

Detecting Fraudulent Financial Statement Using the Fraud Hexagon Approach with Operational Complexity as a Moderating Variable (Empirical Study on Companies Listed on the Indonesia Stock Exchange 2022–2024)

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ABSTRACT : This study aims to examine the effect of the Fraud Hexagon elements pressure, capability, opportunity, rationalization, arrogance, and collusion on financial statement fraud, as well as the moderating role of operational complexity in companies listed on the Indonesia Stock Exchange (IDX) during the 2022–2024. This research employs a quantitative descriptive approach using the Partial Least Squares–Structural Equation Modeling (PLS-SEM) method with SmartPLS 4.0. The sample consists of publicly listed companies selected through purposive sampling, with secondary data obtained from the official IDX website and annual reports. The results show that the empirical results indicate that capability and arrogance have a significant positive effect on financial statement fraud, while pressure, opportunity, rationalization, and collusion show no significant influence. The moderating analysis reveals that operational complexity strengthens the effects of capability, arrogance, and collusion on financial statement fraud, but does not moderate the relationships involving pressure, opportunity, or rationalization. These results highlight the importance of managerial characteristics and organizational structure in understanding fraudulent financial reporting practices. This study contributes theoretically by reinforcing the Fraud Hexagon Theory as a comprehensive framework for detecting fraudulent financial reporting.

KEYWORDS – *arrogance, capability, complexity in companies, fraud hexagon, fraudulent financial statement*

I. INTRODUCTION

Fraudulent financial statements remain one of the most pressing challenges in maintaining the integrity of corporate reporting and the credibility of financial markets. While fraudulent financial statement occurs less frequently than other forms of organizational fraud, its impact is significantly more damaging, both financially and institutionally. Manipulating financial information can distort the true performance of an organization, mislead investors and creditors, and ultimately undermine confidence in the financial system. Reports published by the Association of Certified Fraud Examiners (ACFE) consistently show that fraudulent financial statement generates the largest median losses compared to other types of fraud and often remains hidden for long periods before detection. This prolonged concealment not only amplifies financial damage but also complicates corrective measures, as misstatements may influence strategic decisions, investment allocations, and regulatory actions.

The situation in Indonesia reflects these global concerns. Several high profile cases have highlighted the vulnerability of public companies to financial reporting manipulation. Cases involving PT Garuda Indonesia, PT Jiwasraya, PT Waskita Karya, and PT Wijaya Karya illustrate how even large state-owned and public companies with established governance structures can become involved in fraudulent financial practices. These cases reveal gaps in oversight, weaknesses in internal control systems, and challenges in ensuring reliable financial disclosures. Despite the existence of regulatory bodies such as the Financial Services Authority (OJK) and the Indonesia Stock Exchange (IDX), the persistence of such scandals indicates that significant improvements are still needed to strengthen corporate governance and fraud prevention mechanisms.

To explain why fraudulent financial statement occurs, researchers have relied on several theoretical frameworks. The Fraud Triangle Theory emphasized the role of pressure, opportunity, and rationalization as fundamental drivers of fraud. This theory was later expanded into the Fraud Diamond by adding capability, acknowledging that the ability to commit fraud depends on certain skills, authority, or access. The Fraud Hexagon Theory, the most comprehensive model to date, incorporates six factors: pressure, capability, opportunity, rationalization, arrogance, and collusion. The addition of arrogance and collusion reflects the recognition that overconfidence among key decision makers and the involvement of

multiple parties can significantly increase the likelihood of fraudulent behavior. This expanded model provides a richer understanding of the psychological, structural, and relational dynamics that shape fraudulent reporting.

Despite the conceptual strength of the Fraud Hexagon Theory, empirical evidence on its effectiveness remains mixed. Indonesian studies, including those conducted by Larum et al. (2021), Rizkiawan and Subagio (2022), and Sholikaton and Makaryanawati (2023), report inconsistent findings regarding the influence of the six elements. Some studies highlight pressure and capability as the strongest predictors of fraudulent financial statements, while others find limited or non significant effects for rationalization, arrogance, or collusion. These inconsistencies suggest that fraud risk factors do not operate uniformly across all corporate environments. Instead, they may be influenced by organizational structures, operational characteristics, industry specific conditions, or broader economic pressures.

One organizational factor that may explain these variations is operational complexity. As companies grow and expand their activities, their internal structures become more intricate. Operational complexity often takes the form of multiple subsidiaries, diversified business activities, complex reporting hierarchies, and broad geographical operations. These conditions can increase the difficulty of implementing effective internal controls and monitoring systems. When a company's operational environment is highly complex, auditors, regulators, and internal teams may struggle to detect irregular transactions or inconsistencies in financial records. Such complexity may create opportunities for fraudulent behavior to go unnoticed, even when control mechanisms are in place.

In the Indonesian corporate landscape, operational complexity has become increasingly relevant. Many large public companies operate across diverse sectors, maintain numerous subsidiaries, and manage long chains of reporting responsibilities. These conditions create challenges in ensuring consistent financial reporting and maintaining rigorous oversight across all operational levels. The role of operational complexity as a factor that interacts with fraud risk has received limited attention in prior research, particularly in emerging markets where governance practices vary widely and corporate reporting environments continue to evolve. This gap in the literature underscores the need to explore how operational complexity influences the relationship between fraud risk factors and fraudulent financial statements.

Therefore, this study seeks to examine the influence of the six elements of the Fraud Hexagon on fraudulent financial statements in companies listed on the Indonesia Stock Exchange (IDX) during the 2022–2024 period. Additionally, this research investigates whether operational complexity moderates the relationship between these fraud risk factors and the likelihood of fraudulent reporting. By using recent post pandemic data, this study captures the changing economic pressures, organizational adjustments, and evolving risk landscapes experienced by Indonesian companies in recent years. This makes the research particularly relevant, as companies during this period faced new challenges related to financial sustainability, regulatory compliance, and economic recovery.

The findings of this study are expected to contribute to both academic literature and practical applications. Academically, the study enriches the understanding of fraud theories by examining how the Fraud Hexagon operates in the context of Indonesia's corporate environment, where structural and cultural differences may influence fraud patterns. The study also strengthens theoretical insights by incorporating operational complexity as a moderating variable, offering a more comprehensive view of the conditions under which financial statement fraud occurs. Practically, the research provides valuable implications for regulators, auditors, corporate leaders, and policymakers. By understanding how fraud risk factors interact with operational complexity, stakeholders can design more effective monitoring mechanisms, strengthen governance systems, and develop targeted fraud prevention strategies tailored to the unique characteristics of Indonesian public companies.

II. METHODS

This study employs a quantitative associative research design with a causal comparative approach to examine the influence of the Fraud Hexagon elements on fraudulent financial statement, and to assess the moderating role of operational complexity. The design is explanatory in nature, relying on secondary data from companies listed on the Indonesia Stock Exchange (IDX) during 2022–2024. The population consists of 787 firms listed on the Indonesia Stock Exchange (IDX), and the sample is selected purposively based on the availability of complete annual reports, governance disclosures, and financial data for the years 2022–2024. Companies were also required to have a Beneish M-Score above -2.22 to ensure the presence of potential financial reporting irregularities. A total of 108 firms met the selection criteria and were included in the analysis.

The study uses secondary data sourced from audited annual reports, sustainability reports, and information available on the official IDX platform. Fraudulent financial statement, serving as the dependent variable, is measured using the Beneish M-Score. The independent variables reflect the six elements of the Fraud Hexagon: pressure, opportunity, rationalization, capability, arrogance, and collusion, operationalized through financial ratios and governance indicators. Operational complexity, measured by the number of

operating segments, is included as a moderating variable to capture structural characteristics that may influence fraud risk.

Data analysis is conducted using Structural Equation Modeling–Partial Least Squares (SEM-PLS) through SmartPLS 4. This technique is selected due to its suitability for complex models, its tolerance for non normal data, and its ability to simultaneously assess measurement and structural relationships. The analysis involves evaluating construct validity and reliability, followed by structural model testing using R-square, predictive relevance, and path coefficient significance. Hypotheses are assessed through bootstrapping with a 5% significance level. Through this methodological framework, the study aims to provide empirical evidence on how fraud risk factors and organizational complexity shape the likelihood of fraudulent financial reporting in Indonesian public companies.

III. FINDING & DISCUSSION

The empirical results of this study provide a comprehensive understanding of how the elements of the Fraud Hexagon and operational complexity shape fraudulent financial statement among companies listed on the Indonesia Stock Exchange (IDX) during 2022–2024. From an initial population of 2,671 firms, 108 companies were selected through purposive sampling based on the availability of complete financial disclosures and Beneish M-Score criteria. Descriptive statistics illustrate considerable variation in financial conditions, governance structures, and operational characteristics, suggesting substantial diversity in fraud risk environments across firms.

Tabel 1. Coefficient Determination Test Result

| variabel Laten | R-square | R-square adjusted | Notes |
|--------------------------------|----------|-------------------|-----------|
| Fraudulent Financial Statement | 0.58818 | 0.531227 | Currently |

Validity assessments show that all measurement indicators achieved perfect loading values, demonstrating excellent convergent validity and confirming that each construct is measured accurately. Multicollinearity tests also show VIF values far below critical limits, indicating that the model is free from multicollinearity concerns. The structural model yields an R^2 value of 0.588, meaning that 58.8% of the variation in fraudulent financial reporting can be explained by the Fraud Hexagon variables and operational complexity. This reflects a moderately strong explanatory capability within the model. In addition, effect size analysis reveals that capability is the only predictor with a moderate effect, while the remaining variables contribute minimally, signaling their limited direct influence on fraudulent reporting behavior.

Tabel 2. Hypothesis Testing Result

| Model | Original Sample (O) | T Statistics (O/STDEV) | P Values |
|--|---------------------|--------------------------|----------|
| Pressure -> Fraudulent Financial Statement | -0.130 | 0.569 | 0.569 |
| Capability -> Fraudulent Financial Statement | 0.279 | 3.195 | 0.001 |
| Opportunity -> Fraudulent Financial Statement | 0.139 | 1.783 | 0.075 |
| Rationalization -> Fraudulent Financial Statement | 0.090 | 1.233 | 0.218 |
| Arrogance -> Fraudulent Financial Statement | 0.199 | 3.014 | 0.003 |
| Collusion -> Fraudulent Financial Statement | 0.077 | 0.795 | 0.426 |
| Operational Complexity -> Fraudulent Financial Statement | 0.007 | 0.048 | 0.961 |
| Operational Complexity x Pressure -> Fraudulent Financial Statement | -0.240 | 0.464 | 0.642 |
| Operational Complexity x Capability -> Fraudulent Financial Statement | 0.413 | 4.55 | 0.000 |
| Operational Complexity x Opportunity -> Fraudulent Financial Statement | 0.225 | 1.930 | 0.054 |
| Operational Complexity x Rationalization -> Fraudulent Financial Statement | 0.147 | 1.734 | 0.083 |
| Operational Complexity x Arrogance -> Fraudulent Financial Statement | 0.232 | 3.083 | 0.002 |
| Operational Complexity x Collusion -> Fraudulent Financial Statement | 0.289 | 4.43 | 0 |

The findings show that the six Fraud Hexagon variables do not exert uniform influence on fraudulent financial statement. Three variables, pressure, opportunity, and rationalization were found to be insignificant. Pressure did not have a meaningful effect on fraudulent financial statement, suggesting that performance expectations or earnings fluctuations alone do not drive managers to manipulate reports. This may reflect the presence of strong regulatory oversight, external monitoring, or corporate governance practices that prevent pressure from translating into unethical behavior. Opportunity, which theoretically implies weaknesses in internal controls, also yielded an insignificant effect, indicating that many firms in the sample likely have sufficiently robust oversight mechanisms that limit managerial discretion. Rationalization, a cognitive process through which individuals justify wrongdoing, likewise showed no significant effect. This outcome may be due to limitations in using accrual-based financial proxies to represent psychological constructs, as internal justification of fraud is largely an internal, non-observable phenomenon.

In contrast, two variables, capability and arrogance demonstrated significant positive effects. Capability proved to be one of the strongest predictors of fraudulent financial statement, confirming that individuals possessing the skill, authority, and access necessary to exploit control weaknesses are more capable

of committing and concealing fraud. When key executives understand internal procedural gaps or have sufficient discretion to override controls, fraud becomes more feasible. Arrogance also positively influenced fraudulent financial statement, suggesting that leaders who believe they are untouchable, superior, or beyond scrutiny may be more likely to disregard ethical standards and manipulate financial outcomes to serve personal or organizational interests. Together, these significant findings illustrate that fraud in public companies tends to be driven more by managerial behavior and psychological factors than by structural or financial pressures.

Collusion, the final element of the Fraud Hexagon, did not show a significant direct influence. Although collusion is often observed in high impact fraud cases, the proxy used number of subsidiaries may not adequately capture collaborative wrongdoing. Additionally, strong segregation of duties in many firms may reduce the likelihood of coordinated fraudulent activity occurring undetected.

Operational complexity added important nuance to the analysis. While complexity did not show a direct effect on fraudulent reporting, it played a significant role as a moderating variable. Operational complexity strengthened the relationship between capability and fraudulent financial statement, meaning that firms with complex structures multiple segments, layered hierarchies, or numerous subsidiaries provide an environment where capable managers have greater opportunities to exploit information asymmetry and control weaknesses. The moderating effect was also significant for arrogance, indicating that complex organizations, which often have diluted oversight and dispersed monitoring, allow overconfident managers more freedom to act unethically. Similarly, operational complexity strengthened the effect of collusion, suggesting that fraud involving multiple actors is more easily facilitated in complex firms where oversight gaps exist and coordination difficulties reduce detection likelihood.

However, operational complexity did not moderate the effects of pressure, opportunity, or rationalization. These variables appear to operate independently of organizational structure. Pressure is shaped primarily by external performance expectations, opportunity is controlled largely by formal governance, and rationalization is a cognitive process unaffected by the degree of structural complexity.

Overall, the hypothesis testing results reveal that fraudulent financial statement in Indonesian public companies is fundamentally driven by behavioral factors particularly capability and arrogance rather than by classical fraud motivators. Operational complexity acts as an enabling condition that amplifies specific fraud risks, but not universally across all fraud drivers. These findings underscore the need for governance mechanisms that focus more closely on managerial behavior, ethical culture, and the design of control systems that remain effective even in complex organizational environments.

IV. CONCLUSION

This study concludes that fraudulent financial statement in Indonesian listed companies is primarily driven by managerial behavior, specifically capability and arrogance, while traditional fraud factors such as pressure, opportunity, rationalization, and collusion show no significant direct effects. Operational complexity does not independently increase fraudulent reporting but significantly amplifies the influence of capability, arrogance, and collusion, emphasizing the importance of organizational structure in shaping fraud risk.

The main advantage of this research lies in its integration of operational complexity into the Fraud Hexagon framework, offering a deeper understanding of how behavioral and structural factors interact in enabling fraud. The use of recent post pandemic data also provides relevant, contemporary insights for regulators and practitioners. However, the study is limited by the quantitative proxies used to measure psychological constructs and by the dependence on secondary data, which may not fully capture the subjective dimensions of fraud motivation. Despite these limitations, the findings have practical applications for regulators, auditors, and corporate governance bodies, particularly in strengthening oversight of managerial authority and adapting internal controls to fit complex organizational environments. Future research may expand this work by employing qualitative or mixed-method approaches, integrating additional behavioral and governance variables, or examining sector specific fraud dynamics to refine predictive models of fraudulent financial statement.

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