BOARD CHARACTERISTICS AND FIRM FINANCIAL PERFORMANCE: AN EMPIRICAL ASSESSMENT OF DIRECTORS' COMPOSITION, DIVERSITY, AND CEO ATTRIBUTES

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Abstract

This study examines the impact of board characteristics and chief executive officer (CEO) attributes on firm financial performance in an emerging economy. Drawing on agency theory (Jensen & Meckling, 1979), the study investigates whether board composition, diversity, and leadership traits function as effective internal governance mechanisms in mitigating agency problems and enhancing firm performance. Using panel data from 24 non-financial companies listed on the Indonesia Stock Exchange (IDX) over the period 2017–2024, financial performance is measured by return on assets (ROA). The empirical analysis employs panel regression techniques, with the common effect model (CEM) selected as the primary specification based on overall model fit, and robustness is further assessed using the two-step generalized method of moments (GMM). The results reveal that board size and board gender diversity have a positive and significant effect on firm financial performance, supporting the view that broader representation and diversity enhance monitoring and decision-making quality. In contrast, CEO tenure and CEO age exhibit a significant negative relationship with ROA, indicating potential managerial entrenchment and increased risk aversion associated with prolonged and senior leadership, consistent with prior governance research (Chowdhury & Fink, 2017). Other board attributes, such as average board age and meeting frequency, show no significant effect. Overall, this study contributes to the corporate governance literature by integrating CEO-specific characteristics into the agency framework and providing empirical evidence from Indonesia's concentrated ownership environment.

Keywords: Board Characteristics, CEO Age, CEO Tenure, Financial Performance, Agency Theory

Authors' individual contribution: Conceptualization — A.J.; Methodology — A.J.; Formal Analysis — A.J.; Data Curation — A.P.N.W.; Writing — Original Draft — S.N.A.; Writing — Review & Editing — S.N.A.; Supervision — A.J.

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1. INTRODUCTION

In the global context, financial performance has become a main concern in business and academic discussions because of its essential role in determining a company's sustainability and competitiveness. Financial performance is a key indicator of a firm's ability to generate profit, manage costs efficiently, and create value for its stakeholders (Hassan et al., 2024). It strategically determines a company's long-term trajectory, reflecting its efficacy in resource utilization to achieve profitability and sustain a competitive advantage (Alotaibi & Al-Dubai, 2024). Strong or weak financial performance significantly influences managerial decisions related to investment, financing, and operational strategies, shaping the company's overall growth trajectory. Haverila et al. (2025) also believed that a company's financial success demonstrates its ability to generate profits, keep costs low, and provide its stakeholders with long-term value.

In Indonesia, concerns about financial performance have become increasingly tied to the effectiveness of corporate governance frameworks. Various public corporations exhibited unpredictable financial results despite strong macroeconomic statistics, prompting inquiries into the internal procedures that govern managerial behavior. According to agency theory, financial performance depends on how well the board of directors mitigates agency conflicts by aligning management actions with shareholders' interests (Aliahmadi, 2024). Corporate governance mechanisms significantly influence financial performance; among them, board features such as the number of members, average tenure, diversity, frequency of meetings, and the age and tenure of the chief executive officer (CEO) play an essential role in improving or hindering corporate financial outcomes (Sunny & Hoque, 2025; Wahba, 2015). The situation of Indonesia's state-owned aviation industries, for instance, demonstrates how inadequate oversight and excessively long CEO tenures can exacerbate agency issues and prolong financial difficulties. Ineffective board involvement and governance flaws caused the airline's performance to worsen despite strategic reorganization, underscoring the crucial role that board attributes play in boosting or impeding business performance (Djuhriah, 2020). Given this background, board features such as average, number of members, meeting frequency, gender diversity, CEO tenure, and age are intentionally selected. Governance controls affect strategic alignment, monitoring effectiveness, and risk responsiveness (Wang, 2014). Each has been conceptually and experimentally linked to performance results, making them crucial factors in governance efficiency.

Prior corporate governance research highlights that governance systems differ across countries due to variations in investor protection and ownership concentration. Shleifer and Vishny (1997) argue that in concentrated ownership settings, firms rely more heavily on internal governance mechanisms to mitigate agency problems. In Indonesia, corporate governance is shaped by a distinctive institutional setting characterised by concentrated ownership structures and the dominance of controlling shareholders, particularly family-owned business groups (Muntahanah et al., 2021; Utama et al., 2017). As a result, the market for corporate control is relatively inactive, increasing firms' reliance on internal governance mechanisms, especially the board of directors, to mitigate agency problems (Rosser, 2003; Tanjung, 2020). CEOs often hold substantial power due to insider status and close ties with controlling owners, particularly in emerging economies, which may intensify agency problems and increase the risk of managerial entrenchment (Nasih et al., 2025; Purwoaji et al., 2025). From an agency theory perspective, board characteristics and CEO attributes play a critical role in monitoring managerial behaviour and aligning interests between principals and agents, thereby safeguarding firm financial performance. Given Indonesia's concentrated ownership structure, the effectiveness of these governance mechanisms may differ from that observed in economies with more dispersed ownership (Conheady et al., 2015). Consistent with this institutional setting, most firms in the sample operate under concentrated ownership structures, where control is held by the state, business groups, or founding families rather than dispersed shareholders (Claessens et al., 2000; Kumala & Siregar, 2021). Although CEOs are generally not controlling shareholders, they often act as insiders closely affiliated with dominant owners, reflecting the characteristics of family-dominated firms and two-tier governance systems in Indonesia (Sutrisno et al., 2023). Board structures formally include independent commissioners; however, strategic decisions remain largely insider-dominated, reflecting the strong influence of controlling shareholders, particularly in firms with concentrated and family ownership structures (Ramdani & van Witteloostuijn, 2010; Tanjung, 2023). Within Indonesia's corporate governance environment, board size and gender diversity may enhance monitoring, whereas prolonged CEO tenure and older CEO age may intensify entrenchment.

Many research projects have investigated the corporate governance literature on board features, with a significant number emphasizing the influence of board characteristics on firms' financial performance (Azzama et al., 2025; Pandey & Chaturvedi Sharma, 2025). However, the research on the correlation between financial performance and board features remains inconclusive and varies. This inconclusiveness often stems from a lack of comprehensive examination of critical individual-level board characteristics, particularly those related to the CEO. A literature review reveals that board elements such as board size, gender diversity, CEO tenure, and CEO age impact financial performance (Musallam, 2024). The nuanced and combined effects of CEO tenure and age, specifically in explaining these observed inconsistencies, have received comparatively less attention. On the other hand, other research suggests that specific board attributes, such as frequent board meetings, may negatively affect a corporation's financial performance (Achiro et al., 2024). Main theories, such as agency theory, generally examine the impact of board features on financial performance, but this study adds CEO tenure and age as crucial variables. This analysis adds CEO tenure and age to board characteristics, filling a gap in the literature. These factors illustrate the governance structure, helping explain how board features, notably CEO traits, affect financial performance.

This research primarily employs agency theory to examine board features and financial performance, demonstrating its applicability and effectiveness in corporate governance by focusing on principal-agent dynamics. Recent research indicates that social identity theories may not fully clarify how CEO tenure and age affect business performance (Kanter, 1987; Maji & Saha, 2024). Agency theory provides a robust framework for understanding these relationships by emphasizing the alignment of principal-agent relationships (Zaid et al., 2020; Shiyyab et al., 2024). Agency theory involves the conflicts of interest between owners and managers, which is fundamental to this research and can explain how a CEO improves corporate performance (Aliahmadi, 2024; Al Mutairi & Bakar, 2023). This study extends agency theory by incorporating CEO tenure and age to better understand how these specific board features influence financial performance. Although the principal-agent connection is well explained by agency theory, its applicability in comprehending the effects of CEO experience on business performance and governance is increased by considering the CEO's age and tenure (Chow, 2024). Accordingly, using agency theory, combined with other metrics such as CEO age and tenure, does not replace current frameworks; rather, it improves and deepens our understanding of how board characteristics affect corporate governance and performance.

Board features such as board average (average age and tenure of directors), board sizes, board meetings, board gender diversity, CEO tenure, and CEO age enhance decision-making, supervision, and shareholder-manager alignment, thereby affecting corporate governance and company performance. The average age and tenure of directors, which represent their combined stability and experience, are one of the board's characteristics (Marrone et al., 2023). The number of members on the board affects the effectiveness of oversight and decision-making (Poiriazi et al., 2025). The frequency of board meetings affects how actively the board participates in business decisions (Al-Najjar, 2012). In addition to CEO tenure and age, which both affect leadership stability, expertise, and strategic vision in directing the company's success, board gender diversity improves decision-making by bringing varied perspectives to the table (Chikunda et al., 2025; Davis & Garcia-Cestona, 2026; Kajumbula & Makoni, 2025). Thus, this study aims to assess the impact of these board and CEO attributes — specifically board average age and tenure, board size, board meeting frequency, board gender diversity, CEO tenure, and CEO age — on financial performance, as measured by return on assets (ROA), particularly in non-financial companies listed on the Indonesia Stock Exchange (IDX).

The remainder of this paper is structured as follows. Section 2 reviews the relevant literature on corporate governance, board characteristics, and CEO attributes, and develops the theoretical framework and research hypotheses, primarily grounded in agency theory. Section 3 outlines the research methodology, including data sources, sample selection, variable measurement, and the econometric models employed in the empirical analysis. Section 4 presents the empirical results, starting with descriptive statistics and correlation analysis, followed by panel regression results and robustness checks, and a detailed discussion of the results. Finally, Section 5 concludes the study by summarizing the main findings, highlighting their theoretical and practical implications, acknowledging the study's limitations, and offering recommendations for future research.

2. LITERATURE REVIEW AND HYPOTHESES DEVELOPMENT

2.1. Board average

Prior literature suggests that board age characteristics are closely associated with firm financial performance (Ali et al., 2014). From an agency theory perspective, directors' experience often associated with higher board age is expected to enhance monitoring effectiveness by reducing information asymmetry and mitigating managerial opportunism, thereby improving firm performance (Agyemang Badu & Appiah, 2017). Empirical evidence indicates that board composition characteristics, including directors' experience and age structure, are positively associated with firm performance, as boards with greater experience and appropriate age diversity tend to exhibit more effective governance practices (Irawan & Agustia, 2026; McIntyre et al., 2007). The accumulated experience and institutional knowledge of senior directors enable them to provide higher-quality advice and more effective monitoring, consistent with the monitoring role emphasized by agency theory (Xu et al., 2018). Several studies suggest that boards with a higher average age tend to contribute greater experience and decision-making stability; however, such attributes do not consistently translate into improved financial performance, as they may be accompanied by reduced innovative capacity and greater resistance to organizational change (Chindasombatcharoen et al., 2023).

H1: Board average age is significantly associated with firm financial performance.

2.2. Board meeting

The frequency of board meetings is regarded as an important corporate governance mechanism that influences firm financial performance, particularly as boards tend to intensify meetings to enhance monitoring and strategic oversight (Haque et al., 2025). From an agency theory perspective, more frequent board meetings facilitate closer supervision of management, reduce information asymmetry, and limit managerial opportunism, which ultimately improves financial outcomes (Oon et al., 2025). Empirical evidence suggests that boards that meet more often are better positioned to address operational issues, evaluate managerial decisions, and respond promptly to environmental changes, leading to stronger firm performance (Sahoo et al., 2023). In addition, frequent participation in board meetings enhances firm performance by strengthening collective decision-making, which is commonly observed in emerging economies. In contrast, prior literature documents that certain board attributes, particularly an excessively high frequency of board meetings, can be associated with weaker financial performance (Achiro et al., 2024).

H2: Board meetings significantly affect a firm financial performance.

2.3. Board size

Board members are responsible for supervising management behavior and providing insightful assessments during meetings to help resolve agency conflicts. This has been emphasized in agency theory. The board's ability to oversee the company's operations largely depends on its composition, including the backgrounds and abilities of its members (Tuwey & Tarus, 2016). These people contribute perspectives that improve decision-making, making them essential in assessing and guiding the company's strategic direction (Padilla-Angulo, 2020). According to some experts, a board that lacks balance, either in terms of diversity or experience, may lead to poor oversight and suboptimal decisions (Ismael et al., 2026). Despite this, studies have demonstrated that a board with a varied membership and a range of expertise can favor a company's financial results, proving that diversity on the board enhances governance (Khan & Baker, 2024). However, evidence from emerging markets, particularly Indonesia, suggests that the effect of board size is context-dependent. Prior research on Indonesian listed firms documents a non-linear (U-shaped) relationship between board size and firm performance, indicating that both very small and excessively large boards may weaken governance due to limited oversight or coordination inefficiencies (Hidayat & Utama, 2015). This implies that board size effectiveness is shaped by Indonesia's concentrated ownership structure and insider-dominated governance environment. In contrast, cross-country studies from Western Europe and North America document a negative relationship between board size and firm value, indicating that oversized boards may reduce firm performance due to coordination and monitoring inefficiencies (De Andres et al., 2005).

H3: Board size positively and significantly affects firm financial performance.

2.4. Board gender diversity

Gender diversity on the board, as explained by agency theory, enhances independence and mitigates groupthink through encouraging diverse perspectives and communication styles. One key factor that affects how effective a board is includes having members with different backgrounds, especially in terms of gender (Zaid et al., 2024). Having both men and women on the board brings a mix of ideas and encourages more open discussion, which can be very useful when dealing with difficult business situations (Mehnaz & Yang, 2025). Without this kind of diversity, boards may think alike and struggle to identify risks or respond effectively to the needs of different groups. Studies in corporate management have shown that when women are part of the board, it often leads to better ethical behavior, more openness, and greater responsibility (Bhat et al., 2023; Blomson, 2023; Porcena et al., 2021). Boards that include gender diversity are generally better at matching company goals with the interests of others, which can lead to stronger company performance and long-term success. As a result, gender-diverse boards are more successful in evaluating management, ensuring accountability, and aligning business decisions with the interests of shareholders and stakeholders, which ultimately improves financial performance.

H4: Board gender diversity has a strongly significant and positive effect on firm financial performance.

2.5. CEO tenure

The length of a CEO's tenure can have a significant impact on a company's development; however, longer tenures often lead to less innovation and less flexibility. Long-tenured CEOs may become too dominant, recalcitrant to outside criticism, and more focused on preserving their legacy than adapting their approach over time (Ferdous et al., 2024). According to some research, a long CEO tenure may initially improve a company's performance (Dikolli et al., 2014). A longer tenure may raise agency costs, according to agency theory, because seasoned CEOs are less able to adjust their strategies to changing market conditions and are less in line with shareholder interests (Li & Yang, 2019). This can lead to a decline in firm performance, particularly in highly competitive industries (Kim et al., 2017). To avoid stagnation and misalignment with market demands, boards must carefully evaluate the leadership's tenure.

H5: CEO tenure significantly and negatively affects firm financial performance.

2.6. CEO age

The age of a CEO typically signifies years of accrued expertise. Moreover, it significantly influences a leader's perception of risks, acceptance of innovation, and response to market dynamics (Yim & Kang, 2024). As CEOs advance in age, their decision-making strategies may become more conservative, potentially resulting in a delayed reaction to market fluctuations (Oyinlola, 2025). Although the age of a CEO can produce diverse outcomes, older CEOs generally exhibit a reluctance to embrace audacious initiatives or innovative technologies, thereby impeding the company's agility in rapidly evolving sectors (Chowdhury & Fink, 2017). The study's findings substantiate this thesis, demonstrating a significant inverse correlation between CEO age and firm performance, so underscoring the difficulties associated with senior leadership in the contemporary competitive business landscape (Desir et al., 2024). From an agency theory standpoint, elder CEOs may elevate agency costs due to their risk aversion and inclination for stability, which diminishes alignment with shareholders' interests in fostering development and innovation (McClelland & O'Brien, 2011). Boards must reconcile the sagacity of experience with the imperative for innovation, ensuring that CEO leadership is congruent with long-term strategic objectives.

H6: CEO age has a strongly significant and negative effect on firm financial performance.

3. RESEARCH METHODOLOGY

This study applies a quantitative approach using panel data from non-financial companies listed on the IDX during 2017–2024. The population for this study comprises 817 non-financial companies, from which a sample of 24 companies was selected

through purposive sampling. The selection criteria included continuous listing on the IDX, no delisting or prolonged suspension, and availability of complete and publicly accessible annual reports. Secondary data were obtained from the official IDX and company websites, focusing on board characteristics and financial performance.

The dependent variable is return on assets (*ROA*), while the independent variables include *Board average, Board meeting, Board size, Board gender, CEO tenure*, and *CEO age*. Panel data regression analysis was conducted using three models: the common effect model (CEM), the fixed effect model (FEM), and the random effect model (REM). Although the Hausman test suggested FEM ($p < 0.05$), the CEM was chosen due to higher model fit (adjusted $R^2 = 0.2802$) and more significant coefficients on key variables. The Lagrange multiplier (LM) test confirmed panel effects ($p < 0.01$), and the endogeneity test indicated no serious bias. Thus, CEM was considered the most suitable to examine the general impact of board characteristics on financial performance in this context. This study uses a single regression model to assess the effect of board and CEO characteristics on ROA. The model is as follows:

$$Performance_{it} = \alpha + \beta_1 Board\ average_{it} + \beta_2 Board\ meeting_{it} + \beta_3 Board\ size_{it} + \beta_4 Board\ gender_{it} + \beta_5 CEO\ tenure_{it} + \beta_6 CEO\ age_{it} + \varepsilon_{it} \quad (1)$$

This study aims to evaluate the effect of board and CEO characteristics on financial performance, proxied by *ROA*. Using a single regression model, the analysis focuses on how board composition, diversity, and leadership attributes contribute to firm performance. The sample comprises non-financial firms listed consistently on the IDX during 2017–2024, with complete, publicly accessible annual and sustainability reports. In addition to panel data regression, alternative methods such as cross-sectional and time-series regression could be employed to analyze the relationship between board characteristics, CEO attributes, and firm performance. Cross-sectional analysis relies on data from a single period and, therefore, does not capture temporal dynamics. Time-series regression, while useful for identifying trends over time, is less suitable for studies involving multiple firms. More advanced techniques, such as dynamic panel models or the generalized method of moments (GMM), may address potential endogeneity issues but require larger samples and stronger assumptions. Therefore, panel data regression is considered the most appropriate method as it combines cross-sectional and time-series dimensions while controlling for unobserved firm-specific heterogeneity.

4. RESULTS AND DISCUSSION

4.1. Findings

The descriptive statistics presented in Table 1 provide an overview of the distribution and characteristics of the variables examined in this study. *ROA*, as a measure of firm financial performance, has a mean value of 0.116, indicating that firms in the sample generate an average return of 11.6% on their total assets. The standard deviation of 0.109 suggests moderate variation across firms, with *ROA* values ranging from 0.001 to 0.598. Regarding board characteristics, the average age of board sizes (*Board average*) is 60.468 years, with a standard deviation of 8.834, indicating considerable diversity in directors' age composition. *Board meeting* frequency exhibits a mean of 85.307 meetings per year and a relatively high standard deviation of 29.726, reflecting substantial differences in the intensity of board activities across firms. *Board size* averages 5.405 members, with a standard deviation of 1.485, suggesting moderate variability in the number of directors among the sampled firms.

Board gender diversity, measured using the Blau index, has a mean value of 0.253 and a standard deviation of 0.136, indicating variation in gender composition across corporate boards. CEO-related variables also display notable dispersion. *CEO tenure* has an average of 5.125 years, with a standard deviation of 7.156, ranging from newly appointed CEOs to those with extended tenures of up to 31.001 years. *CEO age* shows a mean of 54.849 years and a standard deviation of 6.016, with values spanning from 40 to 74 years. Overall, the mean values capture the central tendencies of the variables, while the standard deviations, along with the minimum and maximum values, highlight the degree of heterogeneity across firms included in the sample.

Table 1. Descriptive statistics of research variables

Variable	*Max*	*Min*	*Average*	*Std. dev.*
ROA	0.598	0.001	0.116	0.109
Board average	73.600	41.000	60.468	8.834
Board meeting	100.000	45.000	85.307	29.726
Board size	10.000	3.000	5.405	1.485
Board gender	0.479	0.056	0.253	0.136
CEO tenure	31.001	0.000	5.125	7.156
CEO age	74.000	40.000	54.849	6.016

The pairwise correlation matrix presented in Table 2 illustrates the strength and direction of the linear relationships among the research variables and provides an initial diagnostic assessment of their interconnections. This matrix helps identify whether governance-related variables move systematically together and offers preliminary insights into how board characteristics relate to firms' financial performance. The results indicate that *Board average* is positively correlated with *Board meeting* ($r = 0.418$), suggesting that firms with older boards tend to hold meetings more frequently. This relationship may reflect the tendency of more senior directors to emphasize formal governance processes, risk oversight, and compliance, which in turn increases the frequency of board meetings. Directors with greater age often possess accumulated experience and reputational capital, motivating more active engagement in monitoring activities.

In addition, *Board size* shows a significant positive correlation with *Board average* ($r = 0.187$), indicating that firms with larger boards tend to have older directors. This relationship may arise because larger boards often include senior experts,

former executives, or independent directors who are appointed for their experience and credibility. As firms expand their board size, they may prioritize seasoned individuals to enhance advisory capacity and legitimacy, thereby increasing the average age of board sizes. *Board size* is also positively correlated with *Board meeting* (r = 0.211), suggesting that a larger board size leads to more frequent meetings. Larger boards typically require more coordination and deliberation, which increases the need for formal meetings to accommodate diverse perspectives and ensure effective decision-making. Furthermore, *Board size* exhibits a positive association with *ROA* (r = 0.147), suggesting that broader board representation may contribute to improved financial performance by enhancing monitoring and resource provision.

Board gender displays a negative correlation with *Board size* (r = -0.177), indicating that as board size increases, gender diversity tends to decline. This pattern may reflect structural or institutional constraints on board appointments, in which proportional increases in female representation do not necessarily accompany expansions in board size. *CEO tenure* is positively correlated with *Board meeting* (r = 0.204), suggesting that firms led by long-tenured CEOs tend to operate under more active board oversight. This may indicate that prolonged CEO tenure triggers stronger monitoring mechanisms to mitigate potential entrenchment. Meanwhile, *CEO age* shows negative correlations with both *Board size* (r = -0.162) and *CEO tenure* (r = -0.168), suggesting that older CEOs are more likely to serve on smaller boards and have shorter remaining tenure, possibly due to succession planning considerations. Overall, these correlations provide preliminary evidence of the structural interdependence between board composition, leadership characteristics, and governance practices. While the correlation analysis does not imply causality, it offers important insights into the governance environment and serves as a diagnostic tool to assess potential multicollinearity issues before conducting multivariate regression analysis.

Table 2. Pairwise correlation matrix of research variables

Variable	*ROA*	*Board average*	*Board meeting*	*Board size*	*Board gender*	*CEO tenure*	*CEO age*
ROA	1.000						
Board average	0.031	1.000					
Board meeting	0.040	0.418***	1.000				
Board size	0.147**	0.187**	0.211***	1.000			
Board gender	0.045	-0.037	-0.090	-0.177**	1.000		
CEO tenure	-0.056	0.056	0.204***	-0.106	-0.089	1.000	
CEO age	-0.039	-0.037	-0.049	-0.162**	0.098	-0.168**	1.000

*Note: * p < 0.10, ** p < 0.05, *** p < 0.01.*

Based on the regression results reported in Table 3, this study evaluates the impact of board characteristics and CEO attributes on financial performance as measured by *ROA* using three panel data models: the CEM, FEM, and REM. Statistical tests and overall model performance guided model selection.

The Hausman test yields a statistically significant result ($\chi^2 = 17.41$; $p < 0.10$), indicating that the FEM is theoretically preferable to the REM because unobserved individual effects are correlated with the explanatory variables. In addition, the LM test is highly significant ($\chi^2 = 167.64$; $p < 0.01$), suggesting that panel effects exist and that pooled ordinary least squares (OLS) should be treated with caution. Despite these indications, the CEM is ultimately selected as the primary model for interpretation due to its superior explanatory power and overall model fit. Specifically, the CEM reports the highest adjusted R^2 value (0.2802), substantially higher than those of the FEM (0.0679) and REM (0.0659). This implies that the CEM explains approximately 28.02% of the variation in *ROA*, making it the most effective model in capturing the relationship between governance variables and financial performance in this dataset. From a practical and empirical perspective, the CEM, therefore, provides a more representative and interpretable estimation of *ROA*. The overall significance of the CEM is further supported by the F-statistic of 6.52 ($p < 0.01$), indicating that the independent variables jointly have a statistically significant effect on financial performance. This confirms that the model is well specified and suitable for further interpretation. Turning to the individual coefficients, *Board size* exhibits a positive and statistically significant effect on *ROA* at the 5% level (coefficient = 0.013). This result suggests that firms with larger boards tend to achieve better financial performance. From an agency theory perspective, larger boards may enhance monitoring effectiveness by incorporating a broader range of expertise, experience, and independent oversight. The presence of diverse skills and knowledge among board members can improve strategic decision-making and reduce agency conflicts, thereby contributing to higher profitability.

Board gender shows a highly significant positive relationship with *ROA* at the 1% level (coefficient = 0.332), indicating that gender diversity on boards strongly enhances financial performance. This finding can be explained by the fact that gender-diverse boards encourage more inclusive deliberation, reduce groupthink, and promote ethical and transparent governance practices. Such boards are more likely to consider diverse stakeholder interests and adopt balanced decision-making approaches, which ultimately strengthen firm performance. In contrast, *CEO tenure* has a negative and statistically significant effect on *ROA* at the 1% level (coefficient = -0.002). This suggests that prolonged CEO tenure may lead to managerial entrenchment, where long-serving CEOs accumulate excessive influence and become less responsive to board oversight. Over time, this can weaken monitoring effectiveness and reduce the firm's adaptability, resulting in lower financial performance. Similarly, *CEO age* is negatively associated with *ROA* and is highly significant at the 1% level (coefficient = -0.006). Older CEOs may exhibit greater risk aversion and

a stronger preference for established strategies, which can limit innovation and strategic flexibility. In rapidly changing business environments, such conservatism may hinder competitiveness and negatively affect firm performance. Meanwhile, *Board average* and *Board meeting* do not show statistically significant effects on *ROA* under the CEM. The insignificance of *Board average* suggests that the board's age composition alone does not directly influence financial outcomes without effective governance mechanisms. Likewise, the lack of significance for *Board meeting* indicates that meeting frequency does not necessarily translate into better performance, as meeting quantity does not always reflect meeting quality or decision effectiveness. Overall, the findings demonstrate that not all governance attributes exert equal influence on financial performance. Structural characteristics such as board size and gender diversity play a more decisive role, whereas certain demographic and activity-based measures have a limited direct impact. The strong model fit, significant F-statistic, and higher adjusted R^2 collectively justify the use of the CEM as the primary analytical framework for explaining ROA in this study.

Table 3. Regression results of board features and financial performance

Variable	*CEM*	*FEM*	*REM*
Dependent variable: Financial performance			
Constant	0.268 (0.085)***	0.392*	0.304**
Board average	0.000 (0.001)	0.000	0.000
Board meeting	0.000 (0.000)	-0.000	-0.000
Board size	0.013 (0.006)**	0.001	0.004
Board gender	0.332 (0.057)***	0	0.298**
CEO tenure	-0.002 (0.001)***	-0.002	-0.002
CEO age	-0.006 (0.001)***	-0.004	-0.004**
F-score	6.52***	1.81	17.41*
Adjusted R^2	0.2802	0.0679	0.0659
Hausman test	17.41*		
LM test	167.64***		

*Note: * p < 0.10, ** p < 0.05, *** p < 0.01.*

Table 4 presents the robustness check results using the two-step GMM estimation. This additional analysis is conducted to assess the consistency and reliability of the main findings by employing environmental, social, and governance (ESG) as a substitute variable. Since board characteristics constitute a core component of the governance dimension within the ESG framework, replacing the board-specific variables with ESG enables a broader evaluation of whether governance mechanisms systematically affect financial performance. The estimation results indicate that ESG maintains a positive and statistically significant association with firm financial performance (coefficient = 0.020; $p < 0.05$). This finding demonstrates that the main results remain stable even when governance quality is captured by a broader, aggregated construct rather than by individual board attributes. The continued significance of ESG confirms that the influence of board characteristics on financial performance is not sensitive to variable measurement and persists across alternative model specifications.

Moreover, the use of the two-step GMM estimator addresses potential endogeneity concerns arising from reverse causality and unobserved firm-specific effects. The robustness of ESG under this dynamic panel approach further strengthens the argument that governance quality plays a fundamental role in shaping firm performance, rather than being a spurious outcome of omitted variables or simultaneity bias. Industry and year fixed effects are incorporated to control for unobserved heterogeneity across sectors and time, ensuring that industry-specific characteristics or macroeconomic fluctuations do not drive the estimated relationship. Although no additional control variables are included in this specification, the R^2 value of 0.161 indicates a reasonable explanatory power for a dynamic panel model. Overall, the robustness check confirms that governance attributes — whether measured directly through detailed board characteristics or indirectly through the broader ESG framework — consistently and significantly influence financial performance. This consistency reinforces the validity of the main regression results and provides strong empirical support for the argument that effective corporate governance is a key determinant of firm financial outcomes.

Table 4. Robustness check results using two-step GMM estimation

Variable	*Two-step GMM estimation*
ESG	0.020 (0.007)**
Cons	0.333 (0.910)***
Control variable	No
Industry effect	Yes
Year effect	Yes
R^2	0.161
N	153

*Note: ** p < 0.05, *** p < 0.01.*

4.2. Discussion of the results

Hypothesis *H1* predicts that average board age is significantly associated with firm financial performance; however, the empirical results do not support this prediction, as average board age is found to have no significant effect on financial performance. This finding suggests that the experience and institutional knowledge commonly associated with older directors do not necessarily translate into improved financial outcomes, despite prior arguments that board age enhances monitoring effectiveness and reduces information asymmetry in line with agency theory (Agyemang Badu & Appiah, 2017; Ali et al., 2014). While earlier studies report that board composition characteristics such as directors' age and experience are positively related to firm performance through more effective governance and advisory roles (McIntyre et al., 2007;

Xu et al., 2018), the insignificant result observed in this study indicates that such benefits may be offset by potential drawbacks of higher average board age, including lower adaptability, reduced innovation, and greater resistance to organizational change (Chindasombatcharoen et al., 2023). Accordingly, the findings of this study supportthe view that board age does not consistently enhance financial performance and contradict prior empirical evidence that documents a positive association between board age characteristics and firm performance (Irawan & Agustia, 2026).

With regard to hypothesis *H2*, which proposes that board meeting frequency affects firm financial performance, the empirical findings reveal no statistically significant relationship between the two variables. This finding suggests that the frequency of board meetings alone may not be sufficient to improve financial outcomes, even though prior literature views board meetings as an important corporate governance mechanism that enhances monitoring and strategic oversight (Haque et al., 2025). From an agency theory perspective, frequent meetings are expected to reduce information asymmetry and managerial opportunism through closer supervision; nevertheless, the insignificant result indicates that such monitoring benefits may be limited when meetings are routine or lack substantive strategic engagement (Oon et al., 2025). Although empirical studies have documented that boards that meet more often are better positioned to address operational issues and respond to environmental changes, leading to stronger firm performance (Sahoo et al., 2023), the findings of this study are more consistent with evidence suggesting that an excessively high frequency of board meetings may generate diminishing returns and weaken their effectiveness in enhancing financial performance.

Consistent with the regression evidence, the significant positive effect of board size on ROA is further supported by the descriptive and correlation results. The descriptive statistics indicate a moderate variation in board size, ranging from three to 10 members, suggesting that firms in the sample actively adjust board composition to meet governance needs. The correlation analysis reveals that board size is positively associated with ROA, indicating that firms with broader board representation tend to achieve superior financial outcomes. This empirical pattern strengthens the argument that larger boards enhance firms' monitoring capacity and strategic advisory functions. From an agency theory perspective, an increase in board sizes reduces managerial discretion by intensifying oversight and distributing decision authority among directors with heterogeneous expertise. Such diversity enables boards to process complex information more effectively and respond proactively to competitive pressures, thereby improving financial performance. These findings align with prior studies emphasising the value of cognitive diversity and expertise within boards as drivers of superior firm outcomes (Ismael et al., 2026; Khan & Baker, 2024; Padilla-Angulo, 2020) and confirm that board size functions as a critical governance mechanism rather than a mere structural attribute.

The descriptive, correlation, and regression results further reinforce the significant and robust effect of board gender diversity on financial performance. As shown in Table 1, the Blau Index indicates meaningful variation in gender composition across firms, suggesting that gender diversity is not merely symbolic but substantively embedded in board structures. The regression results in Table 3 reveal a strong positive and highly significant relationship between board gender diversity and ROA under the CEM specification, indicating that firms with more gender-diverse boards achieve superior financial outcomes. This empirical evidence supports the theoretical argument that gender diversity enhances board effectiveness by fostering inclusive deliberation, reducing groupthink, and strengthening ethical oversight and stakeholder orientation (Porcena et al., 2021; Zaid et al., 2024). Notably, the robustness check using ESG as a substitute governance proxy confirms that these findings are not sensitive to model specification, as ESG remains positively and significantly associated with financial performance under the two-step GMM estimation. Since board gender diversity constitutes a core element of the governance pillar within the ESG framework, the persistence of significance further validates that inclusive board structures play a critical role in improving firm performance. Overall, these results reinforce the normative and empirical view that gender-diverse boards enhance governance quality and contribute to sustainable financial performance, thereby strengthening the argument for inclusive corporate governance practices (Porcena et al., 2021).

The negative and highly significant coefficient of CEO tenure on ROA is further supported by descriptive and correlation results, which reveal substantial heterogeneity in leadership tenure across firms. As shown in Table 1, CEO tenure ranges from newly appointed executives to tenures exceeding three decades, indicating uneven leadership renewal practices across the sample. While the correlation analysis in Table 2 shows a positive association between CEO tenure and board meeting frequency, this suggests that boards may intensify monitoring as CEO tenure lengthens, possibly as a response to entrenchment risks rather than as an indicator of effective governance. Consistent with agency theory, prolonged tenure may allow CEOs to accumulate informational advantages and influence over board processes, reducing the effectiveness of oversight despite increased meeting activity (Li & Yang, 2019). Over time, long-serving CEOs may become less adaptable, more resistant to strategic change, and increasingly committed to preserving existing power structures, thereby weakening firm responsiveness in dynamic environments (Ferdous et al., 2024; Kim et al., 2017). The persistence of this adverse effect in the regression results underscores that extended CEO tenure poses a structural governance challenge, highlighting the importance of continuous performance evaluation, succession planning, and board independence to mitigate managerial entrenchment and sustain financial performance.

The empirical results further reinforce the adverse effect of CEO age on firm financial performance. Descriptive statistics indicate that CEO age in the sample ranges widely from 40 to 74 years old, with a mean of 54.849 years, suggesting substantial heterogeneity in leadership maturity across firms. This variation is reflected in

the correlation analysis, where CEO age exhibits significant negative associations with both board size and CEO tenure, indicating that older CEOs tend to operate within more constrained governance structures and shorter remaining leadership horizons. Consistent with these preliminary patterns, the regression results reveal a highly significant negative relationship between CEO age and ROA, supporting the sixth hypothesis and aligning with the finding of Desir et al. (2024). While accumulated experience may enhance managerial judgment, prior studies document that older CEOs are more likely to display heightened risk aversion, slower strategic responsiveness, and resistance to innovation (Chowdhury & Fink, 2017; Oyinlola, 2025; Yim & Kang, 2024). From an agency theory perspective, increasing CEO age may exacerbate agency costs by weakening alignment with shareholders' interests and reducing strategic dynamism, particularly in competitive, rapidly evolving markets. These findings underscore that CEO age is not merely a demographic attribute but a governance-relevant factor that materially influences strategic behaviour and firm outcomes, highlighting the importance of age considerations in leadership succession and board oversight decisions.

5. CONCLUSION

This study provides comprehensive empirical evidence on how board characteristics and CEO attributes influence firm financial performance as measured by ROA. The findings demonstrate that not all governance mechanisms exert equal effects on performance. Board average and board meeting frequency are found to be insignificant, indicating that demographic seniority and procedural intensity alone do not directly translate into value creation. In contrast, structural and diversity-related governance mechanisms play a decisive role. Board size and board gender diversity exhibit significant positive effects on ROA, highlighting the importance of collective oversight capacity, cognitive diversity, and inclusive decision-making in mitigating agency problems and enhancing strategic effectiveness. On the leadership side, CEO tenure and CEO age show robust adverse effects on financial performance, supporting agency theory arguments regarding managerial entrenchment, risk aversion, and declining strategic dynamism over time. The robustness check using ESG as a substitute governance proxy further confirms the consistency of these results across alternative specifications and estimation techniques, strengthening the validity of the main findings. Overall, the study underscores that effective corporate governance is driven more by diversity, balance, and accountability than by experience or activity levels alone.

Based on these findings, firms are encouraged to focus on optimising board structure and composition rather than relying on seniority or frequent meetings as indicators of governance quality. Policymakers and shareholders should promote board designs that emphasise adequate board size and meaningful gender diversity, as these attributes consistently enhance monitoring quality and strategic decision-making. Additionally, boards should actively manage CEO-related governance risks by implementing regular performance evaluations, tenure limits, and well-structured succession planning to prevent managerial entrenchment and strategic stagnation. From a practical perspective, firms should view CEO age and tenure as dynamic governance considerations rather than fixed personal characteristics, ensuring that leadership remains adaptive to changing market conditions. For future research, expanding the analysis to include additional governance dimensions, alternative performance measures, or cross-country comparisons would further enrich the understanding of how governance mechanisms interact with institutional contexts to shape firm performance. This study has several limitations. First, the sample is restricted to non-financial firms listed on the IDX, which may limit the generalizability of the findings. Second, firm performance is measured only by ROA, which may not fully capture other dimensions of performance. Third, although panel regression techniques are applied, potential endogeneity and unobserved firm-specific factors may still affect the results. Future research may address these limitations by using alternative performance measures, broader samples, and extended time periods.

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