

(Research) Article

Detection Fraudulent Financial Reporting Using the Fraud Hexagon Model with Corporate Governance Mechanisms as Moderator

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Abstract: This study discusses the influence of six fraud hexagon models: pressure, opportunity, rationalization, capability, arrogance, and collusion on fraudulent financial reporting (FFR) practices in the Indonesia banking sector. In addition, this study analyzes the role of corporate governance mechanisms measured by the audit committee, managerial ownership, and institutional ownership as moderating variables. The sample consists of 43 banking companies listed on the Indonesia Stock Exchange (IDX) during the 2020–2023 period, with a total of 172 observations. Data analysis was conducted using WarpPLS 8.0. The results indicate that rationalization, capability, and arrogance have a significant positive effect on FFR, while pressure, opportunity, and collusion show no significant effect. The audit committee, managerial ownership, and institutional ownership also do not have a direct effect on FFR. However, these three variables act as moderators: the audit committee moderates the relationship between collusion on FFR, managerial ownership moderates the relationship between capability on FFR, while institutional ownership moderates the relationship between pressure and opportunity on FFR. This finding emphasizes the importance of effective corporate governance as an instrument to reduce the risk of FFR in the banking sector.

Keywords: Corporate Governance Mechanisms; Fraud Hexagon; Fraudulent Financial Reporting; Managerial ownership; Pressure.

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1. Introduction

Fraudulent Financial Reporting (FFR) is a significant form of fraud that undermines the reliability of financial information. According to Pricewaterhouse Coopers (PwC) 2020 global survey of more than 5.000 respondents from 99 countries, including 171 respondents from Indonesia, 50% of Indonesian respondents acknowledged the occurrence of fraud in the workplace with FFR ranking five at 23% (Sitohangbasuton, 2021). Although its proportion is not as high as other types of fraud, FFR still poses a significant risk of loss if corporate fund oversight and internal control systems are not functioning effectively (Luhri et al., 2021). This risk is also evident in several key sectors, including the banking sector, where total fraud related losses in Indonesia reached IDR 4.62 trillion in the I and II quarters of 2020 (Kumparan, 2021). Data from the Association of Certified Fraud Examiners (ACFE) in 2020 show that FFR is the type of fraud with the highest average loss, amounting to \$39.800 per month. Furthermore, ACFE (2022) reported 351 fraud cases committed by internal parties in the banking and financial sectors, with an average loss value of \$100.000 per case.

The impact of FFR is also seen in various sectors, including the banking sector which ranks first (ACFE, 2020). Maybank's 2020 fraud case came to light when the branch head illegally transferred Rp. 22 billion worth of customer funds from the accounts of e-sports athlete Winda Lunardi and her mother, indicating weak internal supervision and misapplication of standard operating procedures (CNBC, 2020). A similar case also occurred at BSI Bengkulu Branch revealed after the results of the trial process against Tiara Kania Dewi in 2019-2024 who was proven to manipulate customer funds amounting to Rp. 8 billion these findings include through double passbooks, fictitious deposits, and embezzlement of funds (AntaraNews, 2025). The number of recurring fraud cases in the banking sector shows the need for preventive solutions in the future.

Research on fraud hexagon and FFR has shown mixed results (Pujoningrum & Wijayanti, 2023). Pressure is the dominant factor in encouraging FFR (Pamungkas & Sukma, 2022). Previous studies have shown that pressure has a positive influence on increasing FFR due to the urge to meet financial expectations (Sadda & Januarti, 2023; Sihombing & Panggulu, 2022). According to Al-rizky et al. (2024), pressure does not always encourage FFR. Opportunity also plays a role, where weak internal control creates opportunities for management to FFR (Mukaromah & Budiwitjaksono, 2021; Ainiyah & Effendi, 2022). On the contrary, transparency can reduce the chances of FFR through strengthening supervision (Riyanti, 2021). Rationalization provides justification for fraudulent actions that can positively increase the risk of FFR and weaken supervision (Setyono et al., 2023; Salim et al., 2024). However, previous studies by Syurmita et al. (2024) showed that rationalization can reduce the potential for FFR by improving the quality of supervision.

The fourth factor of capability plays a positive role in FFR through system exploitation (Aviantara, 2021; Veny et al., 2024). This finding is contrary to the results of a study by Sari et al. (2022) that good capabilities can actually reduce the risk of FFR through improving company performance. High arrogance opens FFR gaps through neglect of control and abuse of authority (Novarina & Triyanto, 2022; Putra & Achmad, 2024). However, individuals with high public exposure tend to be more cautious in order to maintain their reputations (Jannah & Suwarno, 2023). Collusion contributes to FFR by enabling cooperation between parties to avoid detection (Desi, 2024; Adhitama et al., 2023). Although collusion is often associated with an increased risk of FFR. Collusion in a structured system can actually create transparency and accountability (Wulandari & Ali, 2023).

The novelty of this study places Corporate Governance Mechanisms (CGM) as a moderation variable that affects the interaction of six of fraud hexagon models (pressure, opportunity, rationalization, capability, arrogance, and collusion). This is different from the study by Achmad et al. (2022a) which examined the direct influence of the fraud hexagon element. This approach reflects integrated and relevant CGM practices, given that weak internal oversight and poor governance drive the increase in cases of FFR (Kurniawan & Reskino, 2023). With the effective implementation of CGM, it strengthens transparency, compliance with accounting standards, and prevents manipulation thereby increasing the company's credibility in the eyes of investors (Retnoningtyas & Tarmizi, 2022; Hidayat, 2024). The results of this study enrich the fraud hexagon theory through a systemic approach and provide a practical framework to strengthen governance holistically, especially through the synergy of supervision, transparency, and accountability.

2. Literature Review

The detection of FFR is a challenge in maintaining transparency and accountability because manipulation practices are increasingly complex (Pamungkas & Irwandi, 2024). Efforts to understand the triggers of fraud have been developed from the fraud triangle introduced by Cressey (1953) with three main models: pressure, opportunity, and rationalization. This model was later expanded to a fraud diamond by Wolfe & Hermanson (2004) by adding capability as a factor that strengthens the chances of a person committing fraud. Howarth (2011) developed the fraud pentagon by adding an element of arrogance. Along with the increasing complexity of fraud, Vousinas (2019) introduced the fraud hexagon with a single element of collusion involving more than one individual in the fraud. Empirical studies show that every element in the fraud hexagon contributes to the increase in fraud (Sabrina & Effendi, 2024; Muttiwijaya et al., 2025).

Pressure

The effect of financial stability on FFR

Changes in financial conditions reflect a company's stability in running its business operations. Within the framework of the fraud hexagon, financial instability represents a form of pressure that can encourage management to commit fraud. The asset change indicator (ACHANGE) reflects financial stability, where a decline in assets puts pressure on the report to FFR. According to agency theory, conflicts of interest between principals and agents arise when management conceals asset instability due to information asymmetry. This instability can reduce investor and creditor interest and limit the flow of investments (Achmad et al., 2022a). This condition encourages FFR to appear positive (Kaffah & Afriyenti, 2024). These findings are supported by previous studies (Khoyumi et al. 2024; Stuart & Suhartono 2025; Sadda & Januarti 2023; Putra & Lestanti 2023; Sabrina & Effendi 2024).

H1a: Financial stability has a positive effect on FFR.

The effect of financial targets on FFR

The hexagon fraud theory highlights that pressure from financial targets can drive FFR. Especially when managers face position demands or compensation in difficult conditions (Achmad et al., 2022a). This pressure may trigger fraudulent actions to meet performance expectations (Utami & Idayati, 2022). In line with agency theory, a conflict of interest arises between management and owners when management acts in its own self-interest. Return on Assets (ROA) is commonly used as a basis for performance evaluation and compensation. According to the Statement on Auditing Standards (SAS) No.9, it states that the financial targets that are used as the basis for incentive compensation have the potential to create pressure to manipulate certain accounts or disclosures. Therefore, the higher the profit target set, the greater the potential for FFR (Muttiwijaya et al., 2025). These findings are in line with studies (Sihombing & Panggulu 2022; Putri & Santoso 2025; Elfath & Setiawan 2024; Junus et al. 2025; Achmad et al. 2024) which shows that the pressure to meet financial targets has a positive effect on FFR.

H1b: Financial targets have a positive effect on FFR.

The effect of external pressure on FFR

The high leverage ratio can be an external pressure for management to maintain a positive image of the company in order to sustain stakeholder trust (Erdiana & Puspita, 2025). Management, as the party responsible for operations, has an interest in demonstrating stable performance, while investors rely on this information to assess the company's business sustainability. This imbalance can drive manipulative decision-making. External pressure aligns with the pressure element in the fraud hexagon which arises when management feels compelled to act unethically to protect the company's reputation. Leverage is measured by the ratio of total liabilities to total assets reflecting the level of dependence on external funding. This pressure becomes more complex when companies face the risk of defaulting on loan obligations leading lenders to lose trust and refrain from providing additional funding (Pamungkas & Sukma, 2022). This indicates that external pressure, as reflected in a high leverage ratio, has a significant positive relationship with the increased of FFR, as supported by several studies (Oktavia et al., 2022; Achmad et al. 2022a; Wicaksono & Suryandari 2021; Febriani et al. 2023; Khamainy et al. 2022).

H1c: External pressure has a positive effect on FFR.

Opportunity

The effect of ineffective monitoring on FFR

Opportunity in the fraud hexagon explains the existence of opportunities that allow individuals to commit fraud often arising due to weak supervision. This condition indicates weak efforts in limiting opportunistic behavior by management, especially when the supervisory function that should be carried out by the owner or an independent party does not operate optimally, as explained in agency theory. According to the Statement on Auditing Standards No. 99, ineffective monitoring due to weak control reflects the indecisiveness of those responsible for financial management and internal control, thereby creating opportunities for individuals to commit fraud. One form of ineffective monitoring can be observed in the low proportion of board members from independent parties, which in this study is measured using the BDOUT ratio. Such weak supervision provides an opportunity for management to commit FFR (Purnaningsih, 2022; Mukaromah & Budiwitjaksono, 2021).

These results are supported by the findings of previous studies (Jannah & Praptoyo 2023;Matthew & Siregar 2024;Maharani & Napisah 2024;Ainiyah & Effendi 2022;Muttiwijaya et al. 2025) which show that ineffective monitoring from independent parties contributes positively to the increased potential for FFR.

H2: Ineffective monitoring has a positive effect on FFR.

Rationalization

The effect of auditor switching on FFR

The independence of auditors is the key to maintaining the reliability of financial statements. The relationship between the auditor and the company often involves different interests that can prompt management to replace auditors who are deemed uncooperative in providing the expected audit opinion. As an effort to maintain independence, the Minister of Finance Regulation (PMK) No. 17/PMK.01/2008 limits the consecutive period of auditor assignments. However, auditor switching can also occur voluntarily without regulatory obligations (Octarisa & Syamsuri, 2024). Within the framework of the fraud hexagon, audit switching reflects an element of rationalization when management justifies the practice of FFR under the pretext of obtaining a better audit opinion or avoiding disclosure of irregularities. This phenomenon is reinforced by the findings of several studies (Setyono et al. 2023;Mentari & Indriani 2024;Salim et al. 2024;Jannah et al. 2021;Mustafa & Hadinata 2024) which suggest that auditor switching can be used as a means of justification for FFR. Thus, auditor switching can contribute positively to the increased risk of FFR.

H3: Auditor switching has a positive effect on FFR.

Capability

The effect of CEO change on FFR

Cheating is not only caused by impulse or chance, but also by individuals who have the capacity to do so (Veney et al., 2024). Many large-scale cases involve actors who possess technical capabilities, authority, and strategic positions within the organization. This phenomenon aligns with agency theory, which emphasizes the existence of differing interests. As a director, one has full access to the company's internal information and the authority to make strategic decisions. This condition opens up the potential for directors to act in ways that do not align with the owner's interests, especially if the supervisory mechanism is weak. However, CEO change can also reflect policy changes and create transitional pressures that open up opportunities for FFR (Achmad et al., 2022b).

Wolfe & Hermanson (2004), Muttiwijaya et al. (2025), Veney et al. (2024) show that the high frequency of CEO change correlates with an increased potential for FFR. In addition to having implications for the stability of internal controls, this condition can create structural uncertainty that allows room for deviations. New directors often need time to adapt, so the effectiveness of previously established supervision can weaken, providing loopholes for FFR (Achmad et al., 2024). This is consistent with studies by (Aviantara 2021;Lionardi & Suhartono 2022;Anggraeni 2024;Muttiwijaya et al. 2025;Hermiyetti 2022) which suggest that CEO change have the potential to positively increase the risk of FFR.

H4: CEO change has a positive effect on FFR

Arrogance

The effect of CEO pitcules on FFR

In the business environment, the CEO is regarded as an authoritative figure who significantly influences a company's decisions. The CEO's arrogant attitude can affect financial decision-making, including the potential for FFR (Achmad et al., 2022b). A higher level of arrogance increases the risk of moral hazard, where the CEO may violate ethical standards for personal gain (Jati & Setiyani, 2023). Consequently, arrogance can lead CEO's to act without considering shareholders' interests, such as disregarding the importance of internal control which exacerbates information asymmetry and weakens the effectiveness of supervisory mechanisms-key elements in mitigating agency conflicts (Achmad et al., 2022a). One indication of a CEO's arrogance can be reflected in the frequency of their photographs in the annual report. Frequent appearances of the CEO's pictures are perceived as a sign of a need for self recognition, which may drive FFR (Jannah & Suwarno, 2023). Several previous studies have also indicated that CEO's pictures representation may signal personal characteristics that influence FFR (Maulina & Meini, 2023;Novarina & Triyanto, 2022;Putra & Achmad, 2024;Ifani et al., 2024;Alfindo & Hilda, 2023).

H5: CEO's pictures have a positive effect on FFR.

Collusion

The effect of cooperation with government project on FFR

Collusion refers to illegal or unethical cooperation between two or more parties for personal gain (Handoko, 2021). This practice fosters a culture of fraud within organizations and complicates efforts to detect and prevent fraudulent activities, particularly when both internal and external parties are involved (Vousinas, 2019). A defining feature of collusion is the involvement of multiple parties in mutually beneficial relationships that are concealed from oversight. This aligns with the fraud hexagon theory, in which management may exploit their privileges to commit FFR due to a misalignment of interests between agents and principals (Achmad et al., 2022a). In the context of corporate-government relations, collusion often manifests in the form of incentives offered to officials or the use of intermediaries in procurement processes. Corporate involvement in government projects is common, especially in strategic sectors that rely on public-private partnerships. However, such conditions frequently create opportunities for collusion, as procurement decisions are often influenced by political pressures and personal networks. Although these collaborations can increase profitability, the resulting achievements may not accurately reflect real performance if accompanied by manipulative actions to preserve the company's image (Sugiarti, 2024). Thus, collusion in government projects has the potential to positively increase the risk of FFR, as evidenced in previous studies (Desi, 2024; Adhitama et al., 2023; Lestrini & Suartana, 2023; Hakim et al., 2023; Yadiati et al., 2023).

H6: Cooperation with government projects has a positive effect on FFR.

Audit committee and FFR

The audit committee is an integral part of the CGM, responsible for overseeing financial reporting and the effectiveness of the internal control system (Amalia & Annisa, 2023; Syah & Mayangsari, 2024). Amid the increasing complexity of transactions and the pressure to meet performance targets, this role has become increasingly important. The independent and objective execution of the oversight function enables the audit committee to maintain the integrity and transparency of financial reporting. This independence also supports honest evaluations without management intervention, thereby minimizing the potential for FFR. An effective audit committee is capable of mitigating the risk of FFR, including the manipulation of receivables data, inaccurate cash reporting, and other creative accounting practices that may mislead stakeholders (Rifaldi & Indrabudiman, 2022; Hasna & Novianti, 2024). Preventive efforts are not limited to detection aspects but also include strengthening the company's ethical culture and compliance. In addition, the audit committee plays a strategic role in limiting managerial pressures or influences that may trigger FFR practices, thus supporting the accountability and reliability of financial reporting (Dwianto et al., 2024). Therefore, the audit committee can weaken the factors of the fraud hexagon that trigger FFR. The following hypothesis is proposed:

H7: Audit committee weakens FFR

H8: Audit committee can weaken the impact of pressure on FFR.

H9: Audit committee can weaken the impact of opportunity on FFR.

H10: Audit committee can weaken the impact of rationalization on FFR. H11: Audit committee can weaken the impact of capability on FFR. H12: Audit committee can weaken the impact of arrogance on FFR. H13: Audit committee can weaken the impact of collusion on FFR.

Managerial ownership and FFR

The prevention of FFR can be strengthened through the implementation of effective CGM (Luhri et al., 2021). One of the relevant mechanisms is managerial ownership. Shareholding by managers encourages greater involvement in maintaining the company's long-term performance (Wicaksono & Fauzan, 2024). This condition encourages managers to be more careful in making decisions that impact the quality of financial reports. (Soedarman et al., 2024). In this regard, managerial ownership functions as a control mechanism that limits the potential occurrence of FFR especially when companies face financial pressure, demanding performance targets, leadership changes, or weak monitoring. Empirical findings from Rumapea et al., (2022) and (Yusup et al., 2021) show that the greater the managerial ownership, the lower the tendency for managers to commit FFR due to the alignment of

managerial interests with the long term goals of the company. Therefore, managerial ownership can weaken the relationship between various risk factors in the fraud hexagon and FFR. The following hypothesis is proposed:

H14: Managerial ownership weakens FFR

H15: Managerial ownership can weaken the impact of pressure on FFR.

H16: Managerial ownership can weaken the impact of opportunity on FFR.

H17: Managerial ownership can weaken the impact of rationalization on FFR.

H18: Managerial ownership can weaken the impact of capability on FFR.

H19: Managerial ownership can weaken the impact of arrogance on FFR.

H20: Managerial ownership can weaken the impact of collusion on FFR.

Institutional ownership and FFR

As external shareholders, institutional ownership plays a crucial role in maintaining the integrity of financial statements through oversight that is focused on long-term interests. A higher level of institutional ownership can encourage more active supervision of management, thereby weakening the influence of risk factors in the fraud hexagon on the occurrence of FFR. The greater the proportion of shares held by institutions, the higher the attention paid to decision-making processes and financial reporting, which leads to increased corporate accountability (Fitriani, 2024). Pratiwi et al., (2022) how that the presence of institutional ownership can reduce the risk of FFR through active oversight of management. Similar findings are presented by Liu et al., (2023) who revealed that companies with a high level of institutional ownership tend to have lower market manipulation due to reduced information asymmetry. Anisykurlillah et al., (2023) and Satata et al., (2024) also emphasize that institutional ownership is part of an effective CGM in limiting the potential for FFR. Therefore, the following hypothesis is proposed:

H21: Institutional ownership weakens FFR

H22: Institutional ownership can weaken the impact of pressure on FFR.

H23: Institutional ownership can weaken the impact of opportunity on FFR.

H24: Institutional ownership can weaken the impact of rationalization on FFR.

H25: Institutional ownership can weaken the impact of capability on FFR.

H26: Institutional ownership can weaken the impact of arrogance on FFR.

H27: Institutional ownership can weaken the impact of collusion on FFR.

3. Research Method

This research focuses on banking sub-sector companies listed on the Indonesia Stock Exchange (IDX) during the 2020–2023 period. The selection of this sector is based on the high incidence of fraud cases in the financial industry, particularly in banking, which is known for its high level of risk and operational complexity, making it vulnerable to financial reporting irregularities. Out of a total of 45 banking companies listed on the IDX between 2020-2023, 43 companies met the sample criteria. Data analysis was conducted using the Warp PLS version 8.0, which enables simultaneous testing of the relationships between independent, dependent, and moderating variables without assuming normal data distribution.

Table 1. Sample Criteria.

No	Data Criteria	Total
1	Banking sector listed on the IDX in 2020-2023	49
2	Banking sector that did not publish financial reports during 2020-2023	(6)
3	Availability of CGM data consecutively during 2020-2023	(0)
	Total samples that meet the criteria	43
	Total research data (Total sample of companies that met the criteria during the four years of research)	172

Table 2. Operational Definition of Variables.

Variable	Concept	Measurement	Scale	References
Financial statement fraud	Manipulation of financial statements to mislead users	Model F-score	Nominal	(Saleh et al.,2021)
Financial stability	The financial condition of the company	$((TA)_t - (TA)_{t-1}) / ((TA)_t)$	Rasio	(Dwianto et al.,2024)
Financial targets	Targets or demands to meet financial goals	Net profit after tax/Total assets	Rasio	(Mukaromah & Budiwitjaksono,2021)
External pressure	External pressure on the company's internal	Total liabilities/Total assets	Rasio	(Annisyah & Sari,2023)
Ineffective monitoring	Lack of effectiveness of internal controls	Total independent board of commissioners/Total board of commissioners	Rasio	(Mukaromah & Budiwitjaksono,2021)
Auditor switching	Auditor switching is used as a rationalization of fraud during the transition period	If 1 performs Auditor switching, If 0 does not perform Auditor switching	Nominal	(Setyono et al.,2023)
CEO change	Changes in the company's leadership through the change of directors or CEO	If 1 makes a CEO change, If 0 does not make a CEO change	Nominal	(Aviantara,2021)
CEO pictures	Selfishness in showing power	Total CEO photos in the annual report	Nominal	(Achmad et al.,2022a)
Cooperation with government project	Cooperation with high-revenue government projects can encourage fraud	If 1 cooperates, If 0 does not cooperate.	Nominal	(Adhitama et al.,2023)
Audit Committee	Audit committee to oversee financial systems and reports	Total audit committee with accounting or financial skills/Total audit committee members	Rasio	(Achmad et al.,2022b)
Managerial ownership	Ownership of shares by managers or board of directors	Total shares owned by the manager/ Total outstanding shares	Rasio	(Soedarman et al.,2024)
Institutional ownership	Ownership of shares owned by an institutional institution or external institution	Total shares owned by institutions/ Total shares outstanding	Rasio	(Samudra,2021)

4. Results and Discussion

The descriptive analysis results in Table 3 show that the average FFR level reached 61.6% of the maximum scale with a fairly wide data spread (SD = 0.99). This finding indicates that most companies in the sample are at a relatively high level of fraud. Among the six models of the fraud hexagon, arrogance became the most dominant factor with an average contribution of 68.8%, followed by opportunity 58.5%, rationalization 40.7%, collusion 33.7%, pressure 30.8%, and capability 22.7%. The variation in contribution among the elements shows that the potential for fraud is the result of a combination of various factors, both originating from individual behavior and from the organizational environment. Meanwhile, the company's CGM shows an uneven level of involvement. The audit committee plays a role in 49.6% of the total sample, managerial ownership is recorded at 76.1%, while institutional ownership is only 0.7%. This composition reflects the dominance of internal supervision, with external involvement still very limited. This condition confirms that the potential for fraud in financial reporting is influenced not only by the internal characteristics of the actors but also by the effectiveness of supervision originating both inside and outside the company.

Tabel 3. Descriptive Results of Statistics.

Variabel	N	SD	Means	Minimal	Max
Fraudulent Financial Reporting (Y)	172	0.99140	1.8488	1.00	3.00
Pressure	172	0.17093	0.3080	0.02	1.66
Opportunity	172	0.11223	0.5852	0.33	1.00
Rationalization	172	0.49270	0.4070	0.00	1.00
Capability	172	0.41995	0.2267	0.00	1.00
Arrogance	172	4.55870	6.8837	0.00	26.00
Collusion	172	0.47414	0.3372	0.00	1.00
Audit Committee	172	0.22480	0.4964	0.00	1.00
Managerial ownership	172	0.21473	0.7607	0.00	1.51
Institutional ownership	172	0.4419	0.0073	0.00	0.33

Table 4 present the model fit results and quality indices confirming that the structural model used in this study meets the recommended threshold. The Average Path Coefficient (APC) value of 0.102 with a significance level of $P = 0.043$ indicates a statistically significant causal relationship between the exogenous variables (fraud hexagon models) and the endogenous variable (FFR). The Average R-Squared (ARS) value of 0.297 indicates that the model explains approximately 29.7% of the variance in the dependent variable (FFR). The Average Block VIF (AVIF) and Average Full Collinearity VIF (AFVIF) values are 2.103 and 2.102 respectively, which are below the recommended threshold of 5, indicating that there is no multicollinearity issue in the data. The Goodness of Fit (GoF) value is 0.539, exceeding the minimum criterion of 0.36 indicating that the model structure in the study which includes the fraud hexagon factors and CGM toward FFR, has an overall good model quality. Based on these results, the researchers conclude that the model fit is effectively acceptable and can be used to test the hypotheses. Although some indices do not meet the required thresholds, this does not significantly affect the quality of the data.

Tabel 4. Model Fit Test Results.

Model Fit and Quality Indices	Index	Criteria	Result
Average Path Coefficient (APC)	0.102	$P=0.043$	Meet the criteria
Average R-Squared (ARS)	0.297	$P=0.001$	Meet the criteria
Average Adjusted R-Squared (AARS)	0.165	$P<0.001$	Meet the criteria
Average Block Variance Inflation Factor (AVIF)	2.103	If ≤ 5 , Ideally ≤ 3.3	Fit Models
Average Full Collinearity VIF (AFVIF)	2.102	If ≤ 5 , Ideally ≤ 3.3	Fit Models
Tenenhaus GoF (GoF)	0.539	Small ≥ 0.1 , medium ≥ 0.25 , Large ≥ 0.36	Large
Simpson's Paradox Ratio (SPR)	0.852	If ≥ 0.7 , Ideally = 1	Meet the criteria
R-Squared Contribution Ratio (RSCR)	0.921	If ≥ 0.9 , Ideally = 1	Meet the criteria
Statistical Suppression Ratio (SSR)	0.593	If ≥ 0.7	Small
Nonlinear Bivariate Causality Direction Ratio (NLBCDR)	1.000	If ≥ 0.7	Fit Models

A significance value of 0.295 with a coefficient of -0.041 indicates that pressure does not have a significant positive effect on FFR, thus hypothesis H1 is rejected. This result was obtained from the analysis of pressure as a second order construct formed by three indicators: financial stability, financial target, and external pressure. This model was chosen because these three indicators are theoretically interrelated and collectively represent the concept of pressure in the fraud hexagon. This finding is consistent with the study by Setyono et al. (2023), which also found that pressure does not have a significant positive effect on FFR. However, this result contradicts agency theory which states that pressure can drive management to commit fraud for personal gain.

Opportunity does not have a significant positive effect on FFR, with a significance value of 0.167 and a coefficient of 0.073. Therefore, hypothesis H2 is rejected. In this study, opportunity is represented by the indicator of ineffective monitoring which reflects weak internal supervision. This finding indicates that strong internal supervision can reduce the chances of FFR occurring. This result is consistent with the findings of Putra & Mildawati (2023) and Sitoresmi et al. (2024), which showed that opportunity does not have a positive effect on FFR.

Auditor switching represents rationalization in the fraud hexagon. The test results show that rationalization has a significant positive effect on FFR with a significance value of 0.008 and a coefficient of 0.179, thus hypothesis H3 is accepted. This finding indicates that the practice of auditor switching can be used by management as a justification to commit fraud, particularly to obtain a more favorable audit opinion or to avoid disclosure of irregularities. In this context, auditor switching reflects weak auditor independence, which should serve as a safeguard for the reliability of financial statements. These findings are in alignment with previous studies (Setyono et al., 2023; Mentari & Indriani, 2024; Salim et al., 2024; Jannah et al., 2021; Mustafa & Hadinata, 2024) that show auditor switching can be used as a form of rationalization for FFR actions.

Capability in this study is represented by the indicator of CEO change. The test results show that capability has a positive effect on FFR with a significance value of 0.001 and a coefficient of 0.256, thus hypothesis H4 is accepted. This finding indicates that a new CEO as a strategic authority holder with full access to internal information has the potential to commit fraud covertly. Moreover, the adaptation pressure and structural uncertainty that usually accompany leadership changes can weaken the effectiveness of existing supervision, thereby creating opportunities for FFR to occur. This result is consistent with previous studies by Muttiwijaya et al. (2025), Aviantara (2021), and Hermiyetti (2022), which also found that capability has a positive effect on FFR.

Arrogance in the fraud hexagon model is measured using CEO picture as its indicator. The trait of arrogance or high ego has the potential to cause FFR because individuals with high ego tend to disregard internal controls. Based on the data in Table 5, the arrogance variable has a significance value of 0.011 and a coefficient of 0.170, which indicates that arrogance has a positive effect on FFR. Thus, hypothesis H5 is accepted. Previous studies also showed a positive effect of arrogance on FFR (Putra & Achmad, 2024; Ifani et al., 2024; Alfindo & Hilda, 2023).

Collusion in this study is represented by the indicator of cooperation in government projects, which involves collaboration among parties and has the potential to create opportunities for FFR. However, this potential can be minimized if the projects are carried out under strict supervision especially by independent external parties and supported by transparent procurement mechanisms. The test results show that collusion does not have a positive effect on FFR with a significance value of 0.471 and a coefficient of -0.006 thus hypothesis H6 is rejected. This finding is consistent with the study by Gunawan et al. (2025), which also found that collusion does not have a significant effect on FFR.

The test result for H7 with a significance value of 0.235 and a coefficient of -0.054 indicates that the presence of an audit committee does not significantly weaken FFR, thus H7 is rejected. Furthermore, the results of the interaction test between the audit committee and the pressure, opportunity, rationalization, capability, and arrogance models also did not show any significant moderating effect. Although the direction of the coefficients for several models such as opportunity -0.016, rationalization -0.085, and capability -0.036 showed a negative direction indicating a weakening trend, the significance value above 0.05 caused the

H8 to H12 hypotheses to be rejected. Meanwhile, the only relationship showing a significant moderating effect is the interaction between the audit committee and collusion, with a significance value of 0.021 and a coefficient of -0.151, thus H13 is accepted.

Based on Table 5, managerial ownership is not proven to have a direct effect on FFR. This is indicated by a significance value of 0.278 and a positive interaction coefficient of 0.044, leading to the rejected of hypothesis H14. Furthermore, the test results on the moderating role of managerial ownership in weakening the relationship between each fraud hexagon construct and FFR also show that most are not significant. The interaction between managerial ownership and pressure yields a significance value of 0.187 with a coefficient of 0.067, thus H15 is rejected. Similarly, the moderating effect of managerial ownership on the relationship between opportunity and FFR shows a significance value of 0.333 and a coefficient of 0.033, leading to the rejected of H16. For rationalization, the significance value is 0.274 with a coefficient of 0.046, indicating that H17 is rejected. Arrogance has a significance value of 0.043 with a coefficient of 0.128, resulting in the rejected of H18. Meanwhile, collusion also shows an insignificant result with a significance value of 0.436 and a negative coefficient of -0.012, thus H19 is rejected. The only relationship showing a significant moderating effect is capability. The interaction between managerial ownership and capability yields a significance value of 0.022 with a coefficient of -0.150, so hypothesis H20 is accepted.

The moderating test of institutional ownership on FFR directly yields a significance value of 0.071 with a coefficient of -0.110, resulting in the rejected of H21. The interaction between institutional ownership and pressure produces a significance value of 0.001 with a coefficient of -0.317, thus H22 is accepted. The results of the study indicate that institutional ownership weakens the opportunity for FFR, with a significance value of 0.015 and a coefficient of -0.162, thus supporting the accepted of H23. Conversely, hypotheses H24 through H27 is rejected. H24 shows that institutional ownership fails to weaken rationalization with a significance value of 0.188 and a positive coefficient of 0.067. H25 which tests the effect of institutional ownership on the capability of FFR produces a significance value of 0.305 with a negative coefficient of -0.039 indicating that the moderation effect is not statistically significant. In H26 although the significance value is very low at 0.001 the interaction coefficient is positive at 0.272. Finally, H27 which tests the effect related to collusion is not significant with a significance value of 0.251 and a coefficient of 0.051.

Table 5. Summary of Hypotheses.

	Hypoteses	Criteria	Sign	β	Summary
H1	Pressure has a positive effect on FFR	<0.05	0.295	-0.041	Rejected
H2	Opportunity has a positive effect on FFR	<0.05	0.167	0.073	Rejected
H3	Rationalization has a positive effect on FFR	<0.05	0.008	0.179	Accepted
H4	Capability has a positive effect on FFR	<0.05	0.001	0.256	Accepted
H5	Arrogance has a positive effect on FFR	<0.05	0.011	0.170	Accepted
H6	Collusion has a positive effect on FFR	<0.05	0.471	-0.006	Rejected
H7	Audit committee weakens FRR	<0.05	0.235	-0.054	Rejected
H8	Audit committee can weaken pressure on FFR	<0.05	0.111	0.092	Rejected
H9	Audit committees can weaken opportunities on FFR	<0.05	0.417	-0.016	Rejected
H10	Audit committees can weaken rationalization on FFR	<0.05	0.130	-0.085	Rejected
H11	Audit committee can weaken capability on FFR	<0.05	0.315	-0.036	Rejected
H12	Audit committee can weaken arrogance on FFR	<0.05	0.102	0.096	Rejected
H13	Audit committee can weaken collusion on FFR	<0.05	0.021	-0.151	Accepted
	Hypoteses	Criteria	Sign	β	Summary
H14	Managerial ownership weakens FFR	<0.05	0.278	0.044	Rejected
H15	Managerial ownership can weaken pressure on FFR	<0.05	0.187	0.067	Rejected
H16	Managerial ownership can weaken opportunity on FFR	<0.05	0.333	0.033	Rejected
H17	Managerial ownership can weaken rationalization on FFR	<0.05	0.274	0.046	Rejected
H18	Managerial ownership can weaken capability on FFR	<0.05	0.022	-0.150	Accepted
H19	Managerial ownership can weaken arrogance on FFR	<0.05	0.043	0.128	Rejected
H20	Managerial ownership can weaken collusion on FFR	<0.05	0.436	-0.012	Rejected
H21	Institutional ownership weakens FFR	<0.05	0.071	-0.110	Rejected
H22	Institutional ownership can weaken pressure on FFR	<0.05	0.001	-0.317	Accepted

H23	Institutional ownership can weaken opportunity on FFR	<0.05	0.015	-0.162	Accepted
H24	Institutional ownership can weaken rationalization on FFR	<0.05	0.188	0.067	Rejected
H25	Institutional ownership can weaken capability on FFR	<0.05	0.305	-0.039	Rejected
H26	Institutional ownership can weaken arrogance on FFR	<0.05	0.001	0.272	Rejected
H27	Institutional ownership can weaken collusion on FFR	<0.05	0.251	0.051	Rejected

5. Conclusions

This study reveals that not all fraud hexagon models have a consistent influence on FFR in the Indonesian banking sector. Among the six models analyzed only rationalization, capability, and arrogance were found to have a significant positive effect on FFR. In contrast, pressure, opportunity, and collusion did not show a positive influence on FFR. The moderating role of CGM was evident: the audit committee weakened the effect of collusion on FFR; managerial ownership mitigated the impact of capability; and institutional ownership reduced the influence of pressure and opportunity on FFR. The practical implications of these findings suggest that companies should adopt a more adaptive approach in implementing CGM. Rationalization risks, such as those arising from auditor switching practices, can be reduced by reinforcing auditor independence through structured and transparent rotation policies. Capability related risks, which often escalate during CEO transitions, should be addressed through well-planned leadership succession to ensure the continuity of internal control functions. Meanwhile, to curb arrogance rooted in centralized leadership, organizational culture should promote shared leadership and accountability among management, rather than concentrating authority or symbolic representation in a single figure. Going forward, future research models are advised not only to expand the sectoral and temporal scope but also to incorporate combinations of moderating variables that reflect both internal and external control mechanisms. A whistleblowing system can serve as an indicator of individual behavior based internal oversight, while institutional ownership represents pressure from external parties. The integration of these two aspects aims to offer a deeper perspective on the dynamic relationship between managerial behavior, CGM, and ownership structure in shaping the risk of financial reporting fraud.

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