

# Corporate Governance Mechanisms, Firm Size, and Financial Performance: Evidence from Indonesian Mining Companies

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The author(s) declare that the research was conducted in the absence of any commercial or financial relationships that could be construed as a potential conflict of interest.

## ABSTRACT

**Purpose:** This study examines the effects of institutional ownership, independent commissioners, audit committees, and firm size on the financial performance of mining companies listed on the Indonesia Stock Exchange (IDX), with Return on Assets (ROA) used as the performance indicator.

**Research Method:** This study employed a quantitative explanatory design using audited annual report data from 30 IDX-listed mining companies during 2021–2023, generating 90 firm-year observations. The data were analyzed using multiple linear regression with SPSS after conducting classical assumption tests.

**Results and Discussion:** Institutional ownership, independent commissioners, audit committees, and firm size have positive and significant effects on ROA. Firm size has the strongest effect, indicating that larger firms are better positioned to achieve operational efficiency, economies of scale, and broader access to financing. The positive governance effects demonstrate that effective ownership monitoring, board independence, and audit oversight strengthen managerial accountability and asset utilization.

**Implications:** Companies should strengthen governance practices beyond formal compliance, while regulators should promote effective monitoring and accountability. Future studies should examine longer periods, other industries, additional performance measures, and governance quality indicators.

**Originality:** This study provides sector-specific evidence from Indonesia's mining industry on the combined role of governance mechanisms and firm size in explaining asset profitability.

**Keywords:** corporate governance; institutional ownership; independent commissioners; audit committee; firm size; financial performance.

## 1. Introduction

The mining sector plays a strategic role in Indonesia's economy through its contribution to national energy supply, export earnings, employment, and state revenue. Despite its economic importance, mining is characterized by high capital intensity, substantial operational risk, earnings volatility, and strong exposure to global commodity-price movements. These characteristics make the financial performance of mining companies highly sensitive not only to external market conditions but also to the quality of internal governance, managerial decision-making, and resource allocation (Fama & Jensen, 1983; Zhou *et al.*, 2019). In this context, return on assets (ROA) is a critical indicator, as it reflects



the extent to which management can convert the firm's asset base into profits. For capital-intensive mining companies, low asset utilization, ineffective managerial oversight, and poorly managed human resources can substantially reduce profitability, even when firms possess considerable physical and financial resources.

The practical problem is therefore not merely whether mining companies own sufficient assets, technology, and capital, but whether those resources are effectively governed and managed. Good Corporate Governance (GCG) is expected to provide an institutional framework that strengthens managerial accountability, improves oversight, and ensures that corporate resources are directed toward productive activities. From a financial perspective, governance also influences the way human resources are selected, supervised, incentivized, and evaluated. Managers and employees are the parties responsible for operating assets, controlling costs, implementing investment decisions, and maintaining operational productivity. Consequently, ineffective human resource management may undermine asset productivity, whereas governance-supported human resource management can enhance operational efficiency and improve ROA. Poor governance can lead to managerial opportunism, inefficient staffing, weak performance controls, and misallocation of corporate resources, thereby increasing financial instability and reducing investor confidence, particularly in emerging markets where institutional systems are still developing (Claessens & Yurtoglu, 2013; Zhang *et al.*, 2018).

Recent empirical developments in Indonesia's mining industry reinforce the importance of this issue. The financial performance of several mining companies declined in 2023 compared with 2022 as export demand weakened and coal prices fell following China's resumption of coal imports from Australia. Such external pressures intensified earnings volatility and reduced the profitability generated from mining companies' asset bases. Although commodity price movements are largely beyond managerial control, their financial consequences may be mitigated through stronger governance, disciplined cost management, sound investment decisions, and more productive deployment of managerial and operational employees. Effective governance can therefore function as a stabilizing mechanism by ensuring that boards, managers, audit committees, and institutional owners respond to environmental shocks through timely supervision and responsible financial decisions (Bhagat & Bolton, 2008).

Theoretically, GCG is designed to align the interests of shareholders, managers, and other stakeholders by reducing agency conflicts, limiting opportunistic behavior, and strengthening managerial accountability (Fama & Jensen, 1983; Shleifer & Vishny, 1997). Institutional ownership can increase external monitoring pressure, independent commissioners can strengthen the objectivity of strategic supervision, and audit committees can improve the credibility of financial reporting and internal control. However, these governance mechanisms do not influence financial performance merely through formal monitoring. They also shape how corporate leaders manage human resources, establish performance expectations, control managerial discretion, and ensure that employees' capabilities are directed toward efficient asset utilization. In this sense, the financial effectiveness of GCG depends partly on its ability to transform human resources into productive organizational capabilities that support profitability.

Recent studies have reported varying results regarding the relationship between governance mechanisms and corporate financial performance. Some studies show that institutional ownership and audit committees improve financial performance by strengthening oversight and limiting managerial opportunism. Other studies find that board independence and several formal governance mechanisms have insignificant or even negative effects, particularly in complex and capital-intensive industries

(Arimby & Astuti, 2023; Gerged *et al.*, 2021; Widodo & Salam, 2024). These conflicting findings indicate that the presence of governance structures does not automatically guarantee stronger profitability. Governance mechanisms may exist formally but remain ineffective when boards lack relevant competence, audit committees perform only administrative functions, or managerial and employee performance is not aligned with financial objectives.

Firm size also needs to be considered in examining the governance–performance relationship. Larger firms generally possess more assets, employees, managerial layers, and operational units, which may provide greater economies of scale and stronger capacity to absorb economic shocks. At the same time, greater organizational size creates more complex coordination, monitoring, and human resource management problems (Dang *et al.*, 2018; Demsetz & Lehn, 1985). Without effective governance, an extensive asset base and a large workforce may generate bureaucratic inefficiency, higher agency costs, and declining asset productivity. Therefore, firm size may affect ROA not only because larger firms control more resources, but also because they face greater challenges in directing human resources and corporate assets toward profitable activities.

A major limitation of previous research is its tendency to treat institutional ownership, independent commissioners, and audit committees as separate, unrelated variables. This fragmented approach may underestimate the collective influence of governance arrangements and produce an incomplete assessment of GCG effectiveness (Bhagat & Bolton, 2008; Hearn *et al.*, 2023; Savitri & Pinem, 2022). Moreover, previous studies have predominantly focused on formal governance structures and have insufficiently explained how governance supports the productive management of human resources from a financial perspective. In capital-intensive mining companies, financial performance depends not only on the amount of assets owned but also on managerial competence, employee productivity, cost discipline, internal control, and the ability of decision-makers to allocate assets efficiently. Thus, GCG should be viewed as an integrated governance system that connects ownership monitoring, board supervision, audit control, and managerial accountability with the effective utilization of both physical and human resources.

Based on this gap, the central research question is: Does Good Corporate Governance, when conceptualized as an integrated governance construct, influence the return on assets of mining companies listed on the Indonesia Stock Exchange after controlling for firm size? Accordingly, this study aims to examine the effect of integrated GCG on the financial performance of Indonesian mining companies, with ROA used as the primary measure of management's efficiency in generating profits from corporate assets. Firm size is included as a control variable because organizational scale may influence both governance complexity and asset productivity. The novelty of this research lies in treating GCG as a unified construct rather than as a set of isolated mechanisms and in positioning governance as a financial control system that indirectly supports the effective management of human resources, managerial accountability, and asset utilization. This perspective extends prior governance research by emphasizing that improvements in ROA may depend not only on formal governance compliance but also on the ability of governance structures to direct managerial and employee capabilities toward productive financial outcomes in a highly regulated and resource-intensive industry (Huang *et al.*, 2025).

The remainder of this paper is organized as follows. Section 2 presents the theoretical foundation and develops the research hypotheses concerning GCG, firm size, and financial performance. Section 3 describes the research design, population and sample, variable measurement, and analytical procedures. Section 4 reports and discusses the empirical findings, particularly the effect of integrated

governance on ROA. Finally, Section 5 presents the conclusions, theoretical and managerial implications, research limitations, and recommendations for future studies.

## 2. Literature Review and Hypothesis Development

### 2.1 Agency Theory

Agency Theory, developed by Jensen & Meckling (1976, 2019), describes the contractual linkage between shareholders as principals and managers as agents. Because ownership is separated from control, managers may prioritize their own interests over those of shareholders, creating agency costs and inefficient decisions. For that reason, organizations require monitoring and control arrangements, which are typically institutionalized through corporate governance mechanisms. From this perspective, institutional ownership, independent boards, and audit committees serve as primary instruments for limiting agency conflicts. Institutional investors usually hold large stakes, possess analytical expertise, and have superior access to information, allowing them to monitor managerial behavior and influence strategic choices. A higher proportion of institutional ownership therefore tends to curb opportunistic actions, lower agency costs, and improve firm performance. Concentrated ownership by informed investors strengthens monitoring incentives and aligns managerial conduct with shareholder objectives (Jensen & Meckling, 1976).

An independent board of commissioners also contributes significantly to resolving agency problems. Commissioners who are not affiliated with management or controlling owners are expected to provide impartial oversight and safeguard minority shareholders by ensuring that decisions support the firm's long-term interests. Empirical literature indicates that greater board independence improves supervision quality, strengthens accountability, and enhances strategic decision-making. Meanwhile, the audit committee plays a vital role in ensuring transparency and credibility in financial reporting. By supervising internal controls, conducting internal audits, and overseeing external audit processes, audit committees reduce information asymmetry between management and owners. Effective committees not only improve reporting quality but also discourage earnings manipulation and managerial opportunism, thereby supporting sustainable performance.

Empirical findings generally reinforce Agency Theory in the governance–performance relationship. Handriani & Robiyanto, (2018) show that institutional ownership and independent commissioners positively affect firm value measured by Tobin's Q. (Zainal *et al.*, 2024) demonstrate that audit committees improve earnings persistence, indicating governance affects long-term performance. (Aryani & Laksmiwati, 2021; Chang *et al.*, 2016; Sidauruk & Putri, 2022) find that institutional ownership influences dividend policy, which limits free cash flow and reduces agency costs. Likewise, Miao *et al.*, (2023) report that board independence and board size mediate the link between ownership structure and firm performance. Based on these theoretical arguments and empirical evidence, this study expects governance mechanisms embedded in ownership and board oversight to enhance financial performance. This hypothesis is grounded in Agency Theory, which posits that institutional investors enhance monitoring effectiveness and reduce agency costs (Jensen & Meckling, 1976, 2019). Empirical support is provided by (Handriani & Robiyanto, 2018; Miao *et al.*, 2023; Al-Najjar, 2015), who found that institutional ownership contributes to improved firm performance through enhanced control and dividend policy discipline.

**H1:** *Institutional ownership has a positive effect on a company's financial performance.*

Independent commissioners are expected to strengthen oversight and protect shareholders' interests by reducing managerial opportunism. Prior studies, including Chang *et al.*, (2016), Handriani & Robiyanto (2018), and Sidauruk & Putri (2022), demonstrate that board independence enhances governance effectiveness and contributes positively to firm performance.

**H2:** *The independent board of commissioners has a positive effect on a company's financial performance.*

## 2.2 Signaling Theory

Signaling Theory, introduced by Spence (1973), explains how actors who possess better information—such as company insiders—communicate credible messages to outside stakeholders to reduce information asymmetry. In capital markets, managers convey indications about firm quality and prospects through observable characteristics, including governance arrangements, financial reporting quality, ownership structure, and organizational scale. These signals help investors evaluate risk, sustainability of performance, and long-term value potential. In a governance setting, the audit committee serves as an especially important signaling device. An audit committee that demonstrates independence, financial competence, and active monitoring communicates the firm's commitment to transparency, accountability, and risk control. Such characteristics increase the reliability of financial reports and lower perceived information risk, thereby improving investor trust. Evidence shows that audit committee quality functions not only as an internal monitoring tool but also as an external indicator of governance credibility and financial discipline (Altın, 2024).

Empirical research reinforces this signaling function. (Altın, 2024) reports that independence and expertise of audit committees are positively linked to firm performance across institutional environments, indicating that they provide credible governance signals to investors. Similarly, Kurnia *et al.*, (2024) find that effective audit committees shorten audit reporting delays, signaling timely and transparent disclosure. Timeliness in reporting is interpreted by the market as evidence of managerial efficiency and effective internal control, strengthening corporate reputation and perceived performance quality. Beyond governance, firm size also communicates important information to the market. Companies with larger total assets or revenues are generally viewed as having greater resource capacity, diversified operations, and stronger resilience to economic fluctuations—an especially relevant perception in capital-intensive sectors such as mining. Consequently, firm size acts as an implicit signal of organizational stability and long-term viability (Putri *et al.*, 2023).

Supporting this argument, Putri *et al.*, 2023) show that firm size positively affects both financial performance and firm value. (Ahmed *et al.*, 2023) further demonstrate that firm size moderates the relationship between capital structure and profitability, indicating superior financial flexibility and stability in larger firms. These advantages communicate lower risk and stronger earning potential to investors. Drawing on Spence's (1973) framework, this study therefore treats both the audit committee and firm size as observable signals through which firms communicate governance quality and financial strength to external stakeholders, extending signaling theory to corporate governance and financial performance in Indonesia's mining industry.

An effective audit committee signals strong governance quality, enhances the credibility and timeliness of financial reporting, and reduces information asymmetry, thereby contributing to improved financial performance (Altın, 2024; Kurnia *et al.*, 2024).

**H3:** *The audit committee has a positive effect on the company's financial performance.*

Larger firms signal greater operational capacity, financial stability, and resilience to economic uncertainty, which positively influence investor perceptions and, ultimately, financial performance (Ahmed *et al.*, 2023; Putri *et al.*, 2023).

**H4:** *Firm size has a positive effect on the company's financial performance.*

## 2.3 Financial Performance

Financial performance reflects a company's ability to use its resources productively to generate sustainable earnings. It serves as a key benchmark for stakeholders to assess managerial effectiveness, operational efficiency, and overall organizational condition. Among numerous performance indicators, Return on Assets (ROA) is one of the most frequently employed measures in corporate finance and governance research because it indicates how efficiently management transforms total assets into net profit. By comparing net income with total assets, ROA captures the efficiency of asset utilization and the managerial ability to allocate firm resources to generate returns. Unlike market-based indicators, ROA focuses on internal operations and is less sensitive to short-term market volatility. Therefore, it is particularly suitable for evaluating firms in capital-intensive sectors such as mining, where profitability largely depends on effective asset management.

Previous studies consistently confirm the reliability of ROA as a proxy for financial performance. (Diaz & Pandey, 2019) report that larger firms in the U.S. technology and financial sectors achieve higher ROA, indicating advantages from economies of scale and more efficient asset deployment. (Rompotis, 2024) finds that free cash flow improves ROA in the banking industry, demonstrating the importance of sound internal cash management, while inefficient investment and financing decisions reduce asset efficiency. (Prekazi *et al.*, 2023) also show that capital structure significantly influences ROA, implying that financing policies, particularly leverage, directly affect the firm's ability to generate returns from its assets. These findings indicate that ROA reflects both operational effectiveness and the consequences of financial decision-making.

Beyond financial policies, governance quality and managerial practices also shape ROA. (Baby *et al.*, 2024; Budiandriani, Mahfudnurnajamuddin, & Syahnur, 2023) highlight that effective governance systems and technological adoption improve ROA by strengthening managerial discipline and operational processes. Similarly, Salsabila *et al.*, (2024) demonstrate that working capital and credit management significantly influence ROA in Indonesian banks, emphasizing the importance of asset and liquidity control in sustaining profitability. Based on these theoretical and empirical considerations, this study adopts ROA as the dependent variable to represent financial performance, enabling an assessment of how governance mechanisms and firm characteristics—such as ownership structure, audit oversight, and firm size—affect asset efficiency and profitability in Indonesia's mining industry.

## 3. Research Method

This study employed a quantitative explanatory design to examine the effects of Good Corporate Governance mechanisms and firm size on the financial performance of mining companies listed on the Indonesia Stock Exchange (IDX). The study used archival secondary data obtained from audited annual reports and financial statements published through the official IDX website and the respective companies' websites. The observation period covered the 2021–2023 fiscal years. Because each company was observed for three consecutive years, the unit of analysis was the firm-year, producing a

balanced dataset that enabled the examination of governance and financial characteristics across companies and periods. The use of audited corporate reports was considered appropriate because these documents provide standardized, publicly verifiable, and relatively comparable financial and governance information (Gujarati & Porter, 2009; Wooldridge, 2016).

The research population consisted of mining companies listed on the IDX during the observation period. The sample was selected using purposive sampling based on criteria established before data collection (Sekaran & Bougie, 2016). A company was included when it: (1) was classified as a mining company and remained listed on the IDX throughout 2021–2023; (2) was not delisted or suspended permanently during the study period; (3) published audited annual reports for all three fiscal years; and (4) disclosed complete information required to measure institutional ownership, the proportion of independent commissioners, audit committee characteristics, firm size, and Return on Assets. Companies with incomplete observations were excluded to maintain consistency across the analysis period. The application of these criteria resulted in a final sample of 30 companies. With three annual observations for each company, the study generated 90 firm-year observations.

Data were collected through documentary analysis using a structured data-recording sheet to ensure consistent extraction of information from each annual report. Institutional ownership was measured as the percentage of outstanding shares owned by institutional investors. The independent board of commissioners was measured as the proportion of independent commissioners relative to the total number of commissioners. The audit committee was measured by the number of members serving at the end of each fiscal year. Firm size was treated as a control variable and measured as the natural logarithm of total assets to reduce scale differences across companies. Financial performance was measured using Return on Assets, calculated as net income after tax relative to total assets. ROA was selected because it reflects management's effectiveness in generating earnings from the company's asset base, which is particularly relevant to capital-intensive mining firms. All data were recorded for the same financial year to maintain temporal consistency between the explanatory and outcome variables.

The data were analyzed using descriptive statistics and a pooled multiple linear regression, with assistance from SPSS v25. Descriptive statistics, including the minimum, maximum, mean, and standard deviation, were used to summarize the distribution of each variable (Hair *et al.*, 2019). Before estimating the regression model, diagnostic tests were conducted to assess multicollinearity, residual normality, autocorrelation, and heteroscedasticity. Multicollinearity was evaluated using tolerance and Variance Inflation Factor values, while residual normality was examined using an appropriate residual-based test or graphical assessment. Autocorrelation and heteroscedasticity tests were conducted to determine whether the regression residuals met the assumptions required for reliable estimation. The individual effects of institutional ownership, independent commissioners, the audit committee, and firm size on ROA were assessed using partial t-tests. In contrast, the model's overall explanatory power was evaluated using the F-test, the coefficient of determination, and the adjusted coefficient of determination. Hypotheses were evaluated at a significance level of 5 percent.

## 4. Results and Discussion

### 4.1 Analysis Results

#### 4.1.1 Descriptive Statistical Test

The variables used in this study include Institutional Ownership (X1), Independent Board of Commissioners (X2), Audit Committee (X3), Firm Size (X4), and Financial Performance (Y). These five variables were analyzed using descriptive statistical tests to determine the minimum, maximum, average (mean), and standard deviation values for each variable. The results are presented in Table 1.

**Table 1.** Descriptive Statistics

| Variable                           | N  | Minimum | Maximum | Mean    | Std. Deviation |
|------------------------------------|----|---------|---------|---------|----------------|
| Financial Performance (ROA)        | 30 | -0.08   | 0.29    | 0.0835  | 0.08742        |
| Institutional Ownership            | 30 | 0.35    | 0.95    | 0.6217  | 0.17684        |
| Independent Board of Commissioners | 30 | 0.30    | 0.75    | 0.4572  | 0.13196        |
| Audit Committee                    | 30 | 3.00    | 5.00    | 3.4670  | 0.68421        |
| Firm Size (Ln Total Assets)        | 30 | 26.10   | 32.85   | 29.4126 | 1.87453        |

Based on Table 1, Institutional Ownership (X1) ranges from 0.35 to 0.95, with a mean of 0.6217 (62.17%). This indicates that, on average, institutional investors hold a dominant ownership stake in the sampled mining companies, reflecting the strong presence of professional and institutional shareholders in the sector. The standard deviation of 0.17684 suggests a moderate degree of variation in ownership concentration across firms, implying differences in monitoring intensity among institutional investors. The Independent Board of Commissioners (X2) variable ranges from 0.30 to 0.75, with an average of 0.4572 (45.72%). This suggests that nearly half of board members in the sampled firms are independent commissioners, indicating compliance with governance regulations and a relatively balanced board structure. The standard deviation of 0.13196 reflects reasonable variation in board independence among firms, which may influence the effectiveness of oversight functions.

With respect to the Audit Committee (X3), the number of members ranges from 3 to 5, with a mean of 3.467 and a standard deviation of 0.68421. These figures indicate that most firms maintain audit committees that meet regulatory requirements, with limited dispersion in committee size. This relatively consistent structure suggests a standardized approach to audit oversight within the mining sector. Regarding Firm Size (X4), measured as the natural logarithm of total assets, the values range from 26.10 to 32.85, with a mean of 29.4126 and a standard deviation of 1.87453. This distribution indicates that the sample comprises predominantly medium to large mining firms, with moderate variation in asset scale. The relatively stable dispersion suggests that the firms operate within comparable asset-intensive environments.

Finally, Financial Performance (Y), proxied by Return on Assets (ROA), ranges from -0.08 to 0.29, with an average value of 0.0835 (8.35%) and a standard deviation of 0.08742. These results indicate that, on average, the sampled firms generate positive returns on their assets, although profitability varies across firms. The presence of negative ROA values reflects the inherent volatility of the mining industry. At the same time, the overall positive mean suggests that asset utilization efficiency remains relatively sound during the observation period.

#### 4.1.2 Classical Assumption Tests

To ensure that the regression model satisfies the BLUE (Best Linear Unbiased Estimator) (Shaffer, 1991) criteria, a series of classical assumption tests were conducted, including the normality test, multicollinearity test, heteroscedasticity test, and autocorrelation test.

##### 4.1.2.1 Normality Test

The normality test aims to determine whether the residuals in the regression model are normally distributed. This test was performed using the Kolmogorov–Smirnov test, and the results are presented in Table 2:

**Table 2.** One-Sample Kolmogorov-Smirnov Test

| Test Statistic           | Value                 |
|--------------------------|-----------------------|
| N                        | 30                    |
| Mean                     | 0.0000000             |
| Std. Deviation           | 0.10105461            |
| Most Extreme Differences |                       |
| - Absolute               | 0.092                 |
| - Positive               | 0.070                 |
| - Negative               | -0.092                |
| Test Statistic           | 0.092                 |
| Asymp. Sig. (2-tailed)   | 0.200 <sup>c, d</sup> |

The normality of the data was examined using the Kolmogorov–Smirnov (K–S) test. Based on the results presented in Table 2, the sample consists of 30 observations, with a mean of 0.000 and a standard deviation of 0.10105, indicating that the standardized residuals are centered around zero with relatively low dispersion. The most extreme differences between the empirical and theoretical cumulative distributions show an absolute value of 0.092, with a maximum positive difference of 0.070 and a maximum negative difference of –0.092. The Kolmogorov–Smirnov test statistic is 0.092, while the asymptotic significance value (two-tailed) is 0.200. Since the significance value exceeds the conventional threshold of 0.05, the null hypothesis of normally distributed residuals cannot be rejected. This result indicates that the residuals are approximately normally distributed, thereby satisfying the normality assumption required for subsequent regression analysis.

##### 4.1.2.2 Multicollinearity Test

The multicollinearity test is used to assess whether there is high correlation among the independent variables in a regression model. The results are shown in Table 3:

**Table 3.** Multicollinearity Test

| Independent Variable                    | Tolerance | VIF   |
|-----------------------------------------|-----------|-------|
| X1 (Institutional Ownership)            | 0.891     | 1.123 |
| X2 (Independent Board of Commissioners) | 0.975     | 1.025 |
| X3 (Audit Committee)                    | 0.924     | 1.083 |
| X4 (Firm Size)                          | 0.901     | 1.109 |

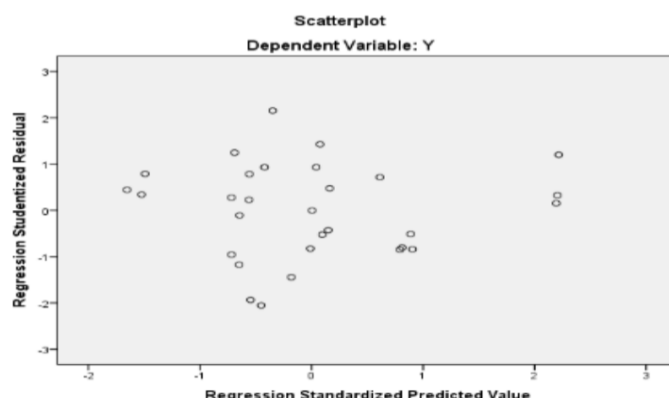
Multicollinearity was assessed using Tolerance and Variance Inflation Factor (VIF) values for each independent variable. As shown in Table X, the tolerance values for Institutional Ownership (X1), Independent Board of Commissioners (X2), Audit Committee (X3), and Firm Size (X4) are 0.891, 0.975, 0.924, and 0.901, respectively. All tolerance values exceed the commonly accepted threshold of 0.10, indicating that each independent variable provides sufficient unique information in the regression model.

Similarly, the VIF values for X1, X2, X3, and X4 are 1.123, 1.025, 1.083, and 1.109, respectively. These values are well below the critical cutoff of 10 (and even the more conservative threshold of 5), suggesting multicollinearity is not a concern in this study. Overall, the results indicate no serious multicollinearity among the independent variables. Therefore, each variable can be reliably included in the regression model without distorting coefficient estimates or standard errors, and the regression results can be interpreted with confidence.

#### 4.1.2.3 Heteroscedasticity Test

The heteroscedasticity test was conducted to determine whether there is a variance inequality of residuals across observations. This was tested using a scatterplot of the residuals versus the predicted values. Based on the scatterplot results (not shown here), the points are randomly distributed without forming a clear pattern or shape, such as a curve or line.

**Figure 1.** Scatterplot of Heteroscedasticity Test Results



This indicates that heteroscedasticity is not present in the regression model, and thus the assumption of homoscedasticity is fulfilled, making the model appropriate for hypothesis testing (Abdillah & Jogiyanto, 2011; Ghozali, 2018).

#### 4.1.2.4 Autocorrelation Test

The autocorrelation test is conducted to determine whether there is a correlation between errors in period  $t$  and  $t-1$ . This was tested using the Durbin-Watson (DW) test, and the results are presented in Table 4.

**Table 4.** Durbin-Watson Test

| Model | R     | R Square | Adjusted R Square | Std. Error of the Estimate | Durbin-Watson |
|-------|-------|----------|-------------------|----------------------------|---------------|
| 1     | 0.621 | 0.386    | 0.312             | 0.09473                    | 1.986         |

Table 4 presents the summary of the regression model and diagnostic statistics. The results show a correlation coefficient (R) of 0.621, indicating a moderate-to-strong relationship between the independent variables and financial performance. The coefficient of determination ( $R^2$ ) is 0.386, indicating that approximately 38.6% of the variation in financial performance (ROA) is explained by institutional ownership, board independence, the audit committee, and firm size. The adjusted  $R^2$  value of 0.312 confirms that the model maintains adequate explanatory power after adjusting for the number of predictors. The standard error of the estimate is 0.09473, indicating a relatively small prediction error and suggesting that the model fits the data reasonably well. Furthermore, the Durbin–Watson statistic of 1.986 falls within the acceptable range of 1.5 to 2.5, indicating the absence of autocorrelation among the residuals. This result confirms that the independence assumption is satisfied and that the regression estimates are reliable and unbiased.

### 4.1.3 Hypothesis Testing

#### 4.1.3.1 T-Test (Partial Test)

The T-Test is used to examine the partial effect of each independent variable on the dependent variable, which is corporate Financial Performance (Y). The results of the t-test are presented in Table 5:

**Table 5.** T-Test Results (Coefficients)

| Variable                         | B      | Std. Error | Beta  | t      | Sig.  | Tolerance | VIF   |
|----------------------------------|--------|------------|-------|--------|-------|-----------|-------|
| (Constant)                       | -0.092 | 0.081      | —     | -1.136 | 0.266 | —         | —     |
| X1<br>Institutional<br>Ownership | 0.138  | 0.064      | 0.246 | 2.156  | 0.040 | 0.889     | 1.125 |
| X2<br>Independent<br>Board       | 0.121  | 0.058      | 0.219 | 2.086  | 0.046 | 0.973     | 1.028 |
| X3 Audit<br>Committee            | 0.033  | 0.014      | 0.201 | 2.357  | 0.026 | 0.921     | 1.086 |
| X4 Firm Size<br>(Ln Assets)      | 0.016  | 0.004      | 0.471 | 3.874  | 0.001 | 0.903     | 1.107 |

The regression results indicate that institutional ownership, board independence, audit committee effectiveness, and firm size have positive and statistically significant effects on financial performance. Firm size has the largest standardized coefficient, suggesting that scale advantages play a dominant role in explaining profitability among capital-intensive mining firms. The positive coefficients of governance variables support the monitoring and signaling roles proposed by Agency Theory and Signaling Theory.

#### 4.1.3.2 F-Test (Simultaneous Test)

The F-test is used to examine whether all independent variables jointly have a significant effect on the dependent variable (corporate financial performance). The results of the F-test are shown in Table 6. The ANOVA results indicate that the regression model is statistically significant. As shown in Table X, the F-statistic is 4.128 with a significance level of 0.009, suggesting that the independent variables—namely, institutional ownership, board independence, audit committee, and firm size—jointly explain variation in financial performance. This result confirms that the model has sufficient explanatory power

and is appropriate for hypothesis testing. Therefore, the null hypothesis that all regression coefficients are simultaneously zero is rejected, indicating that the proposed model is valid for explaining financial performance among the sampled mining firms.

**Table 6.** F-Test Results (ANOVA)

| Source of Variation | Sum of Squares | df | Mean Square | F     | Sig.  |
|---------------------|----------------|----|-------------|-------|-------|
| Regression          | 0.182          | 4  | 0.0455      | 4.128 | 0.009 |
| Residual            | 0.252          | 25 | 0.0101      |       |       |
| Total               | 0.434          | 29 |             |       |       |

#### 4.1.3.3 Coefficient of Determination ( $R^2$ ) Analysis

The coefficient of determination is used to assess how well the regression model explains the variance in the dependent variable, which is corporate financial performance (Y). The results are shown in Table 7.

**Table 7.** Coefficient of Determination (Model Summary)

| Model | R     | R Square | Adjusted R Square | Std. Error of the Estimate | Durbin-Watson |
|-------|-------|----------|-------------------|----------------------------|---------------|
| 1     | 0.621 | 0.386    | 0.312             | 0.09473                    | 1.986         |

Table 7 presents the summary of the regression model. The results show a correlation coefficient (R) of 0.621, indicating a moderate-to-strong relationship between the independent variables and financial performance. The coefficient of determination ( $R^2$ ) is 0.386, suggesting that approximately 38.6% of the variation in financial performance (ROA) is explained by institutional ownership, board independence, audit committee, and firm size. The adjusted  $R^2$  value of 0.312 confirms that the model retains adequate explanatory power after adjusting for the number of predictors.

The standard error of the estimate is 0.09473, indicating a relatively low prediction error. Furthermore, the Durbin-Watson statistic of 1.986 falls within the acceptable range, confirming the absence of autocorrelation among the residuals. Overall, these results indicate that the regression model satisfies key diagnostic assumptions and is suitable for hypothesis testing.

#### 4.1.3.4 Multiple Linear Regression Analysis

Multiple linear regression analysis was employed to examine the simultaneous and partial effects of institutional ownership, independent board of commissioners, audit committee, and firm size on financial performance. The detailed results of the partial significance tests are presented in Table 6 (t-test). The regression results indicate that all independent variables have positive and statistically significant effects on financial performance. Institutional ownership demonstrates a positive influence on financial performance ( $\beta = 0.246$ ;  $p = 0.040$ ), indicating that higher institutional shareholding strengthens monitoring effectiveness and improves profitability. Similarly, the proportion of independent commissioners shows a positive and significant effect ( $\beta = 0.219$ ;  $p = 0.046$ ), suggesting that stronger board independence enhances oversight quality and managerial discipline.

Furthermore, the audit committee variable also exhibits a positive and significant relationship with financial performance ( $\beta = 0.201$ ;  $p = 0.026$ ), reflecting the role of audit oversight in improving

transparency and financial reporting quality. Among all explanatory variables, firm size displays the strongest standardized coefficient ( $\beta = 0.471$ ;  $p = 0.001$ ), indicating that scale advantages play a dominant role in explaining profitability in capital-intensive mining firms. Overall, these findings suggest that both corporate governance mechanisms and firm size jointly contribute to improving financial performance. The results support the argument that effective governance structures, combined with greater organizational scale, enhance firms' ability to utilize assets efficiently and generate higher returns.

#### 4.1.3.5 Regression Model Specification

Based on the estimated coefficients, the multiple linear regression model is specified as follows:

$$ROA = -0.092 + 0.138X_1 + 0.121X_2 + 0.033X_3 + 0.016X_4 + \varepsilon$$

Where ROA represents financial performance,  $X_1$  denotes institutional ownership,  $X_2$  denotes an independent board of commissioners,  $X_3$  denotes the audit committee, and  $X_4$  Denotes firm size.

**Table 8.** Summary of Hypothesis-Testing Results

| Hypothesis | Relationship                    | Direction of Effect | Decision  |
|------------|---------------------------------|---------------------|-----------|
| H1         | Institutional ownership → ROA   | Positive            | Supported |
| H2         | Independent commissioners → ROA | Positive            | Supported |
| H3         | Audit committee → ROA           | Positive            | Supported |
| H4         | Firm size → ROA                 | Positive            | Supported |

The overall pattern shows that financial performance in Indonesian mining companies is shaped not only by the amount of assets controlled by the firm but also by the governance arrangements used to supervise managerial decisions and resource utilization. This result is reasonable in the context of the mining industry, where firms operate with large asset bases, long investment periods, complex operating risks, and substantial exposure to commodity-price fluctuations. Under these conditions, effective monitoring and organizational discipline become essential because weak managerial decisions can quickly reduce the profitability generated from corporate assets.

Although the study does not directly measure human resource management, the governance mechanisms examined are closely connected to the management of executives and employees. Institutional owners, independent commissioners, and audit committees do not directly operate mining equipment or generate revenue. Their influence occurs through the decisions, controls, incentives, and accountability systems imposed on managers and employees. Therefore, the financial contribution of Good Corporate Governance can be interpreted as arising partly from its ability to direct human resources toward more efficient asset utilization, cost control, risk management, and operational productivity. This relationship must, however, be treated as a theoretical interpretation rather than a statistically tested mediation mechanism because no human resource variable was included in the empirical model.

## 4.2 Discussion

This study examines the effects of institutional ownership, independent commissioners, audit committees, and firm size on the financial performance of mining companies listed on the Indonesia Stock Exchange (IDX), using Return on Assets (ROA) as the primary indicator. The mining sector is

characterized by high capital intensity, long investment horizons, volatile commodity prices, stringent regulatory requirements, and substantial environmental and operational risks. Under these conditions, corporate financial performance depends not only on the availability of physical and financial assets but also on the quality of governance through which those assets are controlled, allocated, and operated. Good Corporate Governance (GCG) therefore becomes relevant to human resource management because governance mechanisms influence managerial accountability, employee supervision, performance evaluation, risk discipline, and the alignment of individual decisions with corporate financial objectives. Although human resource management was not directly measured in this study, the findings indicate that governance structures may contribute to higher ROA by encouraging managers and employees to use corporate assets more efficiently and responsibly.

Grounded in Agency Theory, this study extends the governance–performance literature by providing empirical evidence from Indonesia’s mining industry, where concentrated ownership, evolving regulatory frameworks, and institutional pressures may shape the effectiveness of corporate governance differently from developed markets. The results suggest that governance mechanisms should not be understood merely as formal administrative structures. Their financial value lies in their ability to direct managerial behavior, strengthen organizational discipline, and ensure that human resources contribute to the productive use of assets. In a capital-intensive industry, even substantial physical assets will not generate satisfactory returns when managerial decisions are weak, employees are poorly supervised, or operational resources are inefficiently deployed.

#### **4.2.1 Integrated Interpretation of Governance, Human Resources, and ROA**

Overall, the findings show that institutional ownership, independent commissioners, audit committees, and firm size jointly contribute to the financial performance of Indonesian mining companies. The results indicate that GCG mechanisms can improve ROA by strengthening oversight, reducing managerial opportunism, improving the quality of financial controls, and directing corporate resources toward productive activities. However, these mechanisms operate through human decisions and organizational behavior. Governance structures do not manage assets directly; managers and employees do. Therefore, the effectiveness of GCG is partly determined by whether it produces better managerial discipline, clearer accountability, stronger professional competence, and more productive employee behavior.

This connection places human resource management within a financial governance perspective. Human resources should not be viewed only as an administrative or personnel function but as a strategic resource that affects the efficiency with which corporate assets generate profits. Recruitment quality, managerial competence, technical training, performance-based incentives, employee supervision, and financial accountability can all influence ROA by affecting productivity, operating costs, asset maintenance, project execution, and risk exposure. GCG can strengthen these processes by ensuring that decisions concerning personnel, incentives, authority, and performance evaluation remain aligned with shareholder interests and corporate sustainability.

Nevertheless, this study did not include human resource management as an observed variable. It would therefore be methodologically inappropriate to claim that human resource management statistically mediates the effects of GCG on ROA. The present findings only provide a conceptual basis for arguing that governance mechanisms may influence financial performance partly through the management of managerial and employee behavior. Future research should test this mechanism directly by incorporating variables such as human capital quality, employee productivity, competency

development, performance-based compensation, managerial capability, or strategic human resource management as mediating or moderating variables.

## **4.2.2 Institutional Ownership and Financial Performance**

The results demonstrate that institutional ownership has a positive and statistically significant effect on financial performance. This finding supports Agency Theory, which positions institutional investors as external monitoring agents capable of reducing conflicts of interest between managers and shareholders (Jensen & Meckling, 1976). Institutional investors generally possess stronger analytical capabilities, greater access to information, and more substantial incentives to monitor managerial decisions than individual investors. Their presence can therefore increase pressure on management to improve operational efficiency, control unnecessary expenditures, and allocate corporate resources toward financially productive activities. Within Indonesian mining companies, the positive effect of institutional ownership on ROA may reflect stronger managerial discipline and more effective supervision of investment and operating decisions. Mining projects typically involve large sunk costs, complex production processes, and long payback periods. Weak monitoring in such settings may encourage inefficient investment, excessive managerial discretion, or the underutilization of corporate assets. Institutional owners can reduce these problems by demanding clearer performance targets, stronger internal accountability, and more disciplined use of financial and human resources.

The relationship also has implications for human resource management. Institutional monitoring may encourage companies to establish more rigorous systems for executive evaluation, managerial incentives, workforce productivity, and cost control. Through these mechanisms, institutional ownership can indirectly influence how employees and managers contribute to asset utilization. Higher ROA may therefore arise not simply because institutional investors hold a large proportion of shares, but because their monitoring encourages management to organize human resources around measurable operational and financial outcomes. This interpretation is consistent with evidence from emerging markets showing that institutional ownership improves firm performance when institutional investors actively participate in governance and oversight rather than remaining passive shareholders (Bhagat & Bolton, 2008; Claessens & Yurtoglu, 2013).

## **4.2.3 Independent Board of Commissioners and Financial Performance**

The proportion of independent commissioners also has a positive and statistically significant effect on financial performance. This finding is consistent with the monitoring function emphasized by Agency Theory and the governance framework proposed by Fama and Jensen (1983). Independent commissioners are expected to provide objective oversight, limit managerial entrenchment, and protect shareholders from decisions that prioritize managerial interests over organizational performance. Their independence enables them to question management assumptions, evaluate strategic proposals more critically, and strengthen accountability for corporate outcomes. The role of independent commissioners is particularly important in mining companies because strategic and operational decisions involve considerable financial, environmental, and regulatory consequences. Decisions concerning capital expenditure, exploration, production capacity, environmental obligations, and operational safety can substantially affect profitability and asset productivity. Independent commissioners can improve the quality of these decisions by ensuring that management conducts adequate risk assessment and does not pursue expansion or investment projects without sufficient financial justification.

From a human resource perspective, independent commissioners also influence the quality of managerial control. Boards are responsible for supervising senior executives, reviewing management performance, and ensuring that remuneration and promotion decisions are aligned with long-term corporate objectives. Effective independent commissioners can discourage opportunistic managerial behavior and encourage management to establish clearer performance standards throughout the organization. This governance function may improve ROA by ensuring that managers and employees are not merely occupied with operational activity but are directed toward efficient production, cost control, asset maintenance, and revenue generation. The positive relationship identified in this study suggests that independent boards in Indonesian mining companies may perform more than a symbolic compliance function. Their presence appears to contribute to stronger financial outcomes, particularly when independent commissioners possess relevant expertise, sufficient authority, and access to reliable information. This finding is consistent with recent evidence indicating that board independence enhances profitability and firm value when independent directors are substantively involved in monitoring and strategic decision-making (Miao *et al.*, 2023).

#### **4.2.4 Audit Committee and Financial Performance**

The audit committee has a positive and statistically significant effect on financial performance. This result supports the monitoring logic of Agency Theory and, to a more limited extent, the information-quality argument associated with Signaling Theory. From an agency perspective, the audit committee strengthens internal oversight by supervising financial reporting, internal controls, risk management, and the external audit process. These functions reduce information asymmetry, discourage earnings manipulation, and improve the reliability of financial information used by managers, investors, and creditors. The audit committee is especially relevant in mining companies because financial reporting often involves complex estimates related to asset impairment, exploration costs, environmental liabilities, rehabilitation obligations, depreciation, reserves, and revenue recognition. Weak internal controls over these areas may distort financial information and lead to poor managerial decisions. An effective audit committee can improve financial discipline by ensuring that financial reports accurately reflect operational conditions and that management promptly addresses control weaknesses.

The audit committee's contribution to ROA also intersects with human resource management. Internal control effectiveness ultimately depends on the behavior and competence of employees responsible for accounting, operations, procurement, compliance, and financial management. Audit committees can encourage companies to improve employee accountability, clarify financial responsibilities, strengthen professional competence, and enforce compliance with internal procedures. They may also identify weaknesses arising from inadequate training, unclear job responsibilities, or poor segregation of duties. By improving the control environment in which employees perform their tasks, audit committees can reduce resource leakage, operational inefficiency, and costly financial errors. However, the findings should not be interpreted as evidence that the mere existence or numerical size of an audit committee automatically improves ROA. Its effectiveness depends on member independence, financial expertise, meeting quality, access to information, and the extent to which audit recommendations are implemented by management. The positive result therefore highlights the financial importance of substantive audit oversight rather than formal compliance alone. This interpretation is consistent with prior studies showing that effective audit committees improve financial reporting quality, investor confidence, and firm performance (Altın, 2024; Kurnia *et al.*, 2024).

## 4.2.5 Firm Size and Financial Performance

Firm size exhibits the strongest positive and statistically significant effect on financial performance among the explanatory variables. Larger mining companies generally possess broader asset bases, greater access to capital markets, stronger bargaining power, more advanced technology, and more diversified business operations. These advantages may enable them to achieve economies of scale, spread fixed costs over larger production volumes, and absorb commodity price fluctuations more effectively than smaller firms. The positive relationship between firm size and ROA suggests that larger mining firms are better able to transform their organizational resources into profits. Nevertheless, large asset ownership does not automatically result in high financial performance. Larger firms also face greater managerial complexity, additional organizational layers, higher personnel costs, and more difficult coordination across business units. Their financial advantage therefore depends on the quality of governance and human resource management applied to those resources.

From a financial perspective, human resources represent the organizational mechanism through which physical assets become productive. Mining equipment, infrastructure, technology, and financial capital cannot generate returns without competent managers, technical employees, financial personnel, and operational workers. Larger firms may achieve higher ROA when they have the capacity to recruit specialized employees, provide technical training, implement professional performance management systems, and allocate human resources according to operational requirements. They are also more likely to possess formalized procedures for budgeting, risk management, internal control, and productivity evaluation. Accordingly, the strong effect of firm size should not be interpreted simply as an asset-volume effect. It may also reflect the organizational capacity of larger companies to integrate financial, physical, technological, and human resources more effectively. Conversely, when a large workforce and asset base are poorly managed, firm size can create bureaucratic inefficiency, excessive operating costs, and declining asset productivity. The positive result in this study indicates that the larger mining companies sampled were generally more capable of exploiting economies of scale and managing organizational complexity in ways that supported profitability. This finding is consistent with previous studies reporting a positive association between firm size, ROA, and firm value in resource-intensive industries (Ahmed *et al.*, 2020, 2023; Putri *et al.*, 2023).

## 4.2.6 Theoretical and Practical Implications

From a theoretical perspective, the study supports Agency Theory by showing that governance mechanisms associated with ownership monitoring, board independence, and audit oversight are positively related to financial performance. The findings suggest that governance improves ROA not only by limiting agency conflicts but also by creating organizational conditions that encourage managers and employees to use corporate resources more responsibly. Signaling Theory provides a supplementary explanation, particularly regarding audit quality and organizational scale, as credible governance arrangements may signal financial stability and managerial quality to investors and creditors. However, the main explanation remains the monitoring and accountability mechanism derived from Agency Theory. From a practical standpoint, regulators and mining companies should focus on governance effectiveness rather than merely satisfying formal governance requirements. Institutional investors need to exercise active oversight, independent commissioners require relevant expertise and adequate authority, and audit committees must be capable of identifying financial and operational weaknesses. Companies should also connect governance practices to human resource systems by

aligning managerial incentives with ROA, strengthening employees' financial accountability, improving technical and managerial competence, and evaluating workforce productivity relative to asset utilization.

The central implication is that better governance can contribute to higher ROA only when governance decisions are translated into disciplined managerial action and productive employee performance. Formal ownership structures, board composition, and audit committees will have limited financial value when the organization lacks competent people, effective supervision, and performance-oriented human resource practices. Therefore, improvements in mining-company profitability require an integrated approach in which GCG, financial management, asset utilization, and human resource management reinforce one another.

## 5. Concluding Remarks and Recommendation

This study was conducted to understand how corporate governance mechanisms and organizational scale contribute to the financial performance of mining companies operating in a capital-intensive, highly volatile business environment. Specifically, the study examined whether institutional ownership, the proportion of independent commissioners, the audit committee mechanism, and firm size affect Return on Assets (ROA) among mining companies listed on the Indonesia Stock Exchange. A quantitative explanatory design was employed, using secondary data extracted from audited annual reports of 30 mining companies observed during 2021–2023, yielding 90 firm-year observations. The relationships among the variables were examined using multiple regression analysis.

The findings answer the research question by showing that institutional ownership, independent commissioners, the audit committee mechanism, and firm size are positively associated with ROA during the observation period. Firm size demonstrates the strongest contribution, indicating that larger mining companies tend to have greater capacity to utilize their asset base productively. Institutional ownership is associated with stronger shareholder monitoring, while independent commissioners and audit committees contribute to managerial supervision and financial control. However, these findings should be interpreted in light of the characteristics of the sampled companies and the limited observation period, rather than generalized to all industries or all Indonesian corporations.

Theoretically, the study strengthens the application of Agency Theory by demonstrating that ownership monitoring, independent board supervision, and audit oversight are relevant to financial performance in Indonesia's mining industry. Its originality lies in connecting formal corporate governance mechanisms with the financial management of organizational resources. Although human resource management was not directly included in the empirical model, governance mechanisms may create accountability, supervision, competency requirements, and performance discipline that enable managers and employees to utilize corporate assets more efficiently. From a managerial perspective, mining companies should therefore avoid relying solely on asset expansion to improve ROA. Governance structures must be supported by competent commissioners, active institutional investors, financially capable audit committee members, accountable managers, and employees whose performance is aligned with asset productivity and corporate profitability. For regulators, the findings emphasize that governance assessment should extend beyond formal compliance to include the competence, independence, participation, and actual supervisory contribution of governance actors.

This study is subject to several limitations. The three-year observation period may not fully capture long-term governance effects or fluctuations across mining and commodity cycles. The sample is restricted to listed mining companies, thereby limiting the applicability of the findings to other industries and non-listed firms. Financial performance is measured solely by ROA, whereas the governance variables primarily reflect quantitative structural characteristics and do not capture the actual quality of monitoring, board behavior, audit committee expertise, organizational culture, managerial competence, or employee productivity. Furthermore, because human resource management was not empirically measured, its role in connecting governance quality with financial performance remains a conceptual interpretation rather than a tested mechanism.

Future research should use a longer observation period and apply panel-data estimation to better account for firm- and time-specific effects. Comparative studies across industries with different levels of capital intensity and regulatory exposure would clarify whether the governance–performance relationship is context-dependent. Additional financial and market-based measures, including ROE, Tobin's Q, profit margin, and stock returns, should also be considered. More importantly, future models should directly examine managerial capability, employee productivity, human capital quality, performance-based compensation, and strategic human resource management as potential mediating or moderating mechanisms between corporate governance and financial performance. Such an extension would provide stronger evidence of how governance arrangements translate into productive human behavior, efficient asset utilization, and improved corporate profitability.

## Statement of Use of Generative AI

During the preparation of this work, the author used generative artificial intelligence tools to support the scientific writing process. Grammarly was used to check grammar, refine writing style, and improve clarity in scientific writing. All interpretations, analyses, and conclusions presented in this study are the sole responsibility of the author.

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