enhancement, particularly in addressing ego and collusion. Therefore, it is recommended that companies improve the independence and competence of their audit committees and strengthen internal control systems to minimize the risk of financial statement fraud.

**Keywords**---Audit Committee, Financial Statement Fraud, Fraud Hexagon.

## Introduction

A fraudulent financial statement is no longer a foreign issue in Indonesia, particularly in light of high-profile fraud cases within the manufacturing sector. For instance, PT Indofarma Tbk. (INAF) was found to have manipulated its financial statements from 2020 to 2023, resulting in an alleged state loss of IDR 371.83 billion (BPK, 2024). In 2024, PT Delta Jakarta Tbk. (DLTA) was implicated in revenue and profit inflation, fictitious transactions, and deferred expense recognition (Kompasiana, 2024). Similarly, PT Tiga Pilar Sejahtera Food Tbk. (AISA) In 2021, overstated sales by IDR 662 billion, inflated receivables by IDR 4 trillion, and transferred IDR 1.78 trillion to affiliated parties without transparency (Kontan, 2021).

These cases highlight the severity of financial statement fraud and its far-reaching consequences. Therefore, identifying the underlying causes of such fraud is essential for effective prevention. One effective strategy for detecting fraud is the application of fraud theories, which serve as analytical frameworks to identify risks and fraud patterns in corporate financial reports. Among them, the Fraud Hexagon Theory (Vousinas, 2019) has gained prominence. The evolution of fraud theories—from the Fraud Triangle, Fraud Diamond, and Fraud Pentagon to the

Fraud Hexagon—reflects a growing effort to understand the nature of financial misconduct more comprehensively. The Fraud Hexagon, also known as SCCORE (Stimulus, Capability, Collusion, Opportunity, Rationalization, and Ego), introduces collusion as an additional component (Sihombing & Panggulu, 2022).

As a refinement of earlier models, the Fraud Hexagon Theory provides a more comprehensive and accurate framework for identifying fraudulent behavior (Vousinas, 2019). It identifies six key factors: (1) Stimulus, which arises from business and economic pressures such as unrealistic profit expectations from investors and shareholders (Tragouda et al., 2024); (2) Capability, referring to an individual's skill and capacity to commit fraud (Sánchez-Aguayo et al., 2021); (3) Opportunity, which arises when weaknesses in internal control systems enable undetected misconduct (Gepp et al., 2024); (4) Rationalization, where perpetrators justify unethical acts as acceptable (Gepp et al., 2024); (5) Ego, reflecting personal ambition and self-interest in manipulating information (Vousinas, 2019); and (6) Collusion, a collaborative effort between two or more individuals to conceal fraudulent acts and make them difficult to detect (Apsari & Suhartini, 2021).

Previous studies applying the Fraud Hexagon Theory to detect fraudulent financial statements have yielded inconsistent results. The impact of stimulus has varied across studies by Achmad et al. (2022), Situngkir & Triyanto (2020), and Sukmadilaga et al. (2022). Similarly, opportunity has shown differing outcomes in research by Achmad et al. (2023), Khamainy et al. (2022), and Nugroho & Diyanty (2022). The same applies to rationalization (Alfarago & Maburur, 2022; Sukmadilaga et al., 2022; Utomo et al., 2019), capability (Achmad et al., 2023; Riviera et al., 2024; Arel et al., 2023), ego (Achmad et al., 2023; Situngkir & Triyanto, 2020; Sukmadilaga et al., 2022), and collusion (Alfarago & Maburur, 2022; Khamainy et al., 2022; Purnama et al., 2022). These inconsistencies suggest the potential presence of moderating factors that influence the relationships among the fraud elements and financial statement fraud. Therefore, this study introduces the audit committee as a moderating variable, given its role in mitigating fraud risk (Asih et al., 2024; Sunti, 2023).

The audit committee serves as an independent oversight body responsible for ensuring the integrity of financial statements and the effectiveness of internal controls. Its existence enhances monitoring over financial activities, helps prevent or detect potential fraud, and contributes to a stronger control environment (Asih et al., 2024). As a moderating variable, the audit committee may strengthen or weaken the influence of Fraud Hexagon elements on financial statement fraud, thereby improving financial statement quality and reducing fraud risk. However, the continued occurrence of fraud despite the presence of audit committees raises questions about their effectiveness. It is therefore essential to evaluate whether the audit committee strengthens or weakens the relationship between Fraud Hexagon elements and fraudulent reporting behavior (Zhang et al., 2007).

This study aims to detect fraudulent financial statements using the Fraud Hexagon Theory. This theory is chosen due to its relevance as the most recent and comprehensive framework in the evolution of fraud theories, while previous studies predominantly relied on older models. The audit committee is introduced as a moderating variable, based on its role as an independent oversight body with the potential to suppress fraud in organizations. The manufacturing sector was selected due to its operational complexity, extensive asset management, and high risk of financial statement manipulation. Furthermore, the study period from 2019 to 2023 covers the pre-pandemic, pandemic, and post-pandemic periods, providing insights into how significant economic changes influence fraud risk and reporting practices (Ghafran & O'Sullivan, 2017; Lin et al., 2015).

### *Literature Review and Hypothesis Development*

The fraud hexagon theory identifies pressure (stimulus) as a primary driver of fraudulent behavior. This pressure may stem from poor financial conditions, high earnings expectations from shareholders, or unrealistic performance targets (Vousinas, 2019). From an agency theory perspective, such pressure creates conflict between managers (agents) and shareholders (principals), where agents are tempted to protect the company's image by manipulating financial statements (Jensen & Meckling, 1976). Challenging economic circumstances often escalate the likelihood of opportunistic behavior, particularly when financial stability is at risk.

Several empirical studies support the positive relationship between pressure and financial statement fraud. Research by Achmad et al. (2023), Fathmaningrum & Anggarani (2021), and Situngkir & Triyanto (2020) indicates that financial instability significantly contributes to fraudulent reporting. Similarly, findings by Alfarago & Maburur (2022), Fitriyah & Novita (2021), and Fitri et al. (2019) confirm that high levels of pressure frequently lead to unethical financial decisions. Therefore, this study proposes the hypothesis that pressure positively influences financial statement fraud.

*H1: Pressure has a positive effect on financial statement fraud*

In the Fraud Hexagon Theory, opportunity plays a crucial role in enabling fraudulent behavior, particularly when internal monitoring is ineffective (Vousinas, 2019). When oversight is weak or not functioning properly, individuals with access to financial statements may exploit these gaps to manipulate information without fear of detection. Within the agency theory framework, this condition intensifies conflicts between managers as agents and shareholders as principals, as agents may take advantage of poor internal controls for personal gain (Jensen & Meckling, 1976).

Numerous prior studies support this assumption. Research by Alfarago & Mabur (2022), Aviantara (2021), Fitri et al. (2019), and Hartono & Mukhibad (2024) demonstrates that ineffective monitoring increases the risk of financial statement fraud. In the absence of strong supervision, managers may misuse their authority to conceal poor performance or enhance personal benefits. Thus, Hypothesis H2 posits that opportunity has a positive effect on financial statement fraud.

*H2: The Effect of Opportunity on Financial Statement Fraud*

Fraud Hexagon Theory states that rationalization refers to the moral justification used by individuals to legitimize their fraudulent actions (Vousinas, 2019). Perpetrators often believe their actions are acceptable, either due to entitlement, pressure, or perceived insignificance of the harm caused. According to agency theory, auditor changes can exacerbate conflicts between agents (management) and principals (shareholders), as new auditors may lack familiarity with prior financial reports, creating a window for fraud (Jensen & Meckling, 1976). Auditor rotation may also reflect a strategy to avoid disclosure of manipulative practices by selecting more lenient auditors (Ningtiyas & Hariyanto, 2024).

This moral reasoning becomes particularly salient during auditor transitions, which may weaken oversight. Studies by Alfarago & Mabur (2022), Fitri et al. (2019), and Utomo et al. (2019) show that auditor changes are positively associated with financial statement fraud. Other studies, such as those by Tragouda et al. (2024) and Meidijati & Amin (2022), confirm the influence of rationalization on fraudulent behavior. Therefore, Hypothesis H3 asserts that rationalization positively influences financial statement fraud.

*H3: The Effect of Rationalization on Financial Statement Fraud*

Fraud Hexagon Theory emphasizes that capability refers to the skills or strategic positions that allow individuals to commit and conceal fraud (Vousinas, 2019). This capability is often held by individuals in high authority with deep knowledge of the system or access to crucial organizational information. From the perspective of agency theory, changes in directors can intensify conflicts as new agents may exploit transitional periods where oversight is less stringent (Jensen & Meckling, 1976).

Leadership transitions may provide opportunities for manipulation, especially if the new director possesses strategic capabilities. Research by Arel et al. (2023), Rizkiawan & Subagio (2023), and Maryani et al. (2022) supports the notion that changes in directorship are linked to increased fraud risk. Such changes can weaken supervision, allowing capable individuals to exploit internal vulnerabilities. Accordingly, Hypothesis H4 proposes that capability has a positive effect on financial statement fraud.

*H4: The Effect of Capability on Financial Statement Fraud*

Fraud Hexagon Theory suggests that ego drives individuals to project a flawless self-image, often at the expense of ethical conduct (Vousinas, 2019). CEOs with high egos are more concerned with personal reputation than organizational integrity. This aligns with agency theory, where such agents prioritize personal ambition over the interests of principals (Jensen & Meckling, 1976). High ego can result in the manipulation of financial reports to maintain a perception of success.

One measurable indicator of ego is the frequency of CEO pictures in annual reports. Research by Achmad et al. (2023) and Hartono & Mukhibad (2024) indicates that this visibility correlates with increased fraud. Other studies, including Fouziah et al. (2022) and Allie et al. (2024), confirm the positive relationship between ego and fraudulent financial statements. Thus, Hypothesis H5 suggests that ego has a positive influence on financial statement fraud.

*H5: The Effect of Ego on Financial Statement Fraud*

Fraud Hexagon Theory introduces collusion as a vital element in enabling fraud, as it involves agreements between parties to commit deceitful acts (Vousinas, 2019). Political connections may facilitate fraud by offering preferential treatment or shielding from oversight (Wicaksono & Suryandari, 2021). Within agency theory, politically connected managers may prioritize self-interest over corporate goals, exacerbating principal-agent conflicts (Jensen & Meckling, 1976).

Research by [Achmad et al. \(2022\)](#) and [Khamainy et al. \(2022\)](#) demonstrates that collusion increases fraud risk, especially when backed by political ties. Studies by [Hartono & Mukhibad \(2024\)](#) and [Apsari & Suhartini \(2021\)](#) further affirm that collusion and political connections lead to higher instances of financial statement fraud. Therefore, Hypothesis H6 states that collusion positively affects financial statement fraud.

*H6: The Effect of Collusion on Financial Statement Fraud*

Fraud Hexagon Theory identifies stimulus or pressure as a driver of fraudulent actions, particularly under financial stress or performance targets ([Vousinas, 2019](#)). Under such pressures, management may resort to unethical practices. An effective audit committee serves as a moderating mechanism that enhances transparency and mitigates fraudulent tendencies. From an agency theory standpoint, the audit committee bridges principals and agents by enforcing stronger oversight ([Jensen & Meckling, 1976](#)).

Studies by [Riviera et al. \(2024\)](#), [Dewi & Anisykurlillah \(2021\)](#), and [Hartono & Mukhibad \(2024\)](#) reveal that audit committees weaken the relationship between financial pressure and fraud. The committee ensures compliance with accounting standards and discourages manipulation. Thus, Hypothesis H7 proposes that the audit committee weakens the effect of pressure on financial statement fraud.

*H7: The Moderating Role of the Audit Committee on the Effect of Pressure*

Opportunity enables fraud when internal monitoring fails, but the presence of an audit committee can enhance governance and transparency ([Vousinas, 2019](#)). As per agency theory, the audit committee reduces conflicts of interest by ensuring independent oversight and fostering accountability ([Jensen & Meckling, 1976](#)).

Empirical evidence from studies such as [Asih et al. \(2024\)](#) and [Kamila & Parinduri \(2023\)](#) shows that audit committees reduce the influence of ineffective monitoring on fraud. By narrowing loopholes in the control system, audit committees mitigate opportunities for manipulation. Therefore, Hypothesis H8 asserts that the audit committee weakens the effect of opportunity on financial statement fraud.

*H8: The Moderating Role of the Audit Committee on the Effect of Opportunity*

Rationalization allows individuals to justify unethical behavior, often during auditor transitions when oversight may be weaker ([Vousinas, 2019](#)). Audit committees ensure auditor rotations are transparent and maintain consistent supervision. This mitigates moral leniency and aligns agent behavior with stakeholder interests ([Jensen & Meckling, 1976](#)).

Research by [Ghaisani et al. \(2022\)](#) and [Santoso \(2019\)](#) supports the role of audit committees in curbing the rationalization process. By maintaining strong oversight, they prevent management from justifying fraudulent acts. Thus, Hypothesis H9 suggests that audit committees weaken the effect of rationalization on financial statement fraud.

*H9: The Moderating Role of the Audit Committee on the Effect of Rationalization*

Capability becomes a risk factor during leadership transitions, where individuals in strategic positions may exploit weak oversight ([Vousinas, 2019](#)). Audit committees ensure continued governance during these transitions, reinforcing trust and transparency ([Jensen & Meckling, 1976](#)).

Studies by [Riviera et al. \(2024\)](#), [Sari et al. \(2022\)](#), and [Kamila & Parinduri \(2023\)](#) confirm that audit committees reduce the influence of capability on fraudulent behavior. Strengthened control systems limit the potential misuse of authority. Accordingly, Hypothesis H10 posits that audit committees weaken the effect of capability on financial statement fraud.

*H10: The Moderating Role of the Audit Committee on the Effect of Capability*

Ego-driven CEOs may manipulate reports to maintain their image, but audit committees serve as checks by promoting accountability ([Vousinas, 2019](#)). They align the focus on organizational goals, reducing agency risks ([Jensen & Meckling, 1976](#)).

Findings from [Dwianto et al. \(2024\)](#) and [Ghaisani et al. \(2022\)](#) indicate that audit committees effectively suppress ego-based fraud. The audit committee's oversight reduces manipulation stemming from personal ambition. Therefore, Hypothesis H11 proposes that audit committees weaken the effect of ego on financial statement fraud.

*H11: The Moderating Role of Audit Committee on the Effect of Ego*

Collusion, especially under political connections, increases fraud risk by weakening external oversight ([Vousinas, 2019](#)). Audit committees counteract this by ensuring transparency and minimizing agency conflicts ([Jensen & Meckling, 1976](#)).

Research by [Hakim et al. \(2024\)](#) and [Prasasti & Lastanti \(2024\)](#) demonstrates that audit committees reduce the influence of collusion on fraud. Their independence and vigilance help restore integrity. Thus, Hypothesis H12 asserts that audit committees weaken the effect of collusion on financial statement fraud.

*H12: The Moderating Role of the Audit Committee on the Effect of Collusion*

## Methods

This study focuses on manufacturing companies listed on the Indonesian Stock Exchange. The selection of the manufacturing sector is based on the report by the Association of Certified Fraud Examiners ([ACFE, 2024](#)), which indicates that it ranks as the second-highest sector in terms of financial statement fraud cases. Moreover, the high complexity of operations, asset management, and financial statement in manufacturing firms increases their susceptibility to manipulation. The rising number of fraud cases within the sector underscores the urgency of investigating the underlying factors that contribute to fraudulent financial statements. Therefore, this study is both relevant and significant in enhancing the understanding of fraud risks within the manufacturing sector. The research period covers the years 2019 to 2023. This timeframe was selected to capture the conditions of firms before, during, and after the COVID-19 pandemic. The pandemic placed considerable pressure on corporate financial and operational performance, providing a relevant context to examine how external shocks and internal pressures may influence the occurrence of financial statement fraud. The sampling technique employed in this study is purposive sampling, which involves selecting samples based on specific criteria relevant to the research objectives. The criteria for sample selection are as follows:

- 1) The company must operate in the manufacturing sector and be listed on the Indonesia Stock Exchange (IDX) during the period from 2019 to 2023.
- 2) The company must consistently publish complete annual financial statements for each year from 2019 to 2023.
- 3) The financial statements must be presented in Indonesian rupiah (IDR) to ensure uniformity in data processing.

This study employs the Moderated Regression Analysis (MRA) method to examine the influence of independent variables on the dependent variable, incorporating a moderating variable. Data processing is conducted using STATA software. One of the main advantages of STATA over other statistical tools is its support for syntax-based commands, which allows greater flexibility for researchers as it is not limited to menu-driven graphical interfaces.

## Result and Discussion

### *Selection of Panel Regression Estimation Model*

Panel data regression analysis can be performed using three main estimation approaches: the Common Effect Model (CEM), the Fixed Effect Model (FEM), and the Random Effect Model (REM). The selection of the most appropriate estimation model is carried out through a series of model specification tests, including:

- 1) Chow Test, to compare CEM and FEM.
- 2) Hausman Test, to determine the better fit between FEM and REM.
- 3) Lagrange Multiplier (LM) Test, to compare CEM and REM.

The Chow Test is used to identify whether the panel data model should be estimated using a Fixed Effect or Common Effect specification. The hypotheses for this test are stated as follows:

- $H_0$ : The model follows the Common Effect Model (CEM), accepted if the *probability value* > significance level ( $\alpha = 5\%$ ).
- $H_1$ : The model follows the Fixed Effect Model (FEM), accepted if the *probability value*  $\leq$  significance level ( $\alpha = 5\%$ ).

The results of the Chow Test for model selection are presented in Table 1.

Table 1  
Results of Chow Test Estimation Model

	Chow Test	
	F Statistic	Probability
Model 1	23.22	0.000
Model 2	23.14	0.000
Model 3	23.72	0.000

Primary Data, 2025

The results of the Chow Test presented in Table 1 show that the F-statistic in the first model—testing the influence of pressure, opportunity, rationalization, capability, ego, and collusion on financial statement fraud—is 23.22 with a probability value of 0.000. This result indicates that the probability value is less than the level of significance ( $\alpha = 5\%$ ), thus  $H_0$  is rejected. Therefore, based on the Chow Test, the appropriate panel regression estimation model for Model 1 is the Fixed Effect Model (FEM).

Next, the F-statistic in the Chow Test for Model 2—testing the influence of pressure, opportunity, rationalization, capability, ego, collusion, and audit committee on financial statement fraud—is 23.14 with a probability value of 0.000. This result also shows that the probability value is below the level of significance ( $\alpha = 5\%$ ), thereby rejecting  $H_0$ . Consequently, the panel regression estimation model for Model 2 is the Fixed Effect Model (FEM).

Furthermore, the F-statistic in the Chow Test for Model 3—which includes pressure, opportunity, rationalization, capability, ego, collusion, audit committee, and the interactions between the audit committee and each fraud hexagon element—yields a value of 23.72 with a probability of 0.000. Since the probability value is less than the 5% significance level,  $H_0$  is again rejected. Thus, the panel regression estimation model for Model 3 is also determined to be the Fixed Effect Model (FEM) based on the Chow Test results.

The Hausman Test is used to determine whether the panel regression estimation model should follow the Random Effect Model (REM) or the Fixed Effect Model (FEM), based on the following hypotheses:

- $H_0$ : Random Effect Model (REM), accepted if the probability value  $>$  level of significance (Alpha ( $\alpha$ ) = 5%)
- $H_1$ : Fixed Effect Model (FEM), accepted if the probability value  $\leq$  level of significance (Alpha ( $\alpha$ ) = 5%)

Table 2  
The Hausman Test

	Hausman Test	
	Chi-Square Statistic	Probability
Model 1	46.13	0.000
Model 2	47.92	0.000
Model 3	65.84	0.000

The results of the Hausman Test as shown in Table 5.4 indicate that the chi-square statistic in Model 1, which examines the influence of pressure, opportunity, rationalization, capability, ego, and collusion on financial statement fraud, is 46.13 with a probability value of 0.000. This probability value is less than the significance level ( $\alpha = 5\%$ ), hence  $H_0$  is rejected. Accordingly, based on the Hausman Test, the appropriate panel regression estimation model for Model 1 is the Fixed Effect Model (FEM).

Next, the chi-square statistic in the Hausman Test for Model 2—testing the influence of pressure, opportunity, rationalization, capability, ego, collusion, and the audit committee on financial statement fraud—is 47.92 with a probability value of 0.000. Since the probability value is less than the 5% significance level,  $H_0$  is rejected. Therefore, the appropriate panel regression estimation model for Model 2 is also the Fixed Effect Model (FEM).

Furthermore, in Model 3, which includes pressure, opportunity, rationalization, capability, ego, collusion, audit committee, and their interaction terms (e.g., interaction between pressure and audit committee, opportunity and audit committee, and so forth), the chi-square statistic is 65.84 with a probability value of 0.000. Given that the probability value is below the significance level of 5%,  $H_0$  is again rejected. Thus, based on the Hausman Test, the appropriate panel regression model for Model 3 is the Fixed Effect Model (FEM).

The Lagrange Multiplier (LM) Test is used to determine whether the appropriate estimation model is the Common Effect Model (CEM) or the Random Effect Model (REM), based on the following hypotheses:

- $H_0$ : Common Effect Model (CEM), accepted if the probability value  $>$  level of significance (Alpha ( $\alpha$ ) = 5%)
- $H_1$ : Random Effect Model (REM), accepted if the probability value  $\leq$  level of significance (Alpha ( $\alpha$ ) = 5%)

The results of the model effect test using the Lagrange Multiplier Test (LM test) are presented in Table 3.

Table 3  
The Lagrange Multiplier (LM) Test

	Lagrange Multiplier Test	
	Chi-Square Statistic	Probability
Model 1	685.34	0.000
Model 2	684.54	0.000
Model 3	652.80	0.000

Primary Data, 2025

The results of the Lagrange Multiplier (LM) Test in Table 5.5 show that for Model 1, which examines the influence of pressure, opportunity, rationalization, capability, ego, and collusion on financial statement fraud, the Chi-Square statistic is 685.34 with a probability value of 0.000. This result indicates that the probability is less than the level of significance ( $\alpha = 5\%$ ), hence  $H_0$  is rejected. This means that, based on the Lagrange Multiplier Test, the appropriate panel regression estimation model for Model 1 is the Random Effect Model (REM).

For Model 2, which includes the influence of pressure, opportunity, rationalization, capability, ego, collusion, and the audit committee on financial statement fraud, the Chi-Square statistic is 684.54 with a probability value of 0.000. Since the probability is less than the significance level of 5%,  $H_0$  is rejected. Thus, the panel regression estimation model for Model 2, based on the Lagrange Multiplier Test, is also the Random Effect Model (REM).

In Model 3, which considers pressure, opportunity, rationalization, capability, ego, collusion, the audit committee, and the interaction terms between each fraud element and the audit committee, the Chi-Square statistic is 652.80 with a probability value of 0.000. Given that the probability is below the 5% significance level,  $H_0$  is rejected. Therefore, the panel regression estimation model for Model 3, according to the Lagrange Multiplier Test, is the Random Effect Model (REM).

Based on the results of the Chow Test, the Hausman Test, and the Lagrange Multiplier Test, the most appropriate estimation model to be used in this study is the Fixed Effect Model (FEM). A summary of the model selection results can be seen in Table 4.

Table 4  
Panel Regression Estimation Model

Test	Hypothesis	Final Result
Chow Test	Common Effect vs Fixed Effect	Fix Effect
Hausman Test	Random Effect vs Fixed Effect	Fix Effect
LM Test	Random Effect vs Common Effect	-

Primary Data, 2025

#### *Coefficient of Determination Test ( $R^2$ ) – Goodness of Fit of the Model*

The goodness of fit of the model in panel regression analysis with moderation effects is assessed using the coefficient of determination (R-squared). This measurement is intended to determine the best-fitting panel regression model with moderation effects based on the extent to which the variability of the dependent variable can be explained by the independent variables. In other words, the R-squared coefficient is used to measure the explanatory power of the independent variables in representing the dependent variable. The closer the R-Square value is to 100%, the better the panel regression model with moderation effects is. The summary of the model's goodness of fit results is presented in Table 5.

Table 5  
Coefficient of Determination Test ( $R^2$ ) – Goodness of Fit of the Model

Dependent Variable	Coefficient of Determination Test ( $R^2$ )		
	Model 1	Model 2	Model 3
Financial Statement Fraud	0.457	0.458	0.493

Primary Data, 2025

The coefficient of determination (R-squared) for the financial statement fraud variable in the first model is 0.457 or 45.7%. This indicates that financial statement fraud can be explained by the variables pressure, opportunity, rationalization, capability, ego, and collusion by 45.7%. In other words, these independent variables contribute 45.7% to the explanation of financial statement fraud, while the remaining 54.3% is attributed to other variables not examined in this study.

The R-squared value for financial statement fraud in the second model is 0.458 or 45.8%. This means that pressure, opportunity, rationalization, capability, ego, collusion, and the audit committee collectively explain 45.8% of financial statement fraud, with the remaining 54.2% being influenced by variables not included in this research. The R-squared value in the third model is 0.493 or 49.3%. This indicates that financial statement fraud is explained by pressure, opportunity, rationalization, capability, ego, collusion, audit committee, and the interaction terms between the audit committee and each fraud hexagon component (pressure, opportunity, rationalization, capability, ego, and collusion) by 49.3%. Thus, the remaining 50.7% of the variance is explained by other variables outside the scope of this study.

#### *Test of Simultaneous Significance (F-Test)*

The simultaneous significance test is intended to determine whether the independent variables collectively have a significant effect on the dependent variable. This test, in the context of moderated panel regression analysis (panel MRA) uses the F-statistic. The decision criterion states that if the probability value  $\leq$  significance level ( $\alpha$ ) = 5%), then the independent variables collectively have a statistically significant effect on the dependent variable. The results of the simultaneous significance test are presented in Table 6.

Table 6  
Simultaneous Significance (F-Test)

Regression Model	F Statistic (FEM)	Probability Value
Model 1	66.05	0.000
Model 2	56.54	0.000
Model 3	34.67	0.000

Primary Data, 2025

Table 6 presents the results of the simultaneous significance tests. For Model 1, which assesses the influence of pressure, opportunity, rationalization, capability, ego, and collusion on financial statement fraud, the F-statistic is 66.05 with a probability value of 0.000. Since the probability value is less than the significance level ( $\alpha = 5\%$ ), the null hypothesis is rejected. This indicates that there is a statistically significant simultaneous influence of pressure, opportunity, rationalization, capability, ego, and collusion on financial statement fraud. These findings suggest that the panel moderated regression model (panel MRA) is appropriate for predicting the impact of these six fraud hexagon elements on financial statement fraud.

For Model 2, which adds the audit committee as an independent variable, the F-statistic is 56.54 with a probability value of 0.000. As the probability value is also less than the significance level ( $\alpha = 5\%$ ), the result confirms a statistically significant simultaneous effect of pressure, opportunity, rationalization, capability, ego, collusion, and the audit committee on financial statement fraud. Thus, the panel moderated regression model remains suitable for capturing the combined effects of these variables.

For Model 3, which incorporates interaction terms between the audit committee and each fraud hexagon component (pressure, opportunity, rationalization, capability, ego, and collusion), the F-statistic is 34.67 with a probability value of 0.000. The probability value is again below the significance threshold ( $\alpha = 5\%$ ), indicating a statistically significant joint effect of all independent and interaction variables on financial statement fraud. Therefore, this further supports the appropriateness of the panel moderated regression model (panel MRA) in

explaining financial statement fraud based on the interaction between the audit committee and fraud hexagon elements.

*Partial Effect Hypothesis Testing (t-Test)*

The partial hypothesis testing aims to examine whether each independent variable individually has a significant effect on the dependent variable. In the context of moderated panel regression analysis (panel MRA), this is tested using the t-statistic. The decision rule states that if the regression coefficient is positive and the one-tailed probability value  $\leq$  level of significance ( $\alpha = 5\%$ ), then the independent variable has a statistically significant effect on the dependent variable. The detailed results of the partial hypothesis tests are presented in Table 7.

Table 7  
Partial Effect Hypothesis Testing (t-Test)

Independent	Coeff.	SE	T Statistics	P Value	P Value (One Tailed)
<b>Model 1</b>					
<i>(Constant)</i>	0.801	0.018	43.820	0.000	
Pressure	0.424	0.023	18.660	0.000	0.000
Opportunity	-0.008	0.041	-0.200	0.839	0.420
Rationalization	0.028	0.019	1.460	0.145	0.073
Ability	0.016	0.016	1.030	0.303	0.152
Ego	-0.003	0.002	-1.370	0.170	0.085
Collusion	0.006	0.035	0.170	0.866	0.433
<b>Model 2</b>					
<i>(Constant)</i>	0.786	0.038	20.520	0.000	
Pressure	0.420	0.024	17.420	0.000	0.000
Opportunity	-0.009	0.041	-0.230	0.821	0.411
Rationalization	0.029	0.019	1.500	0.134	0.067
Ability	0.016	0.016	1.020	0.307	0.154
Ego	-0.003	0.002	-1.300	0.195	0.098
Collusion	0.006	0.035	0.180	0.860	0.430
Audit Committee	0.005	0.011	0.450	0.655	0.328
<b>Model 3</b>					
<i>(Constant)</i>	0.641	0.106	6.030	0.000	
Pressure	0.190	0.089	2.130	0.034	0.017
Opportunity	0.438	0.188	2.340	0.020	0.010
Rationalization	-0.216	0.095	-2.280	0.023	0.012
Ability	-0.318	0.108	-2.950	0.003	0.002
Ego	-0.006	0.015	-0.420	0.673	0.337
Collusion	-0.050	0.131	-0.380	0.703	0.352
Audit Committee	0.050	0.035	1.450	0.147	0.074
Audit Committee Interaction with Pressure	0.055	0.022	2.470	0.014	
Audit Committee Interaction with Opportunities	-0.136	0.060	-2.260	0.024	
Audit Committee Interaction with Rationalization	0.074	0.029	2.590	0.010	
Audit Committee Interaction with Competence	0.107	0.034	3.130	0.002	
Audit Committee Interaction with Ego	0.001	0.005	0.200	0.842	
Audit Committee Interaction with Collusion	0.017	0.034	0.500	0.616	

Primary Data, 2025

The effect of the constant on financial statement fraud yields a t-statistic of 43.820 with a probability value of 0.000. Since the probability value is less than the significance level ( $\alpha = 5\%$ ), it can be concluded that the constant has a significant influence on financial statement fraud. The constant value of 0.801 indicates that when all independent variables (pressure, opportunity, rationalization, capability, ego, and collusion) are held constant, the predicted level of financial statement fraud is 0.801.

The partial hypothesis test for the effect of pressure on financial statement fraud shows a regression coefficient of 0.424 and a t-statistic of 18.660 with a one-tailed probability value of 0.000. These results indicate that the regression coefficient is positive ( $\beta > 0$ ) and the probability value is below the 5% significance level, meaning that pressure has a positive and significant effect on financial statement fraud. Therefore, an increase in pressure by one unit is predicted to increase financial statement fraud by 0.424.

The hypothesis test for the effect of opportunity on financial statement fraud yields a regression coefficient of -0.008 and a t-statistic of -0.200 with a one-tailed probability value of 0.420. This result shows a negative but statistically insignificant effect ( $\beta < 0$  and  $p > 0.05$ ). Hence, while an increase in opportunity by one unit is predicted to reduce financial statement fraud by 0.008, this effect is not statistically significant.

The partial test for the effect of rationalization results in a regression coefficient of 0.028 and a t-statistic of 1.460 with a one-tailed p-value of 0.073. Although the coefficient is positive, the probability value exceeds the significance threshold ( $p > 0.05$ ), suggesting that rationalization does not have a significant effect. In other words, the level of fraud in firms that change auditors does not differ significantly from those that do not, although firms that changed auditors exhibit fraud levels that are 0.028 higher.

The hypothesis test for capability shows a regression coefficient of 0.016 and a t-statistic of 1.030 with a one-tailed p-value of 0.152. This indicates a positive but statistically insignificant effect. Thus, the level of fraud among companies that changed directors is 0.016 higher than those that did not, but this difference is not statistically meaningful.

The partial test for ego shows a regression coefficient of -0.003 and a t-statistic of -1.370 with a one-tailed probability value of 0.085. Although the effect is negative, it is not statistically significant. Therefore, an increase in ego by one unit is predicted to reduce financial statement fraud by 0.003, but the reduction is not statistically significant.

Lastly, the test for collusion results in a regression coefficient of 0.006 and a t-statistic of 0.170 with a one-tailed p-value of 0.433. This reflects a positive but insignificant effect. In other words, firms led by politically connected CEOs exhibit 0.006 higher fraud levels than those led by non-politician CEOs, though the difference lacks statistical significance.

The effect of the constant on financial statement fraud yields a t-statistic of 20.520 with a probability value of 0.000. As the probability value is less than the significance level ( $\alpha = 5\%$ ), this indicates a significant effect of the constant on financial statement fraud. The constant value of 0.786 suggests that if the variables of pressure, opportunity, rationalization, capability, ego, collusion, and audit committee are held constant, the predicted level of financial statement fraud is 0.786 points.

The partial hypothesis test for the influence of pressure on financial statement fraud results in a regression coefficient of 0.420 and a t-statistic of 17.420 with a one-tailed probability value of 0.000. These results show a positive regression coefficient ( $\beta > 0$ ) and a significant probability value ( $p < 0.05$ ), indicating that pressure has a positive and significant effect on financial statement fraud. Thus, a one-unit increase in pressure is predicted to increase financial statement fraud by 0.420 points.

The effect of opportunity on financial statement fraud yields a regression coefficient of -0.009 and a t-statistic of -0.230 with a one-tailed p-value of 0.411. Despite the negative coefficient, the p-value is greater than 0.05, suggesting a negative but statistically insignificant effect. This implies that a one-unit increase in opportunity would reduce financial statement fraud by 0.009 points, although the decrease is not statistically significant.

The partial test for rationalization produces a regression coefficient of 0.029 and a t-statistic of 1.500 with a one-tailed p-value of 0.067. Although the coefficient is positive, the p-value is greater than the 5% threshold, indicating a positive but not statistically significant effect. In other words, the level of financial statement fraud committed by firms that changed auditors is slightly higher (by 0.029 points) than that of firms that did not, but the difference is not statistically significant.

The influence of capability on financial statement fraud results in a regression coefficient of 0.016 and a t-statistic of 1.020 with a one-tailed p-value of 0.154. The positive coefficient and a p-value greater than 0.05 indicate that capability has a positive but insignificant effect. This suggests that firms that changed directors committed slightly more financial statement fraud (by 0.016 points) than those that did not, although the difference is not significant.

The hypothesis test for ego shows a regression coefficient of -0.003 and a t-statistic of -1.300 with a one-tailed p-value of 0.098. This indicates a negative but statistically insignificant effect. A one-unit increase in ego is associated with a 0.003-point decrease in financial statement fraud, although the effect is not significant.

The effect of collusion on financial statement fraud results in a regression coefficient of 0.006 and a t-statistic of 0.180 with a one-tailed p-value of 0.430. The results suggest a positive but insignificant effect, implying that firms led by politically affiliated CEOs commit 0.006 points more financial statement fraud than those led by non-politician CEOs, although the difference is not statistically significant.

Lastly, the partial test for the effect of the audit committee on financial statement fraud yields a regression coefficient of 0.005 and a t-statistic of 0.450 with a one-tailed p-value of 0.328. The result shows a positive but insignificant effect. Thus, an increase in the number of audit committee members by one person is predicted to increase financial statement fraud by 0.005 points, although the effect is not statistically significant.

The effect of the constant on financial statement fraud yields a t-statistic of 6.030 and a probability value of 0.000. Since the probability value is less than the significance level ( $\alpha = 5\%$ ), the constant has a statistically significant effect on financial statement fraud. A constant value of 0.641 indicates that when the values of pressure, opportunity, rationalization, capability, ego, collusion, and audit committee are held constant, the predicted level of financial statement fraud is 0.641.

The partial hypothesis test for the effect of pressure results in a regression coefficient of 0.190 and a t-statistic of 2.130, with a one-tailed probability value of 0.017. Since the coefficient is positive ( $\beta > 0$ ) and the p-value is less than 5%, pressure has a positive and significant effect on financial statement fraud. A one-unit increase in pressure is predicted to increase financial statement fraud by 0.190.

The effect of opportunity yields a regression coefficient of 0.438 and a t-statistic of 2.340, with a one-tailed p-value of 0.010. This indicates a positive and significant effect. Hence, a one-unit increase in opportunity will increase financial statement fraud by 0.438.

The rationalization variable has a regression coefficient of -0.216, a t-statistic of -2.280, and a one-tailed p-value of 0.012. The coefficient is negative ( $\beta < 0$ ) and the p-value is less than 5%, indicating a negative and significant effect. This implies that companies that did not change auditors are associated with 0.216 higher levels of financial statement fraud compared to those that did.

The effect of capability yields a regression coefficient of -0.318, a t-statistic of -2.950, and a one-tailed p-value of 0.002. The coefficient is negative and statistically significant, suggesting that companies that did not replace directors exhibit 0.318 higher levels of financial statement fraud compared to those that did. Thus, capability has a negative and significant effect.

The ego variable shows a regression coefficient of -0.006, a t-statistic of -0.420, and a one-tailed p-value of 0.337. The result is negative but not significant, suggesting that a one-unit increase in ego may decrease financial statement fraud by 0.006, although the effect is not statistically significant.

The effect of collusion results in a regression coefficient of -0.050, a t-statistic of -0.380, and a one-tailed p-value of 0.352. The coefficient is negative, and the effect is statistically insignificant. It indicates that firms led by non-politician CEOs are associated with financial statement fraud levels 0.050 higher than those led by political CEOs, but the difference is not significant.

The effect of the audit committee produces a regression coefficient of 0.050, a t-statistic of 1.450, and a one-tailed p-value of 0.074. Despite the positive coefficient, the p-value is greater than 5%, indicating that the effect is positive but not significant. A one-person increase in the audit committee is associated with a 0.050 increase in financial statement fraud, though this is not statistically significant.

#### *Moderation Hypothesis*

The moderation hypothesis testing aims to determine whether there is a moderating effect on the causal relationship between independent variables and the dependent variable. This test is conducted using the **t-statistic** in a panel moderation regression analysis (Moderated Regression Analysis or MRA).

The testing criterion is as follows: if the probability value is less than or equal to the level of significance ( $\alpha = 5\%$ ), the moderating variable is deemed to significantly moderate the causal relationship between the independent and dependent variables.

The results of the moderation hypothesis testing are summarized in Table 8.

Table 8  
Moderation Hypothesis

Independent	Coefficient	T Statistics	P Value
Interaction of Pressure with the Audit Committee	0.055	2.470	0.014
Interaction of Opportunity with the Audit Committee	-0.136	-2.260	0.024
Interaction of Rationalization with the Audit Committee	0.074	2.590	0.010
Interaction of Ability with the Audit Committee	0.107	3.130	0.002
Interaction of Ego with the Audit Committee	0.001	0.200	0.842
Interaction of Collusion with the Audit Committee	0.017	0.500	0.616

Primary Data, 2025

The interaction between pressure and the audit committee on financial statement fraud yielded a t-statistic of 2.470 and a probability value of 0.014. This result indicates that the probability value is less than the significance level ( $\alpha = 5\%$ ), which means that the interaction has a significant effect. In other words, the audit committee moderates the causal relationship between pressure and financial statement fraud. Based on the coefficient in Model 3, pressure has a positive effect on financial statement fraud, and the interaction between pressure and the audit committee also shows a positive effect (0.055). This implies that the audit committee strengthens the effect of pressure on financial statement fraud. Since the audit committee has an insignificant effect on its own in Model 2, while the interaction term is significant in Model 3, it can be concluded that the audit committee functions as a pure moderator in this relationship.

The interaction between opportunity and the audit committee on financial statement fraud resulted in a t-statistic of -2.260 and a probability value of 0.024. This indicates a significant effect, meaning that the audit committee moderates the causal relationship between opportunity and financial statement fraud. In Model 3, opportunity shows a positive influence on financial statement fraud, while the interaction term has a negative coefficient (-0.136), indicating that the audit committee weakens the influence of opportunity on fraud. Given that the audit committee itself is not significant in Model 2, but the interaction term is significant in Model 3, the audit committee acts as a pure moderator in this relationship.

The interaction between rationalization and the audit committee on financial statement fraud produced a t-statistic of 2.590 and a probability value of 0.010. This result shows that the interaction has a significant effect, indicating that the audit committee moderates the relationship between rationalization and financial statement fraud. Rationalization has a negative influence, while the interaction term has a positive coefficient (0.074), suggesting that the audit committee weakens the negative effect of rationalization. Because the audit committee is insignificant in Model 2 and the interaction term is significant in Model 3, the audit committee serves as a pure moderator.

The interaction between capability and the audit committee on financial statement fraud yielded a t-statistic of 3.130 and a probability value of 0.002. The result indicates a significant moderating effect, meaning the audit committee moderates the relationship between capability and financial statement fraud. Capability has a negative effect on fraud, while the interaction term has a positive coefficient (0.107), meaning the audit committee weakens the influence of capability. Since the audit committee alone is not significant in Model 2, but the interaction term is significant in Model 3, it functions as a pure moderator in this relationship.

The interaction between ego and the audit committee on financial statement fraud yielded a t-statistic of 0.200 and a probability value of 0.842. As the probability value is greater than 5%, this indicates no significant effect. Therefore, the audit committee does not moderate the causal relationship between ego and financial statement fraud. Both the audit committee's effect (Model 2) and the interaction term (Model 3) are insignificant, which means that the audit committee serves as a homologizer moderator (a potential moderating variable) in this relationship.

The interaction between collusion and the audit committee on financial statement fraud produced a t-statistic of 0.500 and a probability value of 0.616, indicating an insignificant effect. Thus, the audit committee does not moderate the causal relationship between collusion and financial statement fraud. As both the audit committee (Model 2) and the interaction term (Model 3) are insignificant, the audit committee is categorized as a homologizer moderator in this context.

## **Conclusion**

Pressure has a positive effect on financial statement fraud in manufacturing companies listed on the Indonesia Stock Exchange (IDX) during 2019–2023. Opportunity also has a positive effect on financial statement fraud, while rationalization and capability each show a negative effect. Ego and collusion do not have any significant effect on financial statement fraud. Furthermore, the audit committee strengthens the effect of pressure, rationalization, and capability on financial statement fraud, while it weakens the effect of opportunity. However, the audit committee does not moderate the effect of ego or collusion on financial statement fraud in manufacturing companies listed on the IDX during the same period.

### *Managerial Implication*

This study contributes to the growing body of literature on the detection of financial statement fraud by utilizing the Fraud Hexagon indicators, which represent a recent advancement in fraud theory. The finding that not all fraud elements have a significant effect—and that their influence can be moderated differently by the audit committee—enhances our understanding of the complexity of fraudulent behavior within organizations. Moreover, the results reinforce and support Agency Theory, particularly highlighting the importance of monitoring mechanisms (in this

case, the audit committee) in addressing conflicts of interest between management (agents) and owners (principals). Practically, the findings of this study offer valuable guidance for various stakeholders, including corporate management, audit committees, regulators, investors, and the general public. For companies and audit committees, the discovery that pressure, opportunity, rationalization, and capability significantly influence fraudulent practices emphasizes the need to strengthen internal control systems and enhance oversight effectiveness. Audit committees must be empowered not only in terms of membership size but also in terms of competence, independence, and monitoring capability to effectively mitigate fraud risk.

For regulators such as the Financial Services Authority (OJK) and the Indonesia Stock Exchange (IDX), the results provide a foundation for tightening corporate governance standards and policies, particularly in the manufacturing sector, to promote more transparent and accountable financial reporting. For investors as external stakeholders, the study provides deeper insights into the factors that drive financial statement fraud and highlights the critical role of corporate governance in ensuring the integrity of financial information. With this knowledge, the public can make more informed investment decisions and help foster a healthy, integrity-driven business environment.

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