

Corporate Governance, Profitability, and Financial Statement Fraud Risk in Indonesian Pharmaceutical Companies

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Abstract

This study examines the effects of independent commissioners, managerial ownership, and audit committee size on financial statement fraud risk and tests whether profitability moderates those relationships in Indonesian pharmaceutical companies. The study addresses a sector-specific evidence gap by examining all three governance mechanisms and the profitability interaction in a narrowly defined, highly regulated setting. Secondary annual-report data from 2020–2024 were selected purposively. Ten companies yielded 50 initial firm-year observations, four casewise outliers were excluded, leaving 46 observations. The article reports this selection transparently and does not treat outlier deletion as evidence of misconduct. Fraud risk is represented by the continuous Beneish M-Score. Managerial ownership is negatively associated with fraud risk ($B=-7.627$, $p=0.012$). Independent commissioners ($B=1.511$, $p=0.085$) and audit committee size ($B=-0.196$, $p=0.519$) are not significant. ROA does not moderate the three relationships. Structural compliance alone may not capture governance effectiveness, managerial ownership is the only tested mechanism associated with lower fraud risk. The study provides transparent Beneish M-Score evidence from Indonesian pharmaceutical companies and clarifies the inferential limits created by a small, sector-specific sample.

Keywords: Audit Committee, Beneish M-Score, Financial Statement Fraud, Managerial Ownership, Profitability

1. INTRODUCTION

Financial statements of listed companies are central to the decisions of investors, creditors, regulators, and other stakeholders. Deliberate misstatements can distort capital allocation, increase contracting costs, and erode confidence in markets. Fraud as an organizational risk requiring layered controls and oversight ([Usman, Marlissa, & Urip, 2026](#)). In financial reporting, the risk concerns more than technical accounting breaches it is connected to conflicts of interest, performance pressure, and weak monitoring mechanisms ([Rezaee, 2005](#); [Dechow, Ge, Larson, & Sloan, 2011](#)).

The pharmaceutical industry is an informative setting because it operates under intensive regulation, manages complex inventories and receivables, and experienced demand changes during and after the pandemic. These characteristics can create pressure to maintain performance while making accounting judgments more consequential. A fraud-risk measure, however, is not proof of fraud. This article therefore treats the Beneish M-Score as a continuous proxy for the risk or indication of earnings manipulation, not as a finding that any sampled company committed fraud.

The Beneish M-Score combines indices derived from receivables, gross margin, asset quality, sales growth, depreciation, selling and administrative expenses, leverage, and accruals. Higher scores indicate a stronger warning signal. It is useful for financial-statement screening, but it must be interpreted alongside governance, internal-control, and audit evidence. Indonesian studies using the model likewise show that M-Score can identify patterns requiring investigation, while results depend on the fraud theory, industry, sample period, and classification rule employed ([Beneish, 1999](#); [Golec, 2019](#); [Adoboe-Mensah, Salia, & Addo, 2023](#); [Ratmono, Darsono, & Cahyonowati, 2020](#); [Kuang, & Natalia, 2023](#); [Puspitha, & Diantini, 2023](#); [Pratama, & Aminah, 2025](#); [Özari, Can, & Demirkale, 2025](#)). These differences support using the score as a continuous screening indicator rather than as a deterministic label.

Agency theory explains why the separation of ownership and control can allow managers to pursue private interests when shareholders do not possess comparable information. Corporate-governance mechanisms seek to reduce that conflict through monitoring, accountability, and better-aligned incentives ([Jensen, & Meckling, 1976](#); [Fama, & Jensen, 1983](#)). This study operationalizes

governance through the proportion of independent commissioners, managerial ownership, and audit committee size because each has a direct formal connection with management monitoring and financial reporting.

The effectiveness of structural governance proxies is nevertheless not uniform. Independent boards and audit committees may improve scrutiny, yet formal compliance does not automatically measure meeting quality, expertise, willingness to challenge management, or access to information. Indonesian evidence reports mixed results: governance composition and independence-related characteristics can be associated with reporting-fraud risk in some settings, while sectoral studies show that the effect depends on the quality of implementation and the outcome measure ([Ihsanti, & Cheisviyanny, 2023](#); [Jesslyn, & Khairani, 2025](#); [Yanti, & Kresnandra, 2025](#)). International evidence similarly reports heterogeneous governance-fraud relationships across ownership and institutional environments ([Mousavi, Zimon, Salehi, & Stepnicka, 2022](#); [Indiraswari, Subroto, Rosidi, & Subekti, 2025](#); [Pamungkas, Oktafiyani, Swatyayana, Kurniawati, Putri, & Alfared, 2025](#); [Shanikat, & Aldabbas, 2025](#)). This inconsistency motivates a focused test in Indonesian pharmaceutical companies.

Profitability is positioned as a moderator because it can be related to the pressure to improve or maintain reported performance. Fraud theory identifies pressure as one condition that may contribute to opportunistic conduct, while opportunity and collusion can make it more difficult to detect ([Vousinas, 2019](#)). Neither high nor low ROA establishes fraud. A moderation test is needed to determine whether the governance-risk relationships differ across profitability conditions.

A research gap therefore remains. Previous studies frequently combine broad manufacturing, banking, property, or cross-sector samples, use different fraud indicators, or examine governance without testing whether profitability changes the relationship. The resulting findings are difficult to transfer to Indonesian pharmaceutical companies, where regulation, inventory, receivables, product returns, and pandemic-related demand changes can affect both reporting ratios and monitoring demands. The present study addresses this gap by linking three observable governance structures with a continuous risk signal and by testing ROA moderation in the same sector and period.

Accordingly, this study examines the direct effects of independent commissioners, managerial ownership, and audit committee size on financial statement fraud risk among pharmaceutical companies listed on the Indonesia Stock Exchange (IDX) during 2020–2024. It also tests profitability, measured by Return on Assets (ROA), as a moderator. The contribution is threefold, such as a continuous Beneish M-Score proxy, an Indonesian pharmaceutical-company setting, and transparent reporting of casewise outlier removal and the resulting inferential limits. The study does not assume that a governance structure that works in banking, property, or broad manufacturing samples will operate identically in pharmaceuticals. Instead, it evaluates whether formal governance measures explain score variation in this industry and whether profitability changes those associations.

2. LITERATURE REVIEW

2.1 Corporate Governance, Agency Conflict, and Manipulation Risk

Agency theory frames governance as a device for constraining managerial opportunism. Independent commissioners are expected to strengthen objective monitoring, managerial ownership can align managers' interests with those of shareholders, and audit committees assist boards in overseeing reporting and audit processes ([Wahyuni & Aira, 2026](#)). These mechanisms do not replace internal control, but they may reduce information asymmetry and the opportunity for material misstatement ([Jensen, & Meckling, 1976](#); [Fama, & Jensen, 1983](#); [Donelson, Ege, & McInnis, 2017](#)). Recent empirical work also indicates that the expected effect is conditional, governance measures are more informative when they capture independence, expertise, or active oversight rather than only the existence of a formal structure ([Ihsanti, & Cheisviyanny, 2023](#); [Prastyono, Jakaria, Masriana, Maldini, & Noer, 2025](#); [Yanti, & Kresnandra, 2025](#)).

Independent commissioners are expected to lower manipulation risk because they are not responsible for daily operating management ([Anggraini, Rosalina, & Anggita, 2026](#)). The empirical evidence remains mixed. [Ihsanti and Cheisviyanny \(2023\)](#) examine governance mechanisms in relation to fraudulent financial statements, while [Jesslyn and Khairani \(2025\)](#) emphasize the role of independence in corporate-governance disclosure, other evidence indicates that the effect can vary with industry and the way fraud risk is measured ([Kaituko, Githaiga, & Chelogoi, 2023](#); [Shanikat, & Aldabbas, 2025](#); [Pamungkas, Oktafiyani, Swatyayana, Kurniawati, Putri, & Alfred, 2025](#)). These findings do not invalidate the monitoring argument, but they show why a formal proportion should be tested rather than presumed to capture substantive independence. The first hypothesis follows the monitoring argument.

H₁: Independent commissioners are negatively associated with financial statement fraud risk

Managerial ownership may align managerial choices with shareholder value. When managers own shares, they also bear some economic and reputational consequences of misreporting ([Salim, Reniati, & Sumiyati, 2025](#)). Very low ownership may not create a strong alignment incentive, while high ownership can raise entrenchment concerns. Indonesian evidence links ownership structure with earnings management and financial-statement fraud, but the direction and strength of the relationship remain context dependent ([Wati et al., 2023](#); [Yendrawati et al., 2023](#)). The study tests the alignment prediction in the pharmaceutical-company sample and interprets it only within the observed ownership range.

H₂: Managerial ownership is negatively associated with financial statement fraud risk

Audit committees review financial reporting, audit processes, and risk management. This study follows the source thesis by using the number of committee members as a structural proxy. Since size does not measure financial expertise, diligence, independence, or meeting intensity, a negative relation must be tested rather than assumed. Recent studies show that audit-committee effectiveness is more closely connected to independence, internal control, expertise, or active oversight than to headcount alone ([Namakavarani, Daryaei, Askarany, & Askary, 2021](#); [Putri, & Saud, 2021](#); [Luthfiyyah, 2024](#); [Kusumawardani, Soediro, & Adhitama, 2024](#)).

H₃: Audit committee size is negatively associated with financial statement fraud risk

2.2 Profitability as a Moderator

Profitability reflects a company's capacity to generate profit from managed assets. A low ROA may be associated with pressure to improve results, while a high ROA may be associated with pressure to preserve achieved performance. Fraud-hexagon or SCORE theory directs attention to pressure as a risk condition, not as a claim that profitability alone causes fraud. Recent fraud research similarly treats financial pressure and management incentives as interacting conditions rather than as proof of manipulation ([Vousinas, 2019](#); [Rezaee, 2005](#); [Maharany et al., 2025](#); [Ummah & Suwarno, 2024](#)). ROA is used to assess whether firm performance changes the relationship between the three governance proxies and manipulation risk.

If performance pressure changes managerial incentives, the effects of board monitoring, ownership alignment, and audit-committee oversight could differ across ROA levels. Prior evidence reports that financial performance and governance can jointly explain variation in fraudulent-financial-statement risk, although the direction is not necessarily uniform across sectors ([Yendrawati et al., 2023](#)). Conversely, an insignificant interaction would indicate that ROA does not explain variation in the effectiveness of the structural proxies in the observed sample. This distinction is important because a non-significant moderator does not mean that pressure is irrelevant; it may mean that ROA is an indirect and incomplete measure of pressure.

H₄: Profitability moderates the relationship between independent commissioners and financial statement fraud risk

H₅: Profitability moderates the relationship between managerial ownership and financial statement fraud risk

H₆: Profitability moderates the relationship between audit committee size and financial statement fraud risk

Taken together, the literature supports the hypotheses as theoretically plausible but empirically contestable. Agency theory predicts that monitoring and incentive alignment can reduce opportunistic reporting, while fraud theory predicts that pressure may alter the opportunity or motivation to manipulate ([Supriyanto, Damanik, Prasetyo, Alie, & Oktaria, 2025](#)). The empirical record is not uniform some studies report negative governance-fraud relationships, whereas others show that formal composition or headcount is insufficient when independence, expertise, internal control, and activity are not measured. The hypotheses are therefore directional predictions, not assumptions that the coefficients must be significant in this sample.

3. RESEARCH METHODOLOGY

This explanatory quantitative study uses secondary annual-report and financial-statement data for pharmaceutical companies listed on the Indonesia Stock Exchange (IDX). The population comprised 13 firms during 2020–2024. Purposive sampling retained firms that were not delisted and disclosed complete annual-report information for all required variables. This approach was chosen because the Beneish ratios, governance measures, ROA, and interaction terms must be calculated consistently for every firm-year; incomplete observations would otherwise create non-comparable measurement and reduce the interpretability of the moderation tests. The procedure yielded 10 eligible companies and 50 initial firm-year observations. Firm information and financial statements were drawn from Bursa Efek Indonesia (2020-2024).

Table 1. Sample selection

No	Criterion	Count
1	Pharmaceutical companies listed on the IDX	13
2	Companies delisted during 2020–2024	0
3	Companies without complete data for all variables	3
Sample companies		10
Initial observations (10 companies × 5 years)		50
Observations after casewise diagnostics		46

Table 1 shows the unit of analysis is the firm-year. The initial Kolmogorov–Smirnov residual test for 50 observations returned a significance value of 0.000. Following the source thesis procedure, casewise diagnostics were used to identify four observations classified as outliers, leaving 46 observations for testing. The article does not infer that these observations represent fraudulent companies: the classification is a residual-diagnostic decision made to improve the distributional fit of the regression model. This step is explicitly reported because it reduces sample coverage and can affect generalization. The source thesis also records Cochrane–Orcutt treatment for the autocorrelation diagnosis, the reported post-treatment Durbin–Watson statistic is 1.804. Because the available source output does not report the casewise threshold and firm-year identifiers in the article, the exclusion rule remains a methodological limitation and is not presented as a definitive robustness test.

The outlier decision also determines the boundary of the evidence. Casewise deletion is treated as a model-diagnostic procedure, not as a substantive classification of a firm. A stronger robustness design would disclose the four firm-years, state the diagnostic threshold, and compare coefficient signs, standard errors, and decisions across the retained and full samples. If those materials are available in a future replication, the comparison should be reported before any claim of generalizability is made.

Table 2. Variable operationalization

Variables	Proxy	Role
Fraud risk	Eight-index Beneish M-Score	Dependent
Independent commissioners	Independent commissioners / total commissioners	Independent
Managerial ownership	Management shares / shares outstanding	Independent
Audit committee	Number of audit committee members	Independent
Profitability	ROA = net income / total assets	Moderator

Table 2 shows financial statement fraud risk is proxied by the Beneish M-Score and treated as a continuous variable, a higher score indicates a stronger manipulation-risk signal. Independent commissioners are measured as independent commissioners divided by total commissioners, managerial ownership as management-owned shares divided by shares outstanding, audit committee as the number of members, and profitability as net income divided by total assets. The operationalization follows the source thesis and is consistent with recent Indonesian applications of governance and Beneish measures ([Ihsanti, & Cheisviyanny, 2023](#); [Puspitha, & Diantini, 2023](#); [Pratama, & Aminah, 2025](#)). Minimum requirements for independent commissioners and audit committees follow the Financial Services Authority regulations.

The direct effects are examined with multiple linear regression. Moderated Regression Analysis (MRA) is estimated separately for the interactions IC×ROA, MO×ROA, and AC×ROA. The analysis uses IBM SPSS Statistics 26 with a 5% significance level and includes descriptive statistics, Kolmogorov–Smirnov normality testing, tolerance and Variance Inflation Factor (VIF), Glejser heteroscedasticity testing, Durbin–Watson autocorrelation testing, and adjusted R-squared. The separate interaction models follow the source-thesis design and make each moderation coefficient readable, but they do not test the joint influence of all mechanisms. Because the source design applies Ordinary Least Squares (OLS) to a small firm-year sample, the estimates are interpreted as associations rather than causal effects. The limited sample also means that robust standard errors, a full-sample re-estimation, winsorization, and alternative fraud proxies should be treated as important sensitivity checks rather than assumed to be unnecessary.

$$M - Score_{it} = \alpha + \beta_1 IC_{it} + \beta_2 MO_{it} + \beta_3 AC_{it} + \varepsilon_{it} \quad (1)$$

Formula 1 shows the regression model used to examine the effect of corporate governance mechanisms on financial statement fraud risk. In this model, M-Score_{it} represents the fraud risk indicator measured using the Beneish M-Score as the dependent variable, while Independent Commissioners (IC), Managerial Ownership (MO), and Audit Committee Size (AC) are included as independent variables. The coefficients (β_1 , β_2 , and β_3) indicate the effect of each governance mechanism on fraud risk, while ε_{it} represents other factors outside the model that may influence the M-Score.

$$M - Score_{it} = \alpha + \beta_1 X_{it} + \beta_2 ROA_{it} + \beta_3 (X \times ROA)_{it} + \varepsilon_{it} \quad (2)$$

Formula 2 shows the moderated regression model used to examine whether profitability influences the relationship between corporate governance mechanisms and financial statement fraud risk. In this model, M-Score_{it} is the dependent variable representing fraud risk, X_{it} represents the corporate governance variables (independent commissioners, managerial ownership, or audit committee size), and ROA_{it} represents profitability as the moderating variable. The interaction term (X×ROA)_{it} captures the moderating effect of profitability on the relationship between governance mechanisms and fraud risk, while ε_{it} represents other factors outside the model that may affect the M-Score.

4. RESULTS AND DISCUSSION

4.1 Descriptive Statistics

Table 3. Descriptive statistics

Variables	N	Min.	Max.	Mean	SD
IC	50	0.2500	0.7500	0.482758	0.1186506
MO	50	0.0000	0.1039	0.009878	0.0296728
AC	50	2.0000	4.0000	3.060000	0.3136357
M-Score	50	-11.8215	2.5522	-2.236585	1.7701384
ROA	50	-0.9489	0.3099	0.047254	0.2024741

Table 3 shows the original 50-observation descriptive distribution reported in the thesis. The mean proportion of independent commissioners is 48.28%, above the 30% minimum requirement, and the mean audit committee size is 3.06 members, close to the regulatory minimum of three. Fulfilling a numerical minimum, however, is not equivalent to effective monitoring. Average managerial ownership is only 0.99%, suggesting limited ownership alignment for most observations. The table is intentionally labelled as the pre-exclusion distribution, it should not be read as evidence that the final regression sample has the same composition after four casewise observations were removed.

The mean M-Score of -2.236585 lies slightly below the commonly used -2.22 Beneish cut-off. Nonetheless, the wide dispersion and maximum of 2.5522 indicate that some observations carry materially higher warning signals. Recent evidence from Indonesian pharmaceutical and other sectoral samples also supports using M-Score to prioritize further review, not to make an allegation from a single ratio pattern (Kuang & Natalia, 2023; Puspitha & Diantini, 2023; Pratama & Aminah, 2025). The result does not establish that any company is fraud-free or fraudulent; it motivates analysis of factors associated with variation in the score.

4.2 Model Diagnostics

Table 4. Diagnostic summary

Test	Result	Criterion	Conclusion
Normality	K-S $p=0.200$ ($n=46$)	$p>0.05$	Met
Multicollinearity	Tolerance 0.809–0.993, VIF 1.007–1.237	VIF<10	Not detected
Heteroscedasticity	Glejser $p=0.355$ –0.952	$p>0.05$	Not detected
Autocorrelation	DW=1.804 after Cochrane–Orcutt	1.6677	Not detected

Table 4 shows after four outliers were removed, the Kolmogorov–Smirnov p-value was 0.200. Tolerance values ranged from 0.809 to 0.993 and VIF values from 1.007 to 1.237, indicating no serious linear multicollinearity. Glejser p-values were 0.952, 0.923, and 0.355, all above 0.05. Table 4 summarizes the diagnostic evidence as reported in the source analysis. These tests describe the retained sample, they do not establish that the same results would hold if all 50 observations were retained or if a different outlier rule were used.

Meeting these diagnostics supports the reported model under the source procedure but does not remove design limitations. Excluding four observations may improve residual fit while reducing representativeness. OLS does not explicitly control for unobserved firm characteristics in the firm-year data; coefficient tests consequently require a cautious, associative interpretation. Additional robustness considerations are therefore stated explicitly, future re-estimation should compare the full 50-observation sample with the 46-observation casewise sample, report results under winsorization or robust regression, and test alternative outcomes such as the Dechow F-Score or a threshold classification. Since those additional estimates are not included in the source output, this article does not claim that the reported coefficients are insensitive to the outlier decision.

Accordingly, the diagnostic results should be read as evidence that the retained sample meets the reported assumptions under one analysis path. They are not evidence that the underlying

data-generating process is free from influential observations or omitted firm effects. This distinction follows the cautious, explanatory style of the source thesis while making the article's inferential boundary explicit.

4.3 Direct Effects of Corporate Governance

Table 5. Multiple linear regression results

Variables	B	SE	Beta	t	p
Constant	-2.309	1.168		-1.976	0.055
IC	1.511	0.858	0.267	1.761	0.085
MO	-7.627	2.888	-0.362	-2.640	0.012
AC	-0.196	0.302	-0.099	-0.650	0.519

Table 5 shows the direct-effect regression. Managerial ownership is negative and statistically significant ($B=-7.627$, $p=0.012$). Independent commissioners are positive but insignificant ($B=1.511$, $p=0.085$), while audit committee size is negative but insignificant ($B=-0.196$, $p=0.519$). The model has R^2 of 0.217 and adjusted R^2 of 0.161, indicating that the three structural proxies explain a limited portion of M-Score variation. The pattern is therefore more consistent with a selective association for managerial ownership than with a general claim that every formal governance structure reduces the risk signal.

Table 6. Direct-effect model fit

R	R^2	Adjusted R^2	SE Estimate	DW	N
0.466	0.217	0.161	0.5951	1.626	46

Table 6 shows the model summary results of the regression analysis. The model shows a correlation coefficient (R) of 0.466, indicating a moderate relationship between the independent variables and the dependent variable. The R^2 value of 0.217 indicates that the model explains 21.7% of the variation in the dependent variable, while the remaining 78.3% is explained by other factors outside the model. The adjusted R^2 of 0.161 shows the explanatory power after considering the number of predictors included. The standard error of the estimate is 0.5951, indicating the average prediction error of the model, while the Durbin-Watson value of 1.626 suggests no serious autocorrelation problem in the residuals. The analysis was conducted using 46 observations ($N=46$).

H_1 is not supported. The proportion of independent commissioners has no significant association with M-Score at the 5% level. This does not demonstrate that independent commissioners are unimportant, it suggests that membership proportion alone does not differentiate risk in this sample. Monitoring capacity can depend on expertise, experience, access to information, actual independence, and meeting activity attributes not measured here. The result is consistent with recent evidence that distinguishes formal governance composition from the quality of independence and implementation ([Ihsanti & Cheisviyanny, 2023](#); [Kaituko et al., 2023](#); [Jesslyn & Khairani, 2025](#); [Shanikat & Aldabbas, 2025](#); [Yanti & Kresnandra, 2025](#)).

H_2 is supported. Higher managerial ownership is associated with a lower M-Score. The result is consistent with the agency-theory alignment mechanism, when managers own shares, they bear some of the valuation and reputational costs of misreporting. It is also consistent with Indonesian evidence linking managerial ownership to lower reporting-fraud or earnings-management risk ([Wati et al., 2023](#); [Yendrawati et al., 2023](#)). The result must be read in the context of very low mean ownership. It should not be interpreted as a literal one-unit effect for all companies because the observed ownership range only reaches 10.39%.

H_3 is not supported. Audit committee size is not significantly associated with M-Score. Most firms had approximately three members, limiting variation in the proxy. More importantly, size does not capture accounting expertise, independence, meeting frequency, review of internal controls, or auditor interaction. Recent audit-committee studies similarly indicate that active oversight and qualitative characteristics provide more information than headcount alone ([Namakavarani et al., 2021](#);

[Putri & Saud, 2021](#); [Luthfiyyah, 2024](#); [Kusumawardani et al., 2024](#)). The non-significant result should therefore be interpreted as evidence about the size proxy in this sample, not about every possible form of audit-committee effectiveness.

4.4 The Moderating Role of Profitability

Table 7. Moderated regression analysis

Interaction model	Interaction B	SE	t	p	Decision
IC × ROA	−1.940	9.662	−0.201	0.842	H_4 not supported
MO × ROA	54.680	30.488	1.794	0.080	H_5 not supported
AC × ROA	3.065	5.286	0.580	0.565	H_6 not supported

Table 7 shows test the interaction coefficients. None is significant at 5%, such as IC×ROA ($B=-1.940$, $p=0.842$), MO×ROA ($B=54.680$, $p=0.080$), and AC×ROA ($B=3.065$, $p=0.565$). Thus, H_4 , H_5 , and H_6 are not supported. In the observed sample and with ROA as defined, profitability does not statistically alter the relationship of any of the three governance proxies with M-Score. The insignificant IC×ROA term suggests that ROA does not differentiate the association between independent commissioners and M-Score. Monitoring effectiveness may be more strongly shaped by substantive independence and competence than by a single-period profitability measure. The result is compatible with recent research showing that board structure and independence do not automatically translate into fraud prevention without effective oversight processes ([Mousavi et al., 2022](#); [Indiraswari et al., 2025](#); [Jesslyn & Khairani, 2025](#); [Prastyono et al., 2025](#)).

The MO×ROA p-value of 0.080 is closer to conventional thresholds but remains above the pre-specified 5% level. It should not be described as evidence of moderation. The low average managerial ownership may help explain why changes in ROA do not materially strengthen the ownership-alignment mechanism. A larger sample and separate measures for director and commissioner ownership would permit a more sensitive test. The insignificant AC×ROA term again highlights the limitation of committee size as the only proxy. Profitability does not alter the association of headcount with M-Score in this sample. Future studies should include financial expertise, independence, meeting attendance, and external-audit quality to examine the relation among performance pressure, monitoring quality, and reporting risk more precisely.

4.5 Sector Context, Measurement, and Analytical Boundaries

The 2020–2024 period is important for a proportionate interpretation. Pharmaceutical companies faced shifts in demand, supply-chain disruption, input-cost adjustment, and market normalization after the peak pandemic phase. Such changes can affect sales, receivables, inventories, margins, and accruals components also relevant to the Beneish M-Score. Score variation in this study can therefore reflect a combination of real economic dynamics and reporting patterns requiring attention. The article does not assume that every ratio movement is caused by manipulation.

Fraud must also be distinguished from earnings management. Earnings management can lie on a spectrum of accounting choices that remain within standards, whereas financial statement fraud involves intentional misstatement that misleads users. The Beneish M-Score was developed to identify earnings-manipulation characteristics, but it can still produce false positives and false negatives. Recent Indonesian applications demonstrate its usefulness for screening pharmaceutical and other public companies, while also confirming that it should be interpreted with contextual and investigative evidence ([Kuang & Natalia, 2023](#); [Puspitha & Diantini, 2023](#); [Pratama & Aminah, 2025](#)). Literature on material-misstatement prediction cautions that ratio-based measurement is more appropriate as a risk signal than as a substitute for investigation, audit, or legal proof ([Dechow et al., 2011](#); [Beneish, 1999](#)).

This study uses M-Score as a continuous value so that risk variation can be analysed more fully than a simple manipulator/non-manipulator category. That choice allows regression to test whether governance structure is associated with score movements. Consequently, coefficients are not fraud probabilities and cannot be interpreted as changes in the likelihood of a proven fraud case. Readers

should distinguish a model explaining score variation from a claim about actual fraud at each issuer. The managerial-ownership relationship may also be nonlinear. At some ownership levels, managers may be more cautious because they bear the economic effects of their choices. At higher levels, ownership can provide greater influence over the board and decision process. With only 46 final observations and predominantly low managerial ownership, the research is not designed to test threshold or nonlinear patterns. H_2 is therefore evidence of an average linear relationship within the observed sample range.

The ROA moderation is theoretically ambiguous. A low ROA may be related to pressure to improve results but may also limit capacity and opportunity for aggressive accruals. A high ROA can reduce financial pressure but may create a desire to protect a growth reputation. Recent work on financial performance and fraudulent financial statements likewise shows that performance effects can vary across industries and governance contexts ([Yendrawati et al., 2023](#); [Maharany et al., 2025](#)). Without observing compensation targets, debt covenants, or firm-specific market pressure, ROA is only an indirect proxy. The insignificant moderation result does not make pressure irrelevant, it suggests that this proxy does not capture the changing mechanism strongly enough in the available data.

The use of three separate moderation models follows the source-thesis design and makes each interaction easier to read. The approach does not test the joint influence of all governance mechanisms in one expanded moderation model. An integrated model may face sample-size and multicollinearity challenges, but future research with broader data can assess whether independent commissioners, managerial ownership, and audit committees complement or substitute for one another. It can also introduce lags because governance may affect reporting quality with a delay.

Outlier procedures have substantive consequences, particularly when extreme observations carry information about firms with the highest reporting-risk signals. Casewise deletion may be necessary for a stated diagnostic criterion, but it may also reduce variation in the phenomenon being studied. In this study, four observations were removed after the initial residual normality result, but the source output does not provide a comparative full-sample regression. Subsequent studies should report the excluded firm-years, the exact diagnostic threshold, and estimates with and without the observations. These robustness checks would help readers determine whether the principal conclusions are stable or highly sensitive to observation selection.

Finally, OLS offers an accessible summary, but firm-year data have repeated structure. The same company can have relatively stable governance characteristics, while macroeconomic events in a given year may affect all firms. Panel estimators with firm and year effects can separate part of that heterogeneity, although they require more observations. Stating this boundary prevents a reader from treating the coefficients as proof that changing governance structure directly causes a corresponding change in fraud risk.

4.6 Reporting-Risk Monitoring Strategy

The findings can be translated into a reporting-risk monitoring approach. The first stage is to identify ratio changes most relevant to the Beneish model, including sharp receivable increases, margin deterioration, asset-quality changes, accrual growth, and leverage movements. The second stage is to connect these changes to business decisions and operating evidence, such as customer-credit policy, sales contracts, inventory procurement, or asset investment. The third stage is to assess whether the board and audit committee received adequate management explanations and followed up anomalies. This sequence avoids treating M-Score as a stand-alone number.

Pharmaceutical companies particularly require oversight of revenue recognition and inventory. Distribution cycles involving distributors, pharmacies, hospitals, or public institutions can create cut-off, return, discount, and collectability risks. Drug and raw-material inventories also involve expiry, impairment, returns, and regulatory considerations. These risks are not fully captured by the

governance proxies in the model, but they can affect ratios that form M-Score. Audit oversight should therefore combine ratio analysis with an understanding of business processes.

Independent commissioners can strengthen monitoring by requesting information that is more than a high-level summary. For example, they can request reconciliations between sales growth and operating cash flows, receivables aging by distribution channel, inventory-policy changes, and explanations for material budget deviations. Such requests reduce the information asymmetry at the heart of agency theory. The value of independent commissioners is not only the proportion of seats, but their ability to ask critical questions and ensure that material issues enter the board agenda.

Audit committees can use a periodic reporting-risk matrix. The matrix can map significant accounts, management estimates, ratio indicators, risk owners, control evidence, and the status of audit follow-up. In this design, membership size remains necessary for compliance, but work quality becomes observable through the depth of discussion and the resolution of findings. Committees can also ask internal audit to test unusual transactions and monitor remediation of control weaknesses. This practice is consistent with recent evidence that independent committees, internal control, and audit quality are more informative than membership size alone ([Putri & Saud, 2021](#); [Luthfiyyah, 2024](#); [Kusumawardani et al., 2024](#)).

Managerial ownership should be managed carefully. H_2 supports the possibility that ownership fosters alignment, but equity-incentive policies should be accompanied by vesting periods, trading restrictions during sensitive periods, accurate ownership disclosure, and monitoring of related-party transactions. Incentives focused solely on short-term earnings targets can create fresh pressure, consistent with recent evidence on management incentives and corporate fraud ([Ummah & Suwarno, 2024](#)). The quality of incentive design is thus more important than simply increasing management shareholdings, and the ownership result should not be used to justify weak monitoring.

The insignificant profitability moderation has a managerial implication as well. Companies should not assume that high profit automatically signals strong control or that low profit automatically means a higher manipulation risk. Both conditions can require strong oversight, but the focus differs. Under poor performance, attention may turn to covenant pressure, impairment, and recovery estimates. Under strong performance, it may turn to revenue sustainability, revenue cut-off, and margin normalization. A scenario-based approach is more appropriate than a single ROA threshold.

To improve subsequent research, publicly disclosed audit-committee and governance reports can be complemented with content analysis. Researchers can measure meeting frequency, member background, attendance, financial expertise, internal-audit functions, and follow-up on audit recommendations. Such data can explain why two companies with the same committee size differ in oversight quality. Lagged governance variables can also reduce the risk that governance and reporting quality are simultaneously determined in the same period.

Cross-sector research would also be useful. Pharmaceutical firms face regulatory and operating conditions that differ from manufacturing, financial services, energy, and technology. Comparing sectors can reveal whether managerial ownership remains important when asset complexity, ownership structure, and market pressure change. Comparative evidence would help regulators define more proportionate disclosure standards and help investors distinguish industry risk from firm-specific risk.

4.7 Theoretical Contribution and Future Evidence Agenda

Theoretically, the findings clarify that agency theory must be applied contextually. Managerial ownership can work as an alignment mechanism, but the effectiveness of independent commissioners and audit committees cannot be inferred from formal composition alone. This does not contradict agency theory, it shows that monitoring must be translated into action, expertise, and real access to information. Recent Indonesian studies reach similarly conditional conclusions: governance and ownership may be associated with reporting quality, but the strength of the association varies with the sector, the fraud proxy, and the quality of the mechanism ([Ihsanti & Cheisviyanny, 2023](#); [Wati et al.,](#)

[2023](#); [Prastyono et al., 2025](#); [Yendrawati et al., 2023](#)). Organizational structure can create an opportunity for oversight, but it does not guarantee that oversight will be exercised effectively.

Fraud theory receives an equally important qualification. Pressure, for which ROA is used as an indirect proxy, does not change the governance relationships in these data. Fraud is a multi-condition phenomenon in which pressure interacts with opportunity, rationalization, capability, arrogance, and collusion. Recent Indonesian research on fraud-triangle elements and management incentives supports the view that pressure should be examined together with opportunity and control conditions, not isolated in a single profit ratio ([Maharany et al., 2025](#); [Ummah & Suwarno, 2024](#)). Future work can measure pressure through earnings targets, covenant changes, external-financing needs, cash-flow decline, or analyst expectations.

The article's empirical contribution is to distinguish measured risk from an allegation of misconduct. Companies with high M-Scores cannot automatically be labelled fraudulent, companies with lower scores still require oversight. Cautious wording is essential because issuer names and financial-statement information can affect economic decisions and reputation. The article consequently uses the terms manipulation indication and risk consistently and positions M-Score as an analytical screening device.

The results also support more informative public governance reporting. Numbers of commissioners and audit committee members are easy to compare, but investors would be better served when firms disclose member expertise, meeting frequency, attendance, matters considered, and follow-up on control findings. Recent evidence on governance, audit committees, and financial-statement integrity likewise points to the importance of qualitative oversight and broader control conditions ([Putri & Saud, 2021](#); [Kusumawardani et al., 2024](#); [Yanti & Kresnandra, 2025](#)). Such disclosure helps the market distinguish governance that is merely compliant from governance that is actively exercised. Better governance reporting can complement financial-ratio analysis.

From a research-design perspective, sample size affects not only statistical power but also sensitivity to extreme observations. Studies in narrowly defined sectors must be cautious with outlier-deletion rules because every deletion can change the composition of firms that remain. Transparent alternatives include reporting the exact casewise criterion, winsorization, robust regression, full-sample estimates, and sensitivity analysis using an alternative fraud proxy. No method is always superior, the crucial requirement is that readers receive enough information to evaluate the effect of the choice on conclusions. The present study reports the limitation rather than claiming robustness that was not available in the source output.

Moderation tests can be strengthened by centering the constituent variables and displaying simple slopes at low, mean, and high ROA levels. Such practices help readers distinguish an interaction that is statistically insignificant from one that has a directional estimate but is too imprecise for a small sample. Evidence that financial performance and governance operate jointly in other sectors supports retaining this possibility for future testing ([Yendrawati et al., 2023](#)). This article follows the pre-specified 5% p-value criterion and therefore makes no moderation claim for the three tested relationships.

Further development can integrate quantitative and qualitative evidence. Interviews with audit committee members, internal auditors, or risk managers can reveal how ratio anomalies are discussed and followed up. This integration can bridge the gap between structural corporate-governance measures and actual monitoring processes. Fraud research would then explain not only whether a proxy is associated with risk, but also how monitoring mechanisms work in practice.

4.8 Integrated Interpretation and Monitoring Implications

The direct and moderation results need to be read together. Only managerial ownership has a significant direct association, while none of the three profitability interactions is significant. This pattern suggests that incentive alignment may be more relevant than structural compliance or reported profitability for explaining M-Score variation in the sample. It is broadly compatible with evidence

that ownership can affect reporting outcomes, but it does not make managerial ownership a stand-alone solution ([Wati, Irman, & Suharti, 2023](#); [Yendrawati, Riantika, Kusumadewi, Azmi, & Mohd-Sanusi, 2023](#)). Ownership can work constructively only when it is accompanied by transparency, board independence, capable audit arrangements, and effective internal controls. Ownership without monitoring can concentrate power and does not automatically protect minority shareholders.

The adjusted R-squared of 0.161 reinforces that the tested governance structure explains only a small portion of manipulation-risk variation. This is unsurprising because the Beneish M-Score is built from eight accounting ratios that react to operating changes, transactions, accounting policies, and financial conditions. Audit quality, internal-control weaknesses, financing pressure, leverage, liquidity, firm size, ownership concentration, and industry conditions may also affect misstatement risk. Evidence on internal-control weaknesses and fraud likewise supports evaluating risk through both governance and control-system quality ([Donelson, Ege, & McInnis, 2017](#)).

The independent-commissioner result requires a distinction between membership proportion and monitoring activity. The sample mean exceeds the regulatory minimum, yet similar compliance among firms can limit the proxy's ability to distinguish governance quality statistically. Formally independent commissioners may vary in financial background, professional networks, time availability, access to audit information, and willingness to challenge management. Recent evidence on independence and financial-statement integrity supports treating these qualitative attributes as important ([Jesslyn, & Khairani, 2025](#); [Yanti, & Kresnandra, 2025](#)). The insignificant H_1 result is therefore better understood as a limit of the proportion measure in this sample, not as evidence that independent commissioners have no monitoring value.

The audit-committee interpretation is similar. A minimum committee size of three is an important governance requirement, but H_3 shows that headcount alone does not explain M-Score variation. Recent governance research commonly measures richer characteristics, including accounting and financial literacy, independence, attendance, meeting frequency, tenure, internal-control quality, and working relationships with internal and external auditors ([Namakavarani, Daryaei, Askarany, & Askary, 2021](#); [Putri, & Saud, 2021](#); [Luthfiyyah, 2024](#); [Kusumawardani, Soediro, & Adhitama, 2024](#)). Using the number of members in the source thesis is understandable because public data are accessible, but the proxy should represent the presence of a formal structure rather than the actual quality of audit oversight.

The Beneish M-Score must also be placed correctly in monitoring practice. It is neither a legal proof nor a replacement for audit procedures. A high score indicates that a pattern of financial ratios resembles manipulation characteristics studied in the Beneish model. A sensible auditor or investor response is to expand analytical procedures, review receivables and margin changes, compare accounting policies, and assess related-party transactions and cash flows. Evidence from Indonesia and other markets indicates that M-Score is most useful when used as an early filter alongside other signals rather than as a deterministic fraud label ([Ratmono, Darsono, & Cahyonowati, 2020](#); [Tarjo, Prasetyono, Sakti, Pujiono, Mat-Isa, & Safkaur, 2023](#); [Kuang, & Natalia, 2023](#); [Puspitha, & Diantini, 2023](#); [Pratama, & Aminah, 2025](#)).

For pharmaceutical-company management, the results emphasize that governance should be linked to the daily reporting process. Monitoring should ensure that sales forecasts, inventory valuation, revenue recognition, impairment estimates, and accruals are supported by traceable evidence. Audit committees can be strengthened through risk-based agendas, discussion of ratio anomalies, and structured communication with internal and external auditors. This approach is more substantive than simply verifying that the number of committee members or independent commissioners meets regulatory requirements.

For investors and creditors, the evidence offers a more balanced way to read risk. Managerial ownership may signal incentive alignment, but it should not be used alone in investment or lending decisions. Users of financial statements should assess whether ownership is accompanied by

disclosure quality, non-excessive governance concentration, adequate operating cash flows, and sustainable earnings quality. Likewise, a Beneish score should be read together with leverage trends, audit quality, audit opinion, and financial-distress indicators.

For regulators, the non-significant results for independent commissioners and audit committee size suggest that governance assessment cannot end with composition disclosure. Minimum numerical requirements are a necessary protection floor, but implementation should be supported by disclosure of competence, oversight activity, actual independence, and follow-up on audit recommendations. Recent Indonesian evidence also links governance quality, independence, audit committees, and financial-statement integrity in ways that support an integrated package rather than one isolated structural measure ([Prastyono, Jakaria, Masriana, Maldini, & Noer, 2025](#); [Yanti and Kresnandra, 2025](#); [Pamungkas, Oktafiyani, Swatyayana, Kurniawati, Putri, & Alfared, 2025](#)).

The article retains important inferential limitations. First, four observations were excluded through casewise diagnostics, so the final model does not cover all 50 initial firm-years. Second, Cochrane–Orcutt treatment is documented in the thesis for the autocorrelation diagnosis, while the main hypothesis tables should be interpreted according to the reported outputs. Third, OLS does not identify firm and year fixed effects. The article therefore does not make causal claims or generalize beyond the tested companies and period.

Future studies can address these limitations with longer panels, fixed-effect or random-effect estimators, and robustness checks using the Dechow F-Score or a Beneish classification as alternatives. Researchers can also incorporate audit quality, audit delay, committee-meeting frequency, financial expertise, institutional ownership, leverage, financial distress, and ownership concentration. Such a design would better test whether profitability represents performance pressure or merely correlates with other sources of reporting risk.

4.9 Financial Reporting Quality as an Integrated System

Financial reporting quality should be understood as the output of a system rather than a single organizational unit. Directors are responsible for controls and preparation, finance teams manage recording processes, internal auditors test control design and operation, audit committees challenge and review information, and independent commissioners ensure that significant issues receive board attention. When one component fails, another should be able to detect and escalate the problem. This framework helps explain why a single structural proxy often has limited explanatory power.

Effective internal control should also connect financial indicators with nonfinancial evidence. For example, receivable increases should be reconciled with customer contracts, delivery documentation, payment patterns, and credit quality. Margin declines should be compared with raw-material prices, promotion, product changes, and discount policies. Such analysis reduces the risk that management or monitors focus only on aggregate figures without understanding the transactions that create them. In the pharmaceutical sector, inventory and return documentation are particularly important elements of control.

External audit has a complementary place in this system. Auditors set procedures using risk assessment, materiality, and an understanding of controls, not M-Score alone. Ratio indicators can nevertheless direct professional skepticism, especially when movements are inconsistent with management narrative or industry conditions. Appropriate audit-committee and external-auditor interaction includes discussion of significant estimates, control findings, corrected and uncorrected misstatements, and auditor independence.

Market transparency is the next layer. Clear disclosure of revenue policy, accounting estimates, related-party transactions, customer concentration, and inventory risk allows investors to assess whether reported performance is sustainable. Good governance does not only reduce misstatement risk, it also improves the comparability of information across periods. High-quality narrative disclosure can therefore complement quantitative metrics and prevent excessive conclusions based on ratios alone.

For these reasons, monitoring recommendations do not end with adding structures or setting numerical targets. Companies need a reporting culture that enables staff to escalate concerns, protects whistleblowers, and ensures that management follows up audit findings. Regulators, investors, and auditors can evaluate whether these mechanisms operate through evidence of activity, not policy statements alone. This systemic approach is most consistent with the complex nature of reporting risk reflected in the study findings.

5. CONCLUSIONS

5.1 Conclusion

This study finds that managerial ownership is negatively and significantly associated with Beneish M-Score financial statement fraud risk in Indonesian pharmaceutical companies during 2020–2024. Independent commissioners and audit committee size do not show significant direct effects. Profitability measured by ROA does not moderate the relationships of the three governance proxies with M-Score. The evidence supports the ownership-alignment mechanism but does not support the conclusion that the structural proportion of independent commissioners or audit committee size alone is sufficient to reduce the fraud-risk signal. The theoretical contribution is a contextual qualification of agency theory: incentive alignment may be visible in the score, whereas formal monitoring structures require measures of competence and activity before their effectiveness can be assessed. The managerial implication is that companies should combine ownership incentives with active board oversight, audit-committee expertise, internal controls, and evidence-based follow-up.

For companies and regulators, the implication is to assess monitoring quality rather than numerical compliance alone. Management should connect governance oversight to revenue recognition, receivables, inventory, estimates, and accruals. Audit committees should document the questions raised, evidence reviewed, and corrective actions taken. Investors and auditors may use M-Score as an initial screening signal alongside an assessment of internal control, cash flows, receivables, audit quality, and governance quality. The score cannot establish fraud or a regulatory violation on its own.

5.2 Research Limitations

The study is subject to several limitations, such as the final sample contains 46 observations after four outliers were excluded, the source output does not fully disclose the casewise threshold and identifiers, OLS is applied to firm-year data without firm and year fixed effects, audit committee quality is represented only by committee size, and relevant factors such as audit quality, leverage, firm size, financial pressure, and internal-control effectiveness are not included. The small, purposively selected pharmaceutical sample also limits external validity. In addition, full-sample, robust-regression, winsorization, and alternative-proxy estimates were not available in the source analysis, so coefficient stability should not be assumed.

5.3 Suggestions and Directions for Future Research

Future research should use longer panels and firm- and year-effects estimators, test alternative fraud and profitability proxies, report the exact outlier rule and excluded firm-years, and present estimates before and after casewise deletion. Robust regression, winsorization, clustered or heteroscedasticity-robust standard errors, and sensitivity to alternative M-Score classifications should be considered. Researchers should also examine audit quality, financial distress, committee expertise, meeting frequency, institutional ownership, leverage, and ownership concentration. Qualitative evidence from audit committees and internal auditors could further explain why governance structures with similar headcounts produce different reporting-risk outcomes.

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AUTHOR CONTRIBUTIONS

DZS contributed to the conceptualization, literature review, data collection, data analysis, and initial manuscript preparation. FM contributed to the research methodology, validation, supervision, and critical revision of the manuscript. DA contributed to data interpretation, manuscript review, and refinement of the final manuscript. All authors have read and approved the final version of the manuscript.

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