

THE EFFECT OF FRAUD PENTAGON ON FINANCIAL STATEMENT FRAUD WITH COMPANY SIZE AS A MODERATING VARIABLE IN MANUFACTURING COMPANIES LISTED ON THE INDONESIA STOCK EXCHANGE FOR THE PERIOD 2021–2024

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Abstract

This study aims to analyze the effect of the fraud pentagon, proxied by financial targets, financial stability, ineffective monitoring, auditor changes, changes in directors, and the frequency of CEO photos, on financial statement fraud, and to examine the moderating role of firm size. The population consists of manufacturing companies listed on the Indonesia Stock Exchange from 2021 to 2024. Using purposive sampling, a sample of 130 companies was obtained, totaling 520 observations. Financial statement fraud was measured using the Fraud Score Model (F-Score). Data analysis was conducted using panel data regression with the Common Effect Model (CEM) approach via EViews 12. The results show that financial targets have a positive and significant effect on financial statement fraud. Conversely, financial stability, ineffective monitoring, auditor changes, changes in directors, and the frequency of CEO photos have no significant effect. Simultaneously, all independent variables significantly influence financial statement fraud. Furthermore, firm size does not moderate any of these relationships. These findings indicate that the pressure to achieve financial targets is the main driver of financial statement fraud in manufacturing companies

Keywords: Financial statement fraud, Financial targets, Firm size, Fraud pentagon, Manufacturing companies.

INTRODUCTION

Financial statements serve as the primary source of information used by investors, creditors, and other external stakeholders to evaluate the performance and fundamental conditions of an economic entity. However, the urgency of this objectivity is often distorted by manipulative actions taken by management to present an artificially impressive financial performance. Material manipulation cases, such as the one involving PT Tiga Pilar Sejahtera Food Tbk, provide real empirical evidence that financial statement fraud remains a systemic threat that damages market confidence in the Indonesian capital market. The manufacturing sector represents one of the highly vulnerable sectors to this practice due to its high operational complexity, supply chain dynamics, and high financial target pressures, particularly during the post-pandemic observation period from 2021 to 2024.

In analyzing the determinants of fraud, modern accounting literature relies heavily on the Fraud Pentagon Theory, which expands the classic fraud dimensions into five main elements: pressure, opportunity, rationalization, competence, and arrogance. Through the perspective of Agency Theory, the conflict of interest between capital providers (principal) and management (agent) triggers information asymmetry, where agents exploit their internal positions to manipulate earnings for personal gain or to fulfill incentive contracts. In this study, management pressure is proxied through financial targets and financial stability. Opportunity is represented by the ineffective monitoring condition of the board of commissioners, while rationalization is identified through the behavior of external auditor switching. On the other hand, competence is proxied by changes in directors, which are often considered political corporate restructuring efforts, and the arrogance element (narcissism) is measured using a relatively new behavioral indicator, namely the frequency number of CEO pictures presented in the company's annual report (Syafri & Utami, 2022). Although testing the elements of the fraud pentagon has been widely conducted, prior empirical studies still show inconsistent results (research gaps). Studies related to high financial targets proved to increase the risk of manipulation in research conducted by (Fathmaningrum & Anggarani, 2021) as well as (Sari & Subkhi, 2021), but under certain conditions, poor financial stability does not always motivate management to commit fraud if internal

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monitoring is strict (Putra, Utami, & Islami, 2024). Ineffective monitoring also recorded mixed findings; a dominant proportion of independent commissioners was reported to reduce fraud in a study by (Jannah, Andreas, & Rasuli, 2021), but was considered insignificant by (Septiani, Darlis, & Hanif, 2025) if the monitoring function was merely an administrative formality. Furthermore, changes in auditors and directors often show biased influence patterns depending on the actual motives behind the succession (Cahyani, Nuraina, & Styaningrum, 2021). Meanwhile, the arrogance indicator based on the number of CEO pictures is still very limitedly explored in the context of manufacturing issuers in Indonesia and frequently shows inconclusive results (Qintharah & Riyanti, 2023).

To bridge the inconsistent results of these direct relationships, this study incorporates firm size as a moderating variable. Firm size is strongly expected to have a contingency role in strengthening or weakening the influence of the fraud pentagon on financial statement fraud. The theoretical logic dictates that large-scale companies have a more established internal control system, are strictly monitored by the public and regulators, and are audited by major public accounting firms (Big Four), thereby limiting management's room for maneuvering to commit fraud despite massive financial target pressures (Khuluqi & Napisah, 2022). Conversely, the complexity of transactions in large companies can also become an asymmetry gap that obscures fraud detection by outsiders if the audit committee does not function effectively.

Based on the theoretical dynamics and empirical gaps described above, this study aims to obtain comprehensive empirical evidence regarding the effect of the fraud pentagon elements (financial target, financial stability, ineffective monitoring, change in auditor, change in director, and frequency number of CEO picture) on financial statement fraud as measured by the Fraud Score Model (F-Score). Furthermore, this study specifically aims to examine and analyze whether firm size can act as a moderating variable in mitigating or exacerbating this causal relationship across all manufacturing companies listed on the Indonesia Stock Exchange (IDX) during the 2021–2024 period.

LITERATURE REVIEW

The theoretical foundation of financial statement fraud analysis is heavily rooted in Agency Theory, which conceptualizes the contractual relationship and inherent conflicts of interest between the principal (shareholders) and the agent (management). According to (Jensen & Meckling, 1976), conflicts arise when managers do not always act in the best interest of shareholders, instead prioritizing personal gains such as bonuses or career preservation. This dynamic generates information asymmetry, providing managers with an informational advantage to manipulate financial reporting parameters to conceal poor performance or artificially meet external expectations. Complementing this, Signaling Theory, as introduced by (Spence, 1973), posits that companies utilize financial reports to send positive signals to the capital market to boost investor confidence. However, when actual financial performance underperforms, management faces an intense urge to send false or distorted signals through fraudulent financial reporting, rendering these theories highly interconnected in explaining the motivational mechanics of corporate fraud.

To comprehensively dissect the specific drivers behind these fraudulent acts, (Crowe, 2011) extended the classic fraud triangle and diamond frameworks into the Crowe's Fraud Pentagon Theory by incorporating five core components: pressure, opportunity, rationalization, competence, and arrogance. Within this framework, financial statement fraud—which involves deliberate misstatements or omissions of material amounts to deceive financial statement users—is systematically examined. The first element, pressure, manifests as the driving force behind the fraudulent intent. In corporate practice, this is frequently proxied by financial targets and financial stability. High financial targets measured by Return on Assets (ROA) increase the stress on executives to sustain high profitability, while threatened financial stability, measured by asset growth volatility (ACHANGE), forces management to adjust statements to simulate growth consistency. However, empirical discrepancies persist in existing literature; while Tessa and Harto (2016) demonstrate a significant positive effect of ROA on fraud, (Nugraheni & Triatmoko, 2017) argue that stable internal monitoring can neutralize this pressure, highlighting a gap regarding how industrial settings influence these dynamics.

The second and third components of the pentagon, opportunity and rationalization, describe the structural environment and psychological justification enabling fraud. Opportunity arises from ineffective monitoring, which occurs when internal control mechanisms, such as the proportion of independent commissioners (BDOUT), fail to actively supervise management. Concurrently, rationalization refers to the cognitive attempts by perpetrators to justify their unethical actions, commonly proxied by corporate auditor changes. Previous works by (Siregar & Utama, 2020) reveal that independent boards often become mere administrative formalities under concentrated ownership, failing to mitigate opportunity. Furthermore, auditor changes are heavily debated; (Putra et al., 2024) identify that

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frequent auditor switching creates an information gap that management exploits to erase fraud trails, whereas (Fathmaningrum & Anggarani, 2021) maintain that such changes are primarily driven by mandatory regulatory compliance rather than opportunistic erasure of audit evidence.

The final elements of the pentagon, competence and arrogance, examine the capability and psychological traits of corporate leadership. Competence is defined as the individual's strategic capability to bypass internal controls, develop sophisticated concealment strategies, and manipulate social situations, which is proxied by changes in directors. Restructuring the board of directors creates a stressful transition period that temporarily weakens internal control oversight, generating a temporary window for fraudulent execution (Yanti, Diantimala, & Nuraini, 2024). Conversely, arrogance is characterized by a superiority complex where top executives believe internal controls do not apply to them. This trait is proxied by the frequency number of CEO pictures in the annual report. (Navila, 2020) suggests that high CEO media exposure mirrors narcissism and an obsessive drive to defend corporate status at all costs, whereas counter-arguments by (Achmad, Ghozali, & Pamungkas, 2022) state that these images merely serve corporate transparency and public relations.

Ultimately, existing studies exhibit severe discrepancies regarding how these pentagon dimensions interact, largely failing to address the contextual influence of corporate scale. This study addresses this exact literature gap by introducing firm size as a moderating variable. Firm size dictates the complexity of internal controls and the intensity of external public scrutiny. By evaluating manufacturing companies on the Indonesia Stock Exchange from 2021 to 2024 through the integration of *firm size* as a moderating mechanism, this study aims to resolve these persistent empirical contradictions and provide a more refined, context-specific perspective on the boundary conditions of the Fraud Pentagon framework

METHOD

This study employs a descriptive research design with a quantitative approach to comprehensively examine the relationship between the independent variables and the dependent variable under the influence of a moderating factor. The target audience or population specified for this research consists of all manufacturing companies listed on the Indonesia Stock Exchange (IDX) during the observation period from 2021 to 2024, which initially comprised 217 companies. To gather relevant samples, a purposive sampling technique was executed based on strict criteria, including continuous listing status throughout the 2021–2024 period, utilizing the Indonesian Rupiah (IDR) as the financial reporting currency, and consistently publishing complete annual reports. Following the screening process, 130 companies met the requirements, generating a balanced panel data structure of 520 total observations (130 firms × 4 years). The materials and secondary data utilized were systematically collected using documentation techniques gathered directly from the official website of the Indonesia Stock Exchange (www.idx.co.id) and the respective corporate websites.

The tools and measurement models were operationalized systematically to reflect the underlying theoretical frameworks. The dependent variable, financial statement fraud, was designed and measured quantitatively using the Fraud Score Model (F-Score), which integrates accrual quality through the RSST accrual formula and financial performance parameters comprising changes in receivables, inventories, cash sales, and earnings. For the independent variables representing the Fraud Pentagon framework, the indicators were designed as follows: target financial pressure was measured by the ratio of Return on Assets (ROA); financial stability was measured by the percentage change in total assets (ACHANGE); ineffective monitoring was proxied by the proportion of independent commissioners to the total board size (BDOUT); while auditor switching, changes in directors, and the frequency of CEO pictures were operationalized using nominal dummy variables assigned a score of "1" for the presence of the event and "0" otherwise. Additionally, the moderating variable, firm size, was quantified using the natural logarithm of the company's total assets (Ln Total Assets).

The data analysis technique was carried out utilizing panel data regression modeling executed via EViews 12 software. To establish the most productive and accurate model performance, the estimation model selection underwent formal statistical procedures, starting with the Chow Test to choose between the Common Effect Model (CEM) and the Fixed Effect Model (FEM), followed by the Lagrange Multiplier (LM) Test to compare the Common Effect Model against the Random Effect Model (REM). The operational tests explicitly confirmed that the Common Effect Model (CEM) approach was the most appropriate framework for the dataset. Diagnostic instrument validation was further guaranteed by running classical assumption tests, which included the matrix-based multicollinearity evaluation to ensure independent variables were free from severe linear associations and the residual-based heteroskedasticity graphical analysis to verify constant variance. Finally, hypothesis verification was established

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using the partial t-test for individual parameters, the simultaneous F-test to assess joint variable performance, and the coefficient of determination to evaluate the overall productivity and explanatory power of the predictive model.

RESULTS AND DISCUSSION

This section describes the detailed statistical findings derived from the balanced panel data analysis of 130 manufacturing companies listed on the Indonesia Stock Exchange across the 2021–2024 observation period. Before assessing the regression outputs, descriptive statistics were generated to observe the basic distribution, central tendency, and variability parameters of all investigated variables within the 520 corporate observations, as summarized in Table 1.

Table 1. Descriptive Statistics

	financial targets	financial stability	Ineffective monitoring	auditor switching	underwent director sucection	CEO's photo in corporate annual reviews	financial statement fraud	Firm Size
Mean	0.0357	0.0720	0.4200	0.2769	0.0519	0.8019	0.0041	28.4736
Median	0.0400	0.0327	0.4000	0.0000	0.0000	1.0000	0.0063	28.3190
Max.	0.3134	9.1204	0.8333	1.0000	1.0000	1.0000	0.7441	33.7900
Min.	(0.9553)	(0.9675)	0.1667	0.0000	0.0000	0.0000	(0.9295)	24.4311
Std.D	0.1086	0.4619	0.1050	0.4479	0.2220	0.3989	0.1307	1.7393
Skew	(2.6152)	15.2831	0.7632	0.9970	4.0390	(1.5151)	(0.4572)	0.4716
Kurtosis	20.9518	288.63	3.9170	1.9940	17.3140	3.2955	14.829	3.1486
Jarq-B	7575.2	17879	68.710	108.0	5853.1	200.83	3049.8	19.754
Prob	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Sum	18.61	37.48	218.43	144.00	27.00	417.00	2.16	14806.31
Sum Sq.	6.12	110.75	5.72	104.12	25.59	82.59	8.87	1570.12
Observ	520	520	520	520	520	520	520	520

Source: Processed secondary data (2026).

The descriptive data in Table 1 illustrates that financial statement fraud, measured via Dechow's F-Score, exhibits a low overall mean of 0.0041, though a notable variation exists between the highest score (0.7441) and the lowest (-0.9295). For the independent variables, financial targets (X₁) reveal a positive mean ROA of 3.57%, while financial stability (X₂) reflects a modest asset growth rate of 7.20% alongside high volatility. Ineffective monitoring (X₃) scores an average proportion of 42.00% independent commissioners, which fulfills the minimum regulatory requirement. Dummy distributions reveal that 27.69% of the firms executed auditor switching (X₄), only 5.19% underwent director sucection (X₅), and a dominant 80.19% displayed their CEO's photo in corporate annual reviews (X₆). Finally, firm size (Z) shows a concentrated distribution with a mean log-transformation value of 28.4736.

To determine the most appropriate and robust specification among the three estimation techniques—namely the Common Effect Model (CEM), Fixed Effect Model (FEM), and Random Effect Model (REM)—formal panel regression selection tests were executed. The protocols initiated with the Chow Test (Redundant Fixed Effects Likelihood Ratio) to compare the performance efficacy of the Fixed Effect Model against the baseline Common Effect Model. Subsequently, the Breusch-Pagan Lagrange Multiplier (LM) Test was carried out to assess the statistical significance of random individual effects by comparing the Random Effect Model against the Common Effect framework. The detailed statistical values and probability outcomes extracted from EViews 12 are formally compiled in Table 2.

Table 2 Selection of Panel Data Linear Regression Model

Test	Statistic	Prob
Chow Test	0.873800	0.8164
Breusch-Pagan	2.538134	0.1111

Source: Processed secondary data (2026).

As documented in Table 2, the formal verification process demonstrates that the empirical dataset is most robustly represented through the baseline model configuration. The Cross-section F-statistic from the Chow Test is

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0.873800 with a corresponding p-value of 0.8164, which is significantly greater than the standard alpha threshold ($0.8164 > 0.05$). Consequently, the null hypothesis cannot be rejected, indicating that individual fixed intercepts are redundant and that the Fixed Effect Model does not provide a better statistical fit than the Common Effect Model.

Furthermore, the secondary validation process confirms this structural trend through the Breusch-Pagan Lagrange Multiplier Test. The cross-sectional interaction statistic records a value of 2.538134 with a probability score of 0.1111. Because this probability outcome is strictly higher than the significance level ($0.1111 > 0.05$), the null hypothesis asserting the absence of individual random errors cannot be rejected. This structurally confirms that the Random Effect Model provides no additional explanatory performance over the basic configuration. Based on the simultaneous diagnostic evidence from both empirical selection instruments, the Common Effect Model (CEM) is validated as the most appropriate, reliable, and mathematically productive regression framework to carry out the analysis for this study

Following the selection of the Common Effect Model (CEM) as the most suitable regression framework, it is necessary to fulfill the classical assumption criteria. Since the CEM is estimated using the Ordinary Least Squares (OLS) method, the primary requirements to ensure the model's validity are the absence of multicollinearity and heteroskedasticity. The multicollinearity test is performed to determine whether there is a dangerously high correlation among the independent variables in the regression model. In this study, the evaluation was conducted by examining the correlation matrix values among the six independent variables: financial targets (X_1), financial stability (X_2), ineffective monitoring (X_3), auditor switching (X_4), changes in directors (X_5), and the frequency of CEO pictures (X_6). The detailed correlation matrix output is presented in Table 3

Table 3 Multicollinearity Test

	X_1	X_2	X_3	X_4	X_5	X_6
X_1	1.000000	0.109731	0.056630	-0.092032	0.013667	0.099041
X_2	0.109731	1.000000	0.025721	0.031849	-0.033385	-0.035376
X_3	0.056630	0.025721	1.000000	-0.133101	0.031354	-0.078101
X_4	-0.092032	0.031849	-0.133101	1.000000	0.068241	0.102688
X_5	0.013667	-0.033385	0.031354	0.068241	1.000000	-0.014178
X_6	0.099041	-0.035376	-0.078101	0.102688	-0.014178	1.000000

Source: Processed secondary data (2026).

Based on the correlation matrix results shown in Table 3, all correlation values among the independent variables are consistently below the critical threshold of 0.90. Furthermore, the majority of the correlation coefficients exist at a very low level, specifically below the 0.20 mark. The highest observed correlation occurs in the relationship between ineffective monitoring (X_3) and auditor switching (X_4), which rests at -0.133101. This value remains substantially below the threshold that would indicate severe multicollinearity. Therefore, it can be conclusively stated that all independent variables are entirely free from multicollinearity symptoms. This structural independence confirms that there is no data distortion among the independent variables, making the regression model unbiased, reliable, and perfectly suitable for the subsequent stages of panel data analysis

In addition to evaluating the multicollinearity matrix, a heteroscedasticity test was performed to verify whether there is an unequal variance of the residuals across observations within the regression model. A statistically sound and reliable regression model must meet the homoskedasticity assumption, which implies that the residual variance remains constant from one observational unit to another. In this study, the evaluation of heteroscedasticity was conducted by performing a visual graphical analysis of the residual plot sequence across the balanced panel observations. The resulting data plot mapping the distributed error variance is formally presented in Figure 1

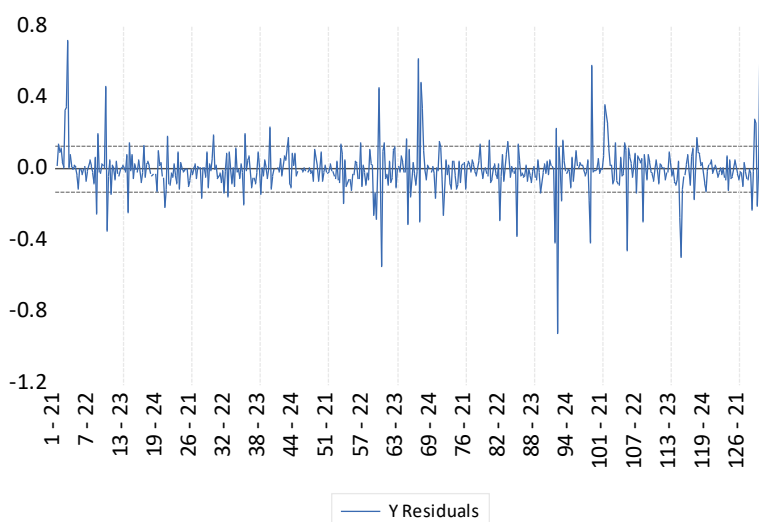


Figure 1 Heteroscedasticity Test Results

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Based on the residual distribution chart illustrated in Figure 1, the graphical plot demonstrates that the residuals are randomly scattered around the zero horizontal baseline and do not construct any systematic geometric configuration, such as a narrowing or widening funnel pattern. The overall error fluctuations remain consistently distributed above and below the zero threshold line across the panel sequence. Although a small number of localized outlier spikes appear at specific cross-sectional points, the baseline error variance remains strictly constant and does not exhibit a continuous systematic progression. Therefore, it can be mathematically concluded that the regression model is free from heteroscedasticity issues, thereby confirming that the homoskedasticity assumption is fully satisfied and validating the model for robust hypothesis testing.

To analyze the direct effects of the independent variables representing the Fraud Pentagon framework on financial statement fraud, a multiple linear regression analysis was executed. The panel data estimation was carried out using the Panel Least Squares approach under the Common Effect Model (CEM) specification, based on 520 balanced observations. The specific coefficients, standard errors, t-statistics, and respective probability values extracted from EViews 12 are formally compiled in Table 4

Table 4 Multiple Linear Regression Test Results

Variable	Coefficient	Std. Error	T-Statistic	Prob.
C	0.023868	0.027336	0.873126	0.3830
financial targets	0.223980	0.053080	4.219670	0.0000
financial stability	-0.017949	0.012364	-1.451693	0.1472
Ineffective monitoring	-0.062798	0.054609	-1.149957	0.2507
auditor switching	-0.008014	0.012917	-0.620416	0.5353
underwent director sucession	0.006293	0.025590	0.245938	0.8058
CEO's photo in corporate annual reviews	0.002295	0.014403	0.159311	0.8735

Source: Processed secondary data (2026).

This study partially demonstrates that financial targets (X_1) represent the only element within the Crowe's Fraud Pentagon framework that exerts a statistically significant positive direct effect on financial statement fraud (Y) among manufacturing companies listed on the Indonesia Stock Exchange for the 2021–2024 period. This critical finding is evidenced by a robust t-statistic of 4.219670 and a highly significant probability value of 0.0000 ($p < 0.05\%$). It structurally implies that extreme profitability expectations, proxied by Return on Assets (ROA), place an immense financial burden and performance pressure on executives. Grounded in Agency Theory, when the principal's targets are overly ambitious, agents (management) are heavily incentivized to exhibit opportunistic behavior, turning to aggressive earnings manipulation or window-dressing techniques to secure personal utility metrics such as compensation packages, bonuses, and career preservation. The heightened post-pandemic market competition within the Indonesian manufacturing sector further intensifies this pressure, rendering financial targets the most dominant catalyst for corporate misreporting in this empirical model.

Conversely, the individual statistical evaluations for the remaining five hypotheses fail to establish empirical significance, as their respective probability values significantly exceed the standard alpha threshold of 0.05. The alternative pressure dimension, financial stability (X_2), exhibits an insignificant negative association with financial fraud (beta = -0.017949, $p = 0.1472$). This confirms that fluctuations in total asset growth ($ACHANGE$) are typically driven by normal, standard corporate investment lifecycles or macro-environmental shifts rather than severe manajerial stress that induces fraudulent report adjustments. From the opportunity (X_3) standpoint, ineffective monitoring documents an insignificant relationship with the dependent variable (beta = -0.062798, $p = 0.2507$). This proves that the quantitative proportion of independent commissioners ($BDOOUT$) within Indonesian boards primarily fulfills institutional regulatory compliance and formal administrative requirements rather than functioning as a substantive, objective monitoring safeguard capable of curbing fraudulent activities.

Furthermore, corporate sucession mechanisms and leadership parameters demonstrate an absolute lack of direct significance regarding financial misreporting. External auditor switching (X_4), representing the rationalization element, logs an insignificant coefficient of -0.008014 ($p = 0.5353$). This implies that changing public accounting firms (KAP) among the observed emiten is driven by mandatory government rotation rules (e.g., Government Regulation No. 20 of 2015) or commercial dissatisfaction with service value, rather than a deliberate strategy to erase historical audit trails or hide fraudulent evidence. Similarly, changes in the board of directors (X_5),

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representing the capability dimension, show no significant influence ($\beta = 0.006293$, $p = 0.8058$). This suggests that executive sucession patterns are standard corporate actions designed to insert more competent talent and refresh leadership cycles to mend operational performance, rather than indicators of systemic governance failures or *stress periods* that encourage fraud execution. Lastly, the frequency of CEO pictures (X_6), which proxies executive arrogance, scores an insignificant direct path ($\beta = 0.002295$, $p = 0.8735$). This clarifies that the publication of a CEO's visual profile in the corporate annual review is purely a public relations tool meant to introduce the board of directors and maintain investor transparency, rather than an expression of individual narcissism that overrules corporate internal control systems.

To evaluate the contingent and structural role of firm scale in the relationship between the Fraud Pentagon dimensions and fraudulent financial reporting, a Moderated Regression Analysis (MRA) was executed. This interaction-based model assesses whether the interaction terms between each independent variable and the moderating variable, firm size (Z), exhibit statistically significant outcomes. The empirical coefficients, standard errors, t-statistics, and respective probability values are formally compiled in Table 5.

Table 5 Moderation Regression Test Results

Variable	Coefficient	Std. Error	T-Statistic	Prob.
C	-0.230197	0.482257	-0.477333	0.6333
financial targets*FS	0.012216	0.037422	0.326448	0.7442
financial stability*FS	-0.002239	0.018699	-0.119735	0.9047
Ineffective monitoring*FS	-0.033642	0.034323	-0.980157	0.3275
auditor switching*FS	0.009827	0.008827	1.113359	0.2661
underwent director sucession*FS	-0.006353	0.014100	-0.450554	0.6525
CEO's photo in corporate annual reviews*FS	0.002107	0.008278	0.254502	0.7992

Source: Processed secondary data (2026).

The Moderated Regression Analysis (MRA) verification results structurally indicate that firm size does not act as a significant moderating variable for any of the causal relationships in this model. Looking at the specific interaction parameters, the interaction term between financial targets and firm size (X_1*Z) records a coefficient of 0.012216 with a probability value of 0.7442 ($p > 0.05$), failing to provide evidence that firm scale strengthens or dampens target-driven financial pressures. Similarly, the interaction for financial stability (X_2*Z) logs an insignificant negative coefficient of -0.002239 with a probability score of 0.9047, demonstrating that corporate scale changes do not substantially alter the relationship between asset volatility and report manipulation. From the opportunity standpoint, the interaction term for ineffective monitoring (X_3*Z) yields an insignificant negative coefficient ($\beta = -0.033642$, $p = 0.3275$), indicating that while larger companies have formal oversight, organizational complexity creates unique control gaps that prevent firm size from significantly shifting supervisory outcomes.

Furthermore, behavioral sucession and leadership traits are equally unaffected by the corporate scale interaction check. External auditor switching coupled with firm size (X_4*Z) generates an insignificant direct path ($\beta = 0.009827$, $p = 0.2661$), proving that regulatory or voluntary public accounting firm selection mechanisms remain independent of asset magnitudes regarding accounting fraud. Board of directors sucession paired with the moderator (X_5*Z) documents a coefficient of -0.006353 and an insignificant probability value of 0.6525, confirming that systematic corporate governance protocols during executive lifecycles minimize structural transition risks uniformly across all organizational dimensions. Lastly, the interaction involving the frequency of CEO pictures (X_6*Z) reveals an insignificant coefficient of 0.002107 with a probability threshold of 0.7992. This implies that executive narcissism or personal corporate dominance is not amplified by larger corporate sizes to a degree that compromises financial reports. Grounded in Agency Theory, these collective outcomes prove that agency friction and opportunistic behaviors are ubiquitous threats across corporate organizations without regard to total asset metrics. Larger companies face strict market monitoring but endure higher market expectations; conversely, smaller entities navigate restricted oversight but less external pressure. These counterbalancing forces effectively neutralize any statistical moderation To ensure the statistical validity of the panel data and prevent the occurrence of spurious regression, a panel unit root test was performed to evaluate the stationarity of the variables. This diagnostic check determines whether the mean and variance of the series remain constant over the investigated time horizon. In this study, the stationarity evaluation was conducted using the Augmented Dickey-Fuller (ADF) Fisher Panel Unit Root

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Test method across the primary continuous numerics, specifically financial targets (X₁), financial stability (X₂), and financial statement fraud (Y). The binary dummy parameters—ineffective monitoring (X₃), auditor switching (X₄), changes in directors (X₅), and the frequency of CEO pictures (X₆)—were excluded from this test because dummy classifications do not fluctuate as continuous numerical trends and are structurally stationary by nature. The empirical statistical results at the baseline level (I(0)) are formally compiled in Table 6.

Table 6 Unit Root Test

Variabel	Statistic	Prob*
financial targets X ₁	502.213	0.0000
financial stability X ₂	531.725	0.0000
financial statement fraud Y	465.456	0.0000

Source: Processed secondary data (2026).

Based on the panel unit root test parameters summarized in Table 6, all evaluated continuous metrics structurally exhibit stationarity at the baseline level framework (I(0)). The empirical evaluation metrics demonstrate that financial statement fraud (Y) scores an ADF Fisher Chi-square statistic of 465.456, financial targets (X₁) logs a value of 502.213, and financial stability (X₂) registers a parameter of 531.725. Crucially, the respective probability scores for all three continuous paths yield an absolute value of 0.0000. Because these probability outcomes are strictly lower than the standard significance alpha threshold ($0.0000 < 0.05$), the null hypothesis asserting the presence of a unit root is rejected. This diagnostic evidence mathematically proves that the time-series attributes of the panel data possess constant variance and mean parameters over the 2021–2024 tracking lifecycle, validating the data structure for further cointegration checking and robust regression estimation.

Following the verification that all continuous data series are integrated of the same order (I(0)), it is mathematically essential to evaluate whether a long-run equilibrium relationship exists among the variables. A panel cointegration check was formally executed using the Kao Residual Cointegration Test method based on the Engle-Granger framework. This diagnostic procedure tests the null hypothesis of no cointegration against the alternative hypothesis that a stable, time-invariant long-run relationship binds the panel variables together over the tracking horizon. The variables included in this residual-based integration analysis are financial statement fraud (Y), financial targets (X₁), financial stability (X₂), ineffective monitoring (X₃), auditor switching (X₄), changes in directors (X₅), the frequency of CEO pictures (X₆), and firm size (Z). The specific parametric output is formally presented in Table 7

Table 7 Cointegration Residual Test Results

	t-Statistic	Prob.
ADF	-18.00010	0.0000
Residual variance	0.037802	
HAC variance	0.020571	

Source: Processed secondary data (2026).

Based on the empirical parameters compiled in Table 8, the diagnostic testing strongly demonstrates the existence of an enduring long-run cointegration vector among the investigated parameters. The Augmented Dickey-Fuller (ADF) t-statistic records a value of -18.00010 with a corresponding probability score of 0.0000. Because this probability outcome is strictly lower than the standard statistical alpha threshold ($0.0000 < 0.05$), the null hypothesis asserting the absence of cointegration is rejected. This robust diagnostic evidence mathematically proves that although individual variables may experience short-run fluctuations, they move together in a stable long-run equilibrium over the 2021–2024 tracking lifecycle. Consequently, this long-run relationship validates the data structure for further advanced estimation modeling, justifying the implementation of specialized panel estimation techniques such as the Fully Modified Ordinary Least Squares (FMOLS) framework.

Following the confirmation of a stable long-run cointegration relationship among the variables, a Fully Modified Ordinary Least Squares (FMOLS) estimation was performed. The FMOLS framework is utilized to obtain optimal, unbiased, and highly robust long-run coefficients by correcting for potential endogeneity and serial correlation issues inherent in panel data series. This advanced estimation technique provides a more reliable verification of the long-run effects of the Fraud Pentagon dimensions on financial statement fraud. The specific

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parametric outputs consisting of long-run coefficients, standard errors, t-statistics, and respective probability values are formally compiled in Table 8

Table 8 Fully Modified Ordinary Least Squares (FMOLS) Test Results

Variable	Coefficient	Std. Error	t-Statistic	Prob.
financial targets	0.745868	0.335376	2.223979	0.0304
financial stability	-0.016208	0.090702	-0.178699	0.8589
Ineffectiveness of Supervision	-0.074752	0.286977	-0.260482	0.7955

Source: Processed secondary data (2026).

The long-run Fully Modified Ordinary Least Squares (FMOLS) estimation results for the continuous variables are summarized as follows:

Financial Targets (X₁): Financial targets exert a significant positive effect on financial statement fraud (Y) in the long run ($\beta = 0.745868$, $p = 0.0304 < 0.05$). This indicates that persistent pressure to meet rigid profitability benchmarks (ROA) acts as a structural catalyst that robustly explains variations in long-term fraudulent reporting behaviors.

Financial Stability (X₂): Financial stability demonstrates an insignificant negative long-run relationship with financial statement fraud ($\beta = -0.016208$, $p = 0.8589 > 0.05$). This confirms that over an extended horizon, baseline asset growth fluctuations are driven by normal corporate lifecycles and are statistically insufficient to induce manager-led manipulation.

Ineffective Monitoring (X₃): Ineffective monitoring holds an insignificant negative long-run association with the dependent variable ($\beta = -0.074752$, $p = 0.7955 > 0.05$). Although a negative direction is formed, the impact is statistically negligible, proving that the quantitative presence of independent commissioners serves primarily as a regulatory compliance formality rather than a substantive long-term deterrent against fraud.

The Effect of Financial Targets on Financial Statement Fraud (H₁)

The empirical analysis demonstrates that financial targets have a significant positive direct effect on financial statement fraud in both the short-run panel model ($\beta = 0.223980$, $p = 0.0000$) and the long-run FMOLS estimation ($\beta = 0.745868$, $p = 0.0304$). Therefore, H₁ is fully accepted. This consistent significance proves that extreme profitability demands, proxied by Return on Assets (ROA), place an intense financial burden on corporate management. Grounded in Agency Theory, when shareholders (*principals*) establish rigid or unrealistically high performance benchmarks, managers (*agents*) are highly incentivized to engage in opportunistic behaviors, such as aggressive earnings manipulation or window-dressing, to artificially satisfy these market mandates and secure individual utility metrics like career preservation and executive compensation. Within the Fraud Pentagon framework, this finding confirms that financial targets act as a primary manifestation of *pressure*, which severely compromises reporting quality over time. This outcome aligns with the empirical findings of (Eriyana & Astuti, 2024; Kharimah, Nugraha, Budiyo, & Arumsari, 2024; Sari & Subkhi, 2021), collectively illustrating that severe corporate profit benchmarks serve as a major catalyst for fraudulent financial reporting.

The Effect of Financial Stability on Financial Statement Fraud (H₂)

The panel model records that financial stability holds an insignificant negative direct path with financial statement fraud ($\beta = -0.017949$, $p = 0.1472$), a trend reinforced by the long-run FMOLS outcome ($\beta = -0.016208$, $p = 0.8589$). Consequently, H₂ is flatly rejected. This statistical insignificance implies that asset growth volatility (*ACHANGE*) does not function as a meaningful driver of fraud within Indonesian manufacturing firms. Under the *pressure* component of the Fraud Pentagon model, when a company experiences less-than-ideal asset growth, management prefers to execute normal operational reallocations or cost-efficiency measures rather than resorting to risky, illegal report manipulation. Furthermore, from the lens of Agency Theory, robust baseline performance minimizes structural frictions, meaning that ordinary asset fluctuations are viewed as standard corporate lifecycles rather than existential triggers for fraud. This result is strongly supported by prior studies such as (Solikhin, 2023), confirming that corporate asset fluctuations do not automatically translate into reporting manipulation.

The Effect of Ineffective Monitoring on Financial Statement Fraud (H₃)

The statistical results confirm that ineffective monitoring maintains an insignificant direct impact on fraud across both the panel regression ($\beta = -0.062798$, $p = 0.2507$) and the long-run FMOLS check ($\beta = -0.074752$,

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$p = 0.7955$). Hence, H_3 is rejected. Although the Fraud Pentagon Theory states that a weak monitoring structure creates a clear *opportunity* for fraud execution, the quantitative proportion of independent commissioners (*BDOU*) within these entities does not significantly dictate fraud variations. This reflects a corporate environment where independent board appointments frequently function merely as an administrative compliance formality to satisfy Financial Services Authority (OJK) requirements rather than serving as a substantive, proactive oversight force. In terms of Agency Theory, the quantitative presence of independent supervisors is textually sound, but it lacks the qualitative empowerment needed to bridge information asymmetry or curb management's opportunistic actions, validating the prior empirical conclusions of Fathmaningrum and Anggarani (2021), Alkotdriyah et al. (2024), and Jannah et al. (2021).

The Effect of Auditor Switching on Financial Statement Fraud (H_4)

The primary regression model records an insignificant direct path between auditor switching and financial statement fraud ($\beta = -0.008014$, $p = 0.5353$), leading to the rejection of H_4 . In the context of the Fraud Pentagon, corporate public accounting firm (*KAP*) switches are theoretically conceptualized as a *rationalization* mechanism to eliminate historical audit trails or evade strict oversight by an experienced auditor. However, the empirical insignificance proves that auditor switching among Indonesian manufacturing companies is largely driven by institutional factors—such as mandatory audit rotation laws under Government Regulation No. 20 of 2015—or standard commercial negotiations rather than fraudulent intent. Thus, changing auditors does not function as a significant signal of financial manipulation, matching the empirical observations of Fathmaningrum and Anggarani (2021) as well as Achmad et al. (2022).

The Effect of Changes in Directors on Financial Statement Fraud (H_5)

The relationship between changes in directors and financial statement fraud is positive but statistically highly insignificant ($\beta = 0.006293$, $p = 0.8058$), resulting in the rejection of H_5 . While the *competence* (capability) element of the Fraud Pentagon framework suggests that a succession in corporate leadership creates a *stress period* or a temporary governance vacuum that management can exploit to execute fraud, the empirical parameters do not support this view. Executive transitions within the observed manufacturing entities are standard governance adjustments decided during General Meetings of Shareholders (RUPS) to bring in more optimal talent and boost long-term productivity, rather than strategic maneuvers intended to facilitate reporting fraud, which is consistent with the findings of Mukaromah and Budiwitjaksono (2021).

The Effect of the Frequency of CEO Pictures on Financial Statement Fraud (H_6)

The frequency of CEO pictures demonstrates an insignificant positive association with financial statement fraud ($\beta = 0.002295$, $p = 0.8735$), causing the rejection of H_6 . The Fraud Pentagon Theory proxies the *arrogance* dimension through media exposure, assuming that an extensive visual prominence of the CEO reflects a superiority complex and a willingness to compromise internal control systems. However, this study empirically demonstrates that the inclusion of CEO images in corporate annual reports is purely a public relations standard, a visual strategy to maintain stakeholder transparency, and a tool to reinforce executive accountability, rather than a reflection of destructive corporate narcissism. This conclusion is strongly aligned with the findings of Achmad et al. (2022) and Lestari and Jayanti (2021).

The Moderating Role of Firm Size (H_7)

The Moderated Regression Analysis (MRA) checks conclusively reveal that firm size is incapable of moderating the relationship between any of the Fraud Pentagon factors and financial statement fraud ($p > 0.05$), leading to the absolute rejection of H_7 . From an Agency Theory standpoint, this proves that agency frictions and opportunistic tendencies are ubiquitous threats across corporate landscapes, completely independent of asset magnitudes. While larger corporations operate under rigid internal control systems and intense public, regulatory, and Big Four audit scrutiny (which should theoretically dampen fraud opportunities), they concurrently endure immense market pressure to satisfy premium investor benchmarks. These counterbalancing structural forces effectively neutralize any visible moderating effect, rendering fraud risks equal across different corporate scales if internal ethical foundations crumble, matching the empirical views of Khuluqi and Napisah (2022).

CONCLUSION

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This study successfully fulfills its primary objective established in the introduction, which is to analyze the empirical impact of the Fraud Pentagon dimensions—proxied by financial targets, financial stability, ineffective monitoring, auditor switching, changes in directors, and the frequency of CEO pictures—on financial statement fraud, alongside testing the potential moderating capacity of firm size within the manufacturing sector from 2021 to 2024. Drawing from the comprehensive results and discussion, it is concluded that financial targets represent the most critical, dominant, and consistent driver of financial statement fraud in both the short-run panel model and the long-run equilibrium. This provides powerful empirical support for Agency Theory and the *pressure* component of the Fraud Pentagon, demonstrating that rigid or aggressive profitability mandates (ROA) severely force agents into opportunistic window-dressing actions to satisfy external stakeholders. Conversely, financial stability, ineffective monitoring, auditor switching, changes in directors, and the frequency of CEO pictures do not exhibit statistically significant direct effects on financial statement fraud, as corporate compliance cycles, mandatory auditor rotations, and visual public relations routines naturally override opportunistic intent. Furthermore, firm size is completely unable to moderate any of the causal links in the framework. This structurally proves that agency conflicts and manipulative behaviors remain ubiquitous corporate threats that are fundamentally independent of asset magnitude, meaning that fraud risks can equally materialize in large or small companies if internal ethical foundations crumble.

Reflecting on these findings, the core implications and future development plans for academic implementation and corporate oversight require a major shift toward quality-driven metrics. Regulators and standard-setters should implement stricter, more substantive monitoring protocols over internal control mechanisms rather than relying on administrative board compliance formalities. For future developmental implementation, the research plan suggests that regulatory bodies, such as the Financial Services Authority (OJK), should actively enforce realistic corporate benchmark settings to prevent management from experiencing excessive target-driven stress. Additionally, future accounting studies should expand their analytical tool designs by integrating advanced qualitative metrics—such as deep forensic accounting audits, detailed corporate governance indexes, and psychological leadership assessments—to capture behavioral dynamics like executive competence and arrogance more robustly. Finally, corporate development plans must prioritize the continuous integration of specialized forensic anti-fraud training programs within internal audit committees to proactively mitigate the risk of financial reporting manipulation across all organizational scales.

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