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Board gender diversity, financial performance, ESG and audit committee: Capturing 'glass cliff' phenomenon in emerging market

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ABSTRACT

This study investigates the effect of board gender diversity on financial performance, using ESG performance and audit committee expertise as moderating variables. Utilizing a purposive sampling approach, a sample of 31 firms from the technology, healthcare, and energy sectors listed on the Indonesia Stock Exchange (IDX) between 2022 and 2023 was selected. The data were analyzed using panel data regression analysis. The results indicate that board gender diversity fails to significantly affect financial performance. Furthermore, ESG performance and audit committee expertise do not moderate the gender diversity and. financial performance dynamic. However, sensitivity tests employing alternative proxies for board gender diversity and financial performance reveal that the presence of female directors significantly affects accounting-based performance (ROE and ROA). Conversely, audit committee expertise positively moderates the impact of female directors on market-based performance (Tobin's Q) across all board gender diversity proxies. Based on these findings, future research should employ the Blau and Shannon indexes to capture board gender diversity during post-crisis periods. Additionally, investors are advised to closely monitor firms with robust audit committee expertise, while policymakers are encouraged to formulate regulations that promote board consolidation with audit committees possessing advanced accounting and financial expertise during turbulent times.

Introduction

Financial performance remains vital for measuring and predicting companies' future prospects from the perspectives of academics, practitioners and regulators alike (Azmi et al., 2026; Báez et al., 2018; Inawati & Rahmawati, 2023; Rhayhan et al., 2023; Vuong, 2022). Within the contemporary business landscape, corporate governance particularly board gender diversity has emerged as a critical determinant of financial success (Arquisola et al., 2018; Juniarti & Jie, 2024; Ranta & Ylinen, 2023). Gender diversity has become a prominent global issue over the last decade (Adusei et al., 2017; Dwaikat et al., 2021; Hazaea et al., 2023; Saha & Maji, 2022), as this dimension is widely recognized to enhance both financial and non-financial performance (Abbas & Frihatni, 2023; Valls Martínez & Cruz Rambaud, 2019; Yap et al., 2017). Nevertheless, the empirical link between board gender diversity and financial performance remains ambiguous and inconclusive (Al-Jaifi, 2020; Issa et al., 2021; Yami et al., 2026), thereby warranting further examination.

The long-standing debate regarding the impact of board gender diversity on financial performance stems from several factors. First, the dynamics of these two variables produce mixed findings, which are classified into positive (Grishunin et al., 2024; Mvita & Du Toit, 2024; Sahu et al., 2025), negative (Abbas & Frihatni, 2023; Adusei et al., 2017; Altarawneh et al., 2026), and non-significant outcomes (Al-Shaer et al., 2024; Murhadi et al., 2021; Saha & Kabra, 2019). Second, in developing markets such as Indonesia, woman leaders are still perceived negatively and face inequality within professional settings (Báez et al., 2018; Dwaikat et al., 2021; Kurnianto & Soewarno, 2024). Lastly, the appointment of women directors is frequently akin to the 'glass cliff' phenomenon and acts as a tokenistic gesture to adhere to regulatory framework and social pressure toward gender equality (Hurley & Choudhary, 2020; Issa et al., 2021; Menicucci & Paolucci, 2024; Valls Martínez & Cruz Rambaud, 2019). Prompted by these rationales, this study reexamines the effect of board gender diversity on financial performance by incorporating ESG and audit committee as moderators among technology, healthcare, and energy sectors in Indonesian listed companies.

Indonesia, as an emerging economy, provides a rich and insightful setting for reexamining the nexus between board gender diversity and financial performance. As one of the ASEAN nations, Indonesia exhibits weak shareholder protection that pales in comparison to developed countries (Al-Jaifi, 2020). Gender diversity remains sub-optimal in this country, as evidenced by the lack of female representation in board and governance structures (Abbas & Frihatni, 2023). This contention is reinforced by Kurnianto and Soewarno (2024), who point out that

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Indonesia still lags behind its Asian counterparts in terms of gender equality and was ranked the lowest for gender equality in ASEAN in 2021. Nonetheless, the gender parity rate in this country has gradually increased over the years (Juniarti & Jie, 2024); furthermore, recent data from the IFC (2025) reveals that Indonesia possesses the highest proportion of female board chairs (11.7%) in Asia. In sum, investigating the board gender diversity–financial performance dynamics within the Indonesian context offers a compelling opportunity to provide a more nuanced perspective through refined sector selection and previously unobserved moderating variables.

Stream of research predominantly concentrates on the nexus between board gender diversity and financial performance during periods of economic stability, with the notable exception of Abbas and Frihatni (2023), who investigated this link under distressed conditions. Accordingly, we attempt to empirically test the 'glass cliff' phenomenon, whereby during turbulent periods, companies appoint women to directorial roles not necessarily for their competence, but to absorb the blame for corporate failure. Specifically, we investigate three sectors that suffered severe financial declines right after COVID-19 in Indonesia from IDX Yearly Statistics 2023, namely technology, healthcare, and energy sectors (IDX, 2023). Reflecting Indonesia's two-tier governance structure, this study focuses specifically on the gender diversity of the board of directors as opposed to the board of commissioners, given that gender diversity exerts a more profound impact at the highest echelons of decision-making (Ouni et al., 2020).

The pervasive empirical inconsistencies in the board gender diversity–performance relationship, driven by institutional, sectoral, and methodological heterogeneities (Issa et al., 2021; Kurnianto & Soewarno, 2024; Maji & Saha, 2021; Valls Martínez & Cruz Rambaud, 2019; Yap et al., 2017), warrant the exploration of moderating mechanisms (Altarawneh et al., 2026). Diverging from contemporary research that heavily relies on ESG as a solitary moderator (Altarawneh et al., 2026; Miharja et al., 2023; Sahu et al., 2025), this study pioneers a dual-moderation framework by integrating both ESG and audit committee expertise, thereby addressing a critical literature gap highlighted by Hazaea et al. (2023). This study intentionally prioritizes audit committee expertise over independence. Given our focus on financial performance, expertise directly enhances the committee's advisory capabilities, enabling them to guide the board toward maximizing financial outcomes (Al Lawati & Hussainey, 2021), a notion heavily supported by Chaudhry et al. (2020). Conversely, excessive independence can restrict the committee's access to firm-specific operational insights, thereby clouding their holistic assessment of complex financial issues (Al-Shaer et al., 2024).

Building on established evidence linking board gender diversity to financial performance (Juniarti & Jie, 2024; Shahzad et al., 2020), this study offers a comprehensive framework by intertwining resource dependence, upper echelons, and agency theories to explicate our conceptual model. From the resource dependence perspective, female directors are viewed as crucial external resources who provide strategic insights and enrich the firm's outlook, thereby improving financial outcomes (Awad & Ghanem, 2023; Dakhlallh et al., 2020). Concurrently, under the upper echelons theory, gender diversity equips the board with unique cognitive and demographic attributes which enhance strategic decision-making (Anwar et al., 2026; Issa et al., 2021; Ouni et al., 2020), particularly in embedding ESG principles into business strategies. Firms with superior ESG disclosures demonstrate greater corporate resilience during crises (Gao & Geng, 2024) and build stronger stakeholder reputation and trust (Ahmad et al., 2026). On the other hand, agency theory posits that female directors are more prudent and diligent, thereby strengthening oversight mechanisms (Chijoke-Mgbame et al., 2020; Yap et al., 2017), a function further augmented by the audit committee expertise (Al Lawati & Hussainey, 2021).

Thus, this study was conducted to provide answers to the following questions: does board gender diversity affect financial performance (RQ1); does ESG moderate the relationship between board gender diversity and financial performance (RQ2); and does audit committee expertise moderate the relationship between board gender diversity and financial performance (RQ3)?

This study employs panel data regression with fixed and random effect model. We compile data for 2022 until 2023, signifies the new normal phase after COVID-19 pandemic. Beyond baseline estimations, we execute a series of sensitivity analyses employing alternative proxies for both board gender diversity and financial performance to ensure empirical robustness. Our findings offer nuanced insights. While a linear headcount proxy (percentage of female directors) yields non-significant direct and moderated effects on accounting performance (ROE), comprehensive diversity metrics, namely the Blau and Shannon indexes, reveal significant negative associations with both ROE and ROA. Crucially, the audit committee expertise exerts a significant, moderating effect on market-based performance (Tobin's Q) across all diversity specifications.

Our study offers several contributions for board gender diversity-financial performance dynamics. Theoretically, this study underscores the necessity of operationalizing gender diversity via structural indexes (Blau and Shannon) rather than crude headcount ratios in post-crisis governance research. Furthermore, our study extends resource dependence theory by incorporating upper echelons and agency theory to examine the dual governance moderation, namely ESG and audit committee expertise simultaneously. Practically, the nuances documented herein serve as a strategic roadmap for emerging market firms and regulators. Amid heightened economic turbulence, market participants may exhibit skepticism toward women board directors and firm sustainability; however, our evidence indicates that deploying audit committees with rigorous financial expertise effectively assuages investor concerns over going-concern stability. Therefore, we provide an empirical justification for

regulators to mandate stricter requirements for specific accounting and financial expertise within oversight committees, ultimately enhancing market-wide governance standards.

Literature Review

Resource Dependence Theory

Resource dependence theory, originally pioneered by Pfeffer and Salancik (1978), posits that organizations must secure critical external resources to thrive. We adopt this framework as our overarching theoretical lens, conceptualizing board gender diversity as a vital external resource. Businesses operate within open systems that continuously interact with their external environments (Ouni et al., 2020), the board of directors' functions as a primary provider of critical resources (Issa et al., 2021). While Hazaea et al. (2023) document that resource dependence is the second most prevalent framework in gender diversity literature, following agency theory, we argue that it offers superior explanatory power for our current model. Consistent with Valls Martínez and Cruz Rambaud (2019), this perspective provides the most logical foundation for examining gender diversity in corporate governance context.

This theory postulates that female directors introduce specialized competencies and distinct skill sets that facilitate strategic external alliances, thereby enhancing both board oversight and corporate performance (Grishunin et al., 2024). Furthermore, audit committees' expertise complements this dynamic by assisting firms in managing their environmental resource dependencies (Al-Shaer & Zaman, 2018), given their superior capacity to navigate complex financial and reporting contingencies (Dakhlallh et al., 2020). Grounded in this resource-centric perspective, directors' cognitive and experiential attributes, such as their psychological traits and professional backgrounds, are vital for operationalizing proactive ESG practices that address complex socio-environmental concerns (Menicucci & Paolucci, 2024). Ultimately, superior ESG integration serves as a conduit for securing critical strategic resources, thereby yielding a sustained competitive advantage (Gao & Geng, 2024).

Upper Echelons Theory

Hambrick and Mason (1984) pioneered the upper-echelons theory, which asserts that the personal and demographic characteristics of executives determine a firm's strategic choices. In other words, a firm's strategic behaviors, such as ESG disclosure, reflect the collective personalities and perspectives of its top management team (Adusei et al., 2017). This theory suggests that demographic traits, including gender, shape managers' cognitive bases (Ouni et al., 2020). Specifically, female directors tend to exhibit heightened awareness toward corporate governance practices (Al-Jaifi, 2020), driving them to contend proactive ESG initiatives (Saktiawan et al., 2026). Consequently, the upper echelons perspective emphasizes that female directors possess distinct cognitive attributes critical for driving corporate success, particularly because ESG disclosure serves as a significant determinant bridging board gender diversity and financial outcomes (Sahu et al., 2025).

Agency Theory

Agency theory, originally introduced in the seminal work of Jensen and Meckling (1976), centers on the conflict of interest between principals and agents, driven by self-serving behaviors. This misalignment induces agency problems that necessitate robust internal monitoring mechanisms, such as audit committees, to mitigate corporate friction (Chaudhry et al., 2020). Although agency theory primarily highlights the shareholder-manager dynamic, the presence of female directors and audit committees provides an additional layer of oversight to protect firm welfare from managerial opportunism (Yap et al., 2017). The amalgamation of female directors and effective audit committees strengthens monitoring practices to oversee managerial conduct, aligning closely with agency perspective (Dwaikat et al., 2021). Moreover, the financial and accounting expertise of audit committee effectively mitigates agency costs arising from inherent agency problem (Nawafly & Alarussi, 2019).

Financial Performance

A firm's financial performance serves as a primary indicator of its long-term operational viability and health (Arquisola et al., 2018; Vuong, 2022), enabling stakeholders to evaluate its efficiency in generating profits, controlling expenses, and optimizing asset utilization (Kurnianto & Soewarno, 2024). To thoroughly evaluate this dimension within emerging markets, this study operationalizes both accounting-based and market-based metrics. Unlike accounting-based indicators (e.g., ROE and ROA) that capture backward-looking historical profitability over a fiscal period, market-based metrics reflect forward-looking stakeholder perceptions and comprehensive market valuations (Juniarti & Jie, 2024). Because market-based performance heavily relies on investor sentiments (Ma et al., 2024), a firm's capacity to strategically manage its reputation among investors directly translates into superior market valuation.

Board Gender Diversity

Directors from diverse gender backgrounds contribute multi-faceted and creative viewpoints to the boardroom, thereby boosting corporate competitiveness (Hazaea et al., 2023; Valls Martínez & Cruz Rambaud, 2019). However, the presence of women on the board leaves an open empirical question regarding its precise financial implications for firms (Mvita & Du Toit, 2024). While several international organizations advocate for gender diversity as a pillar of robust governance mechanisms (Menicucci & Paolucci, 2024), its underlying channels are explained through distinct theoretical lenses. From a resource dependence perspective, female directors are viewed as critical intellectual assets who equip firms with strategic insights (Abbas & Frihatni, 2023). Concurrently, agency theory posits that female board representation strengthens corporate oversight and mitigates communication barriers by stimulating diverse viewpoints to drive corporate optimization (Azmi et al., 2026). Collectively, female directors enrich the board's cognitive capacity and strategic reasoning, aligning it with long-term institutional goals (Ouni et al., 2020). Nevertheless, crystallizing these institutional benefits presents unique challenges within developing market contexts (Al-Shaer et al., 2024).

Environmental, Social, and Governance (ESG)

ESG is a comprehensive framework designed to evaluate a firm's sustainability profile and institutional impact across three core dimensions: environment, social, and governance (Salsabilla & Kusumawardani, 2023). Extant literature demonstrates that robust ESG practices enhance market reputation and bolster corporate resilience during crises (Ahmad et al., 2026; Gao & Geng, 2024). A strategic focus on ESG factors enables firms to secure a distinct competitive advantage to boost corporate success (Inawati & Rahmawati, 2023; Lubis & Rokhim, 2021) and mitigate idiosyncratic ESG risks (Sahu et al., 2025). Concurrently, firms with superior sustainability integration attract a lower cost of capital, driven by capital markets perceiving them as less risky (Chininga et al., 2024). Globally, escalating climate change risks remain a primary catalyst driving prevalent ESG attention among corporations and stakeholders alike (Ahmad et al., 2026; Jucá et al., 2024). Consequently, regulatory shifts and market forces increasingly compel companies, particularly those operating in high-environmental-impact sectors, to embed ESG frameworks into their core corporate agendas and expand their non-financial disclosures (Al-Shaer & Zaman, 2018; Altarawneh et al., 2026).

Audit Committee

The audit committee represents one of the primary standing committees established to assist the board of commissioners in countries operating under a two-tier board system, and it is specifically tasked with monitoring and appraising firm performance (Abbas & Frihatni, 2023; Gautama et al., 2017). By safeguarding financial statement integrity, regulatory compliance, and internal control efficacy, this committee serves as a cornerstone of the corporate governance framework (Awad & Ghanem, 2023; Nawafly & Alarussi, 2019). To fulfill this mandate, its composition typically requires members to possess specialized credentials and professional experience in accounting and finance (Dakhlallh et al., 2020). Prior literature emphasizes that such financial competence significantly elevates the quality of board oversight and strategic decisions (Al Lawati & Hussainey, 2021). Ultimately, an audit committee endowed with rigorous financial expertise functions as an indispensable internal governance mechanism to mitigate information asymmetry (Ma et al., 2024) and capture superior firm performance (Chaudhry et al., 2020).

The Effect of Board Gender Diversity on Financial Performance

The board of directors manages and represents the corporation by establishing long-term goals, policies, and strategies (Valls Martínez & Cruz Rambaud, 2019). Grounded in resource dependence theory, the board is conceptualized as a critical external resource necessary for attaining superior performance (Pfeffer & Salancik, 1978), a function that becomes increasingly vital when directors possess heterogeneous characteristics, such as gender diversity (Al-Shaer et al., 2024; Báez et al., 2018). Extant studies demonstrate that female representation on corporate boards promotes enhanced financial outcomes regarding ROA, ROE, and market value (Abbas & Frihatni, 2023; Al-Jaifi, 2020; Dwaikat et al., 2021). Gender-diverse boards are better equipped to supply distinct viewpoints and innovative ideas, thereby generating a sustained competitive advantage (Saha & Maji, 2022; Yap et al., 2017). This diversity optimizes strategic decision-making because male and female directors possess complementary cognitive qualities that enrich the board's collective reasoning (Juniarti & Jie, 2024; Sari & Fitriani, 2023). Specifically, women tend to display risk-averse, prudent, and diligent characteristics, making them uniquely suited for financial oversight and performance optimization (Gallucci et al., 2020; Hurley & Choudhary, 2020; Maji & Saha, 2021; Murhadi et al., 2021). Furthermore, gender inclusion fosters corporate innovation (Issa et al., 2021) while simultaneously elevating corporate reputation among external investors and consumers (Adusei et al., 2017).

Consequently, inclusive enterprises secure stronger market positioning and superior financial success. Hence, we propose the following hypothesis:
H_1: Board gender diversity has a positive effect on financial performance.

ESG Moderates the Effect of Board Gender Diversity on Financial Performance

Upper-echelons theory posits that the board of directors maintains substantial control over corporate strategic choices (Hambrick & Mason, 1984), particularly regarding sustainable initiatives such as ESG. Adusei et al. (2017) highlight how the acumen and aptitude of board directors interact to reflect a firm's strategic behavior in disclosing its ESG commitment. Given the ongoing empirical ambiguity surrounding the direct nexus between gender diversity and financial performance, integrating contextual moderating variables, such as corporate ESG engagement, is essential to clarify this relationship (Miharja et al., 2023). Prior studies offer compelling evidence regarding the moderating role of ESG disclosure on the board gender diversity–financial performance relationship (Altarawneh et al., 2026; Sahu et al., 2025). As ESG integration remains vital to the contemporary corporate agenda (Al-Shaer & Zaman, 2018), female leaders within the upper echelons tend to approach it with heightened strategic focus. Female directors typically manifest greater awareness regarding environmental and social issues (Menicucci & Paolucci, 2024), driving comprehensive ESG disclosures that ultimately secure long-term financial returns (Chininga et al., 2024). Board gender diversity and ESG commitments are thus intrinsically intertwined; a higher representation of women on the board signals robust sustainability performance (Saktiawan et al., 2026). From an upper-echelons perspective, active ESG disclosure is a strategic outcome executed by female leadership to promote governance transparency (Ouni et al., 2020). Consequently, robust ESG practices enable firms to unlock and convert the benefits of gender diversity into optimized financial success. Therefore, we hypothesize:
H_2: ESG moderates positively the relationship between board gender diversity and financial performance.

Audit Committee Expertise Moderates the Effect of Board Gender Diversity on Financial Performance

The audit committee plays a pivotal role in ensuring the accuracy of corporate financial reporting, statutory compliance, and the enforcement of sound governance protocols, thereby serving as an essential mechanism to amplify the financial impact of board gender diversity (Awad & Ghanem, 2023; Gautama et al., 2017; Nawafly & Alarussi, 2019). In this regard, Hazaea et al. (2023) underscore the audit committee as a vital moderating factor in elucidating the complex dynamics between female directors and firm performance. Based on agency theory, an effective audit committee provides the stringent oversight and control necessary to capitalize on the governance benefits of a gender-diverse board (Al-Jaifi, 2020; Al-Shaer et al., 2024; Grishunin et al., 2024; Jensen & Meckling, 1976). This specialized monitoring structure optimizes strategic decision-making quality and fortifies stakeholder relations, ultimately driving financial performance (Abbas & Frihatni, 2023). In tandem, the audit committee mitigates agency costs by diminishing information asymmetry and curtailing principal–agent conflicts through interest alignment (Altarawneh et al., 2026; Azmi et al., 2026; Ma et al., 2024). Therefore, a highly competent audit committee functions as a complementary monitoring tool that bolsters the positive association between board gender diversity and financial performance (Al Lawati & Hussainey, 2021; Chijoke-Mgbame et al., 2020; Maji & Saha, 2021). Given these insights, we formulate the following hypothesis:
H_3: Audit committee expertise moderates positively the relationship between board gender diversity and financial performance.

The hypothesized relationships among the variables are illustrated in the research model presented in Figure 1.

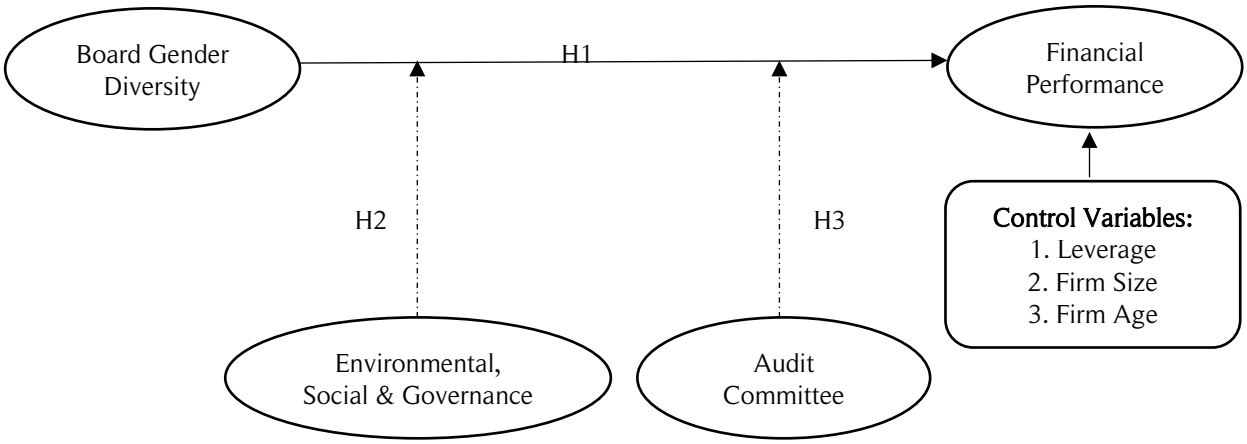

Figure 1. Research Model

Research Method

Using corporate ESG disclosures and audit committee attributes as moderating variables, this study examines the impact of board gender diversity on financial performance across 123 companies in the technology, healthcare, and energy sectors listed on the IDX between 2022 and 2023. These specific sectors were selected based on market data indicating that they experienced the most severe financial performance downturns during the post-pandemic transition period (IDX, 2023). We employ a purposive sampling method based on predefined criteria. Applying this screening protocol yields a final sample of 31 companies over a two-year observation window, resulting in a balanced panel of 62 firm-year observations. The sample matrix comprises three technology firms, 10 healthcare enterprises, and 18 energy corporations.

The dependent variable in this study is financial performance, which reflects a firm's operational health and its capacity to efficiently allocate resources to meet strategic business objectives (Nkote & Jakweyo, 2024). Consistent with Dwaikat et al. (2021), we operationalize financial performance using Return on Equity (ROE) as our primary accounting-based metric. Concurrently, the independent variable is board gender diversity, defined as the proportional representation of female directors within the firm's leadership structure. Following Valls Martínez and Cruz Rambaud (2019), this study utilizes the continuous percentage of female directors relative to total board seats to gauge the depth of boardroom gender diversity. Comprehensive definitions and operational measurements for all variables are summarized in Table 1.

Table 1. Variable Measurement

Acronym	Variable	Indicator	Source
Dependent Variable			
ROE	Financial Performance	ROE = Earnings After Tax / Total Shareholders' Equity	Dwaikat et al. (2021)
Independent Variable			
PW	Board Gender Diversity	PW = Number of Women on the Board of Directors / Number of Members of the Board of Directors	Valls Martínez & Cruz Rambaud (2019)
Moderation Variables			
ESGD	Environmental, Social, Governance Disclosure	ESG Disclosure = n/k, measured using Global Reporting Initiative (GRI) standards Where: (1) n = Number of GRI items disclosed in annual report (2) k = Total GRI items	Inawati & Rahmawati (2023)
AC	Audit Committee Expertise	AC = Number of Audit Committees with Accounting and/or Finance Expertise/Number of Audit Committees	Gautama et al. (2017)
Control Variables			
LEV	Leverage	DER = Total Liabilities / Total Shareholders' Equity	Dwaikat et al. (2021)
SIZE	Firm Size	SIZE = ln (Total Assets)	Gallucci et al. (2020)
AGE	Firm Age	AGE = Research Year – Year the Firm was Founded	Shahzad et al. (2020)
Dependent Variables (Sensitivity Test)			
ROA	Financial Performance	$\frac{\text{Net Income}}{\text{Average Total Assets}}$	Grishunin et al. (2024)
Tobin's Q		$\frac{\text{Total Liabilities + Market Value of Equity}}{\text{Total Assets}}$	
Independent Variables (Sensitivity Test)			
BI	Blau Index (Board Gender Diversity)	$BI = 1 - \sum_{i=1}^{K} p_i^2$ Where: p_i = Proportion of Unit Members k = Categories of Members	Maji & Saha (2021)
SI	Shannon Index (Board Gender Diversity)	$SI = -\sum_{i=1}^{K} p_i \times ln\, p_i$ Where: p_i = Proportion of Unit Members k = Categories of Members ln = Natural Logarithm	Maji & Saha (2021)
DV	Dummy Variable (Board Gender Diversity)	A dichotomous dummy variable was operationalized to capture the presence of female representation on the board, assigned a value of 1 if the board included at least one female director, and 0 otherwise.	Dwaikat et al. (2021)

Source: Author's Works (2026)

This study employs two moderating variables: ESG and audit committee expertise. In this study, ESG is assessed using the GRI standard (Inawati & Rahmawati, 2023), whereas audit committee expertise is determined by the proportion of audit committee members with accounting and/or financial experience (Gautama et al., 2017). Leverage, firm size, and firm age are the three control variables that are featured in this study. The debt-to-equity ratio (DER) was employed as a leverage measure in this study (Dwaikat et al., 2021). The natural logarithm of a company's total assets may be used to calculate the firm's size (Gallucci et al., 2020). The age of a firm is calculated by subtracting the year of observation from the year the company was created (Shahzad et al., 2020). Using Stata 17 software, panel data regression analysis approaches are used in this research. Therefore, the regression equation used to test these hypotheses includes the following.

Model 1:

$$ROE = \alpha + \beta_1 PW_{it} + \beta_2 LEV + \beta_3 SIZE_{it} + \beta_4 AGE_{it} + e$$

Model 2:

$$ROE = \alpha + \beta_1 PW_{it} + \beta_2 ESGD_{it} + \beta_3 PW^{*}ESGD_{it} + \beta_4 LEV + \beta_5 SIZE_{it} + \beta_6 AGE_{it} + e$$

Model 3:

$$ROE = \alpha + \beta_1 PW_{it} + \beta_2 AC_{it} + \beta_3 PW^{*}AC_{it} + \beta_4 LEV + \beta_5 SIZE_{it} + \beta_6 AGE_{it} + e$$

The analytical procedure initiates with descriptive statistics, followed by panel data diagnostic tests to determine the optimal model specification. Specifically, this study estimates Model 1 and Model 3 using the Random Effects Model (REM) framework, whereas Model 2 is operationalized via the Fixed Effects Model (FEM). Subsequent to model selection, hypothesis testing is conducted utilizing partial t-tests. To ensure the empirical robustness of our baseline findings, we further execute a series of sensitivity tests aimed at evaluating whether the primary results are contingent upon specific operationalizations. These sensitivity checks are performed by systematically varying the proxies for both dependent and independent variables. Specifically, financial performance is re-estimated using ROA and Tobin's Q to capture both accounting-based and market-based metrics, while board gender diversity is substituted with the Blau Index, Shannon Index, and dummy variable to validate our findings across alternative structural models.

Results and Discussion

This study analyzes a final sample of technology, healthcare, and energy companies listed on the Indonesia Stock Exchange (IDX) during the 2022–2023 period, yielding a balanced panel of 62 firm-year observations from 31 distinct companies. Table 2 presents the descriptive statistics for all the variable. The mean ROE is 0.147, with a standard deviation of 0.228. Because the standard deviation exceeds the mean value, the sample exhibits substantial cross-sectional variation in accounting profitability, with ROE values ranging from -0.369 to 1.219. Regarding board gender diversity (PW), the mean value stands at 0.218 with a standard deviation of 0.256, spanning from a minimum of 0.000 to a maximum of 0.800; this dispersion indicates high structural heterogeneity across the sampled corporate boards. Conversely, ESG disclosure displays greater convergence, characterized by a mean score of 0.658 and a relatively low standard deviation of 0.186. The ESG disclosure score ranges from a minimum of 0.175 to a maximum of 0.988, reflecting significant disparities between lagging and exemplary sustainability disclosure practices. Finally, audit committee expertise (AC) exhibits a mean of 0.653 and a standard deviation of 0.294, bounded by a minimum of 0.000 and a maximum of 1.000, illustrating varying degrees of technical financial competence within the sample oversight structures.

Table 2. Descriptive Statistics

Variable	Obs.	Mean	Std. Dev.	Max.	Min.
ROE	62	0.147	0.228	1.219	-0.369
ROA	62	0.090	0.127	0.603	-0.121
Tobin's Q	62	1.612	1.411	7.569	0.245
PW	62	0.218	0.256	0.800	0.000
BI	62	0.212	0.207	0.500	0.000
SI	62	0.311	0.300	0.693	0.000
DV	62	0.532	0.503	1.000	0.000
ESGD	62	0.658	0.186	0.988	0.175
AC	62	0.653	0.294	1.000	0.000
LEV	62	1.023	1.003	5.352	0.072
SIZE	62	29.986	1.337	32.758	26.576
AGE	62	37.435	13.605	63.000	9.000

Source: Data Processed (2026)

Leverage (LEV) reports a mean of 1.023 and a standard deviation of 1.003, spanning from a minimum of 0.072 to a maximum of 5.352. Firm size (SIZE) exhibits a mean of 29.986 and a standard deviation of 1.337, bounded by a minimum of 26.576 and a maximum of 32.758. Meanwhile, firm age (AGE) averages 37.435 years (SD = 13.605), with a maximum of 63 years, reflecting established organizational resilience, and a minimum of 9 years. Regarding the sensitivity test proxies, the sample exhibits a lower return on assets relative to equity, which is a standard consequence of leverage structures. Furthermore, these sectors command a substantial market premium, evidenced by a mean Tobin's Q exceeding unity at 1.612. In terms of alternative board gender diversity metrics, the sample reflects low overall baseline gender representation, with the mean Blau Index (BI) and Shannon Index (SI) standing at 0.212 and 0.311, respectively. Nevertheless, certain firms approach full gender parity, capturing maximum scores of 0.500 (BI) and 0.693 (SI). Finally, the dichotomous dummy variable reveals that 53.2% (0.532) of the observed firm-year sample features at least one female director serving on the board.

Table 3. Model Selection Test

Description	Model 1		Model 2		Model 3	
	Hausman Test		Hausman Test		Hausman Test	
	FE	RE	FE	RE	FE	RE
Prob > Chi2	0.3001 (RE)		0.0269 (FE)		0.4212 (RE)	

Source: Data Processed (2026)

To identify the optimal model specification, we perform a series of panel diagnostic checks, where the Hausman specification test determines the appropriate estimator for each model. As reported in Table 3, the Hausman test failed to reject the null hypothesis for our baseline regression (Model 1) and the audit committee moderation model (Model 3), justifying the utilization of the REM. Conversely, the null hypothesis was rejected for the ESG moderation framework (Model 2), necessitating a FEM specification. To safeguard our FEM estimation against collinearity inflation, we execute variance inflation factor (VIF) diagnostics. This multicollinearity test is also crucial to ensure that our profitability metric (ROE) is not heavily influenced by the DER (LEV). Table 4 presents the multicollinearity test results; since all VIF values fall safely below the conservative threshold of 10, we infer that multicollinearity does not contaminate our empirical specifications. The subsequent empirical phase transitions to main hypothesis test, as documented in Table 5.

Table 4. Multicollinearity Test

Variable	ROE	
	VIF	1/VIF
PW	1.24	0.8096
ESGD	1.96	0.5106
AC	2.22	0.4510
LEV	1.08	0.9302
SIZE	1.29	0.7769
AGE	1.33	0.7538

Source: Data Processed (2026)

Table 5. Hypothesis Test Results

	Model 1		Model 2		Model 3	
	Coefficient	p-value	Coefficient	p-value	Coefficient	p-value
PW	-0.1410	0.148	0.0065	0.985	-0.1521	0.659
ESGD	-	-	-0.0226	0.911	-	-
PW*ESGD	-	-	0.2737	0.523	-	-
AC	-	-	-	-	-0.2309	0.306
PW*AC	-	-	-	-	-0.1135	0.806
LEV	-0.0769	0.012**	-0.1944	0.244	-0.0641	0.028**
SIZE	0.0777	0.002***	0.2683	0.305	0.0564	0.025**
AGE	-0.0050	0.070*	-0.0749	0.053*	-0.0033	0.123
F-statistic	0.0041***		0.0339**		0.0004***	
Adjusted R Square	27.46%		7.69%		38.62%	

Notes: * p < 0,10; ** p < 0,05; *** p < 0,01

Source: Data Processed (2026)

Table 5 documents the empirical estimations and partial t-test significance results for each hypothesized pathway. The first hypothesis (H1), which posits a positive direct link between board gender diversity and financial

performance, is rejected (β = -0.141, p-value = 0.148), indicating a statistically insignificant and negative relationship. Similarly, the second hypothesis (H2) is rejected (β = 0.274, p-value = 0.523), demonstrating that ESG disclosure does not exert a significant moderating influence on this nexus. Regarding the third hypothesis (H3), the interaction term yields an insignificant coefficient (β = -0.114, p-value = 0.806), implying that audit committee expertise fails to moderate the relationship between board gender diversity and firm performance; hence, H3 is rejected. Conversely, the control variables display distinct and significant impact. Leverage operates as a statistically significant and negative determinant of financial performance at the 5% level (β = -0.077, p-value= 0.012). Conversely, firm size exerts a highly significant positive influence at the 1% level (β = 0.078, p-value = 0.002). Finally, firm age is weakly significant and negative at the 10% level (β = -0.005, p-value = 0.070), suggesting that older firms within these specific sectors experience slight profitability contractions during the observed period.

We perform a series of sensitivity tests to verify whether our baseline results are invariant to alternative variable operationalizations. While the primary estimations rely on accounting-based ROE and continuous female percentages, the robustness framework substitutes financial performance with ROA and Tobin's Q, and board gender diversity with three distinct metrics: the Blau Index, the Shannon Index, and a dichotomous dummy variable. Table 6 documents the sensitivity results across Models 1 to 3. The empirical outputs for ROA are entirely consistent with our baseline ROE findings, confirming the neutrality of gender proportions on accounting-based performance metrics. Conversely, the market-based performance using Tobin's Q unveils a critical divergence. While the direct effects remain negligible, the interaction model yields a highly significant, positive moderating effect for audit committee expertise (β = 14.5905, p-value= 0.000). This powerful interaction demonstrates that while capital markets do not directly reward simple female board representation, they assign a massive valuation premium to gender-diverse boards when they are paired with a highly competent audit committee.

Table 6. Financial Performance Sensitivity Test Results for Percentage of Women

	ROA		Tobin's Q	
	Coefficient	p-value	Coefficient	p-value
PW	-0.0694	0.277	-0.1043	0.927
ESGD	-0.0366	0.732	-0.6063	0.469
PW*ESGD	0.2510	0.390	2.5792	0.267
AC	-0.0291	0.815	-2.8940	0.000***
PW*AC	-0.3204	0.220	14.5905	0.000***
LEV	-0.0533	0.002***	0.0100	0.904
SIZE	0.0433	0.007***	-0.2548	0.103
AGE	-0.0025	0.120	0.0076	0.707

Notes: * p < 0,10; ** p < 0,05; *** p < 0,01

Source: Data Processed (2026)

Table 7 displays the sensitivity analysis results for alternative board gender diversity metrics. To test the robustness of the main independent metric, we substitute the baseline headcount proportion with three distinct structural specifications: the Blau Index, the Shannon Index, and a dichotomous dummy variable across Models 1–3, yielding several critical insights. First, compared to unidimensional headcount metrics, such as the simple percentage of women on the board or binary variable, the Blau and Shannon indexes exhibit superior empirical sensitivity. This occurs because these comprehensive metrics capture the true distribution and depth of gender variety rather than merely tracking the tokenistic presence or absence of female directors. Crucially, the estimations demonstrate that board gender diversity, when operationalized via the Blau and Shannon indexes, exerts a statistically significant impact on accounting-based performance, whereas its effect on market-based performance remains negligible, with the directional coefficients leaning predominantly negative. This empirical evidence clarifies how capital market participants in Indonesia remain deeply skeptical of high female board representation during turbulent macroeconomic times, effectively signaling a localized manifestation of the 'glass cliff' phenomenon.

This evidence is further validated by the fact that female board appointments within the three most financially distressed sectors spiked during the post-pandemic transition, confirming an institutional tendency to recruit female directors primarily during operational crises (IFC, 2025). Second, while the direct pathways for all board gender diversity proxies (the female percentage, the Blau Index, the Shannon Index, and the dichotomous dummy variable) produce a statistically non-significant impact on Tobin's Q, their interactive configurations tell a vastly different story. Across all specifications modeling market-based performance, the interplay between audit committee expertise and board gender diversity yields a highly significant positive moderating impact on financial outcome. Within corporate finance, Tobin's Q serves as a superior performance metric because it encapsulates forward-looking market expectations and intangible future value alongside realized operational returns (Valls Martínez & Cruz Rambaud, 2019; Yap et al., 2017), making it uniquely suited for long-term strategic analyses.

Economically, this finding reflects investor confidence in structurally distressed or low-profitability sectors during turbulent macroeconomic times. It demonstrates that market participants believe these vulnerable companies can successfully navigate financial distress and achieve post-crisis recovery, provided that the female directors on these boards are complemented by a highly competent and technically expert audit committee.

Table 7. *Board Gender Diversity Sensitivity Test Results*

	ROE		ROA		Tobin's Q	
	Coefficient	p-value	Coefficient	p-value	Coefficient	p-value
			BLAU INDEX			
BI	-0.2019	0.078*	-0.1190	0.083*	-0.8980	0.193
ESGD	-0.1632	0.658	-0.2149	0.254	-1.4212	0.299
BI*ESGD	0.6879	0.442	0.7547	0.119	4.3341	0.210
AC	-0.2945	0.231	-0.0675	0.620	-2.7139	0.000***
BI*AC	0.5337	0.431	0.0302	0.936	9.0433	0.000***
LEV	-0.0714	0.022**	-0.0494	0.004***	0.0650	0.495
SIZE	0.0750	0.002***	0.0406	0.006***	-0.3082	0.019**
AGE	-0.0045	0.108	-0.0020	0.218	0.0158	0.357
			SHANNON INDEX			
SI	-0.1313	0.095*	0.0777	0.053*	-0.6163	0.195
ESGD	-0.2264	0.598	-0.2776	0.206	-1.5796	0.310
SI*ESGD	0.5715	0.424	0.6169	0.109	3.2487	0.226
AC	-0.2134	0.430	-0.0668	0.627	-2.6215	0.000***
SI*AC	0.3124	0.708	0.0205	0.936	5.6493	0.000***
LEV	-0.0712	0.025**	-0.0990	0.100	0.0717	0.457
SIZE	0.0754	0.002***	0.1228	0.438	-0.3099	0.018**
AGE	-0.0045	0.103	-0.0461	0.003***	0.0160	0.356
			DUMMY VARIABLE			
DV	-0.0622	0.164	0.0456	0.053*	-0.2051	0.415
ESGD	-0.3953	0.473	-0.4172	0.151	-1.6024	0.402
DV*ESGD	0.4794	0.366	0.4791	0.099*	1.8742	0.321
AC	-0.2905	0.249	-0.0640	0.645	-2.2606	0.002***
DV*AC	0.1927	0.449	0.0134	0.923	2.5012	0.000***
LEV	-0.0715	0.033**	-0.1024	0.092*	0.3467	0.133
SIZE	0.0776	0.002***	0.1211	0.440	-1.2865	0.106
AGE	-0.0048	0.087*	-0.0467	0.003***	-0.1268	0.204

Notes: * p < 0,10; ** p < 0,05; *** p < 0,01
Source: Data Processed (2026)

The findings of this study demonstrate that board gender diversity exerts a statistically insignificant direct effect on financial performance, thereby rejecting our first hypothesis (H1). Consequently, these initial results fail to lend credence to resource dependence theory, which posits that female board representation automatically provides access to critical external resources that optimize corporate efficiency (Pfeffer & Salancik, 1978). Instead, our baseline outcomes align with prior literature documenting a neutral diversity–performance link (Al-Shaer et al., 2024; Arquisola et al., 2018; Issa et al., 2021; Murhadi et al., 2021; Saha & Kabra, 2019), while diverging from studies that establish a positive relationship (Azmi et al., 2026; Dwaikat et al., 2021; Saha & Maji, 2022; Shahzad et al., 2020; Valls Martínez & Cruz Rambaud, 2019). Crucially, our sensitivity analyses reveal that this baseline insignificance is a function of proxy selection; when operationalizing board gender diversity via the Blau and Shannon indexes, board gender diversity yields a significantly negative impact on financial performance.

Within the context of an emerging market predominantly characterized by conservative socio-religious and cultural norms, female professionals often face systemic institutional friction (Al-Shaer et al., 2024; Hazaea et al., 2023; Kurnianto & Soewarno, 2024). Under these conditions, women on boards are frequently relegated to 'token' positions (Valls Martínez & Cruz Rambaud, 2019) or recruited due to regulatory pressures to serve as institutional scapegoats during organizational distress. Furthermore, from a behavioral standpoint, female directors tend to display heightened risk aversion, which can constrain aggressive capital investments relative to their male counterparts, occasionally dampening short-term financial gains (Rhayhan et al., 2023). Lastly, cognitive friction and task-related conflicts among board members stemming from heterogeneous perspectives may weaken operational efficiency and financial outcome (Al-Jaifi, 2020; Murhadi et al., 2021).

Empirical results reject our second hypothesis (H2), demonstrating that ESG disclosure fails to significantly moderate the board gender diversity–financial performance nexus. This outcome challenges upper-echelons theory, which views ESG milestones as strategic byproducts of female executives' cognitive frameworks (Hambrick &

Mason, 1984). While reinforcing results documented by Miharja et al. (2023), our findings contrast with Altarawneh et al. (2026) and Sahu et al. (2025). This non-significant interaction suggests a structural decoupling: board diversity serves as an internal resource to enrich decision-making (Saha & Maji, 2022), whereas ESG disclosure addresses external socio-environmental compliance (Ahmad et al., 2026). Operating through distinct operational channels, their combined effect remains negligible. This neutrality is further accelerated in Indonesia, where ESG reporting often serves as superficial impression management, triggering investor skepticism (Putri et al., 2026).

Baseline estimations for our third hypothesis indicate that audit committee expertise fails to significantly moderate the relationship between board gender diversity and financial performance, thus the third hypothesis (H3) is rejected. This initial finding contrasts with agency theory assumptions, which posit that specialized audit committees complement female directors by reinforcing strict governance oversight and internal control mechanisms (Al-Jaifi, 2020; Al-Shaer et al., 2024; Grishunin et al., 2024; Jensen & Meckling, 1976). Crucially, our sensitivity analysis reveals that this baseline insignificance is contingent upon proxy selection. While the interaction between audit committee expertise and gender diversity fails to alter accounting-based metrics, it exerts a robust, positive moderating effect on market-based performance. This dichotomy suggests that although technical oversight structures do not immediately boost short-term realized profits, they actively assist the board of directors in guaranteeing the quality of financial information communicated to external stakeholders (Awad & Ghanem, 2023; Gautama et al., 2017; Nawafly & Alarussi, 2019). Consequently, this technical-demographic synergy elevates investor confidence, ultimately enabling firms to command a substantial long-term financial outcome.

Conclusion

This study investigates the influence of board gender diversity on financial performance, modeling corporate ESG disclosure and audit committee expertise as moderating variables across the technology, healthcare, and energy sectors during the turbulent post-pandemic era. While baseline models report negligible direct and moderating effects, a comprehensive series of sensitivity checks unveils nuanced dynamics. Specifically, the alternative use of the Blau and Shannon indices uncovers a negative direct effect on financial performance, signaling institutional barriers surrounding female corporate leadership in emerging markets. Concurrently, the interactive pathway for ESG remains unsupported, reflecting widespread stakeholder skepticism toward superficial impression management. Finally, audit committee expertise bridges this gap by significantly and positively moderating the relationship between board gender diversity and market-based performance (Tobin's Q), reinforcing internal governance and oversight quality to drive long-term value. Collectively, our overall findings support the notion of the 'glass cliff' phenomenon in emerging markets, providing critical empirical nuances regarding the precarious nature of female leadership appointments in Indonesia during turbulent macroeconomic cycles.

This research contributes both theoretically and practically to the board gender diversity, corporate governance and financial performance literatures. Theoretically, this study provides critical insights by performing a series of sensitivity test. First, the Blau and Shannon Indexes are proven to be statistically superior in terms of capture sensitivity compared to simple linier percentage and dichotomous dummy variable. Second, in the context of post-pandemic macroeconomic disturbances, market-based performance metrics such as Tobin's Q offer a more comprehensive, forward-looking outlook to quantify financial performance than accounting-based metrics. Additionally, our study extends resource dependence theory into crisis environments by integrating upper echelons and agency perspectives to elucidate a dual-moderation governance variables, ESG and audit committee expertise, within the gender diversity-financial performance link. Practically, our findings offer vital implications for investors, suggesting that they should factor in the interactive synergy between female directors and financially literate audit committees before making capital allocations. Firms experiencing severe financial distress can expedite structural recovery and turnaround strategies by appointing audit committee members with superior financial proficiency to guide the board. Lastly, policymakers should raise regulatory thresholds for oversight quality by implementing standardized professional assessments, mandating continuous professional education, and increasing the minimum headcount requirements for audit committee compositions.

The findings of the current study should be interpreted with caution due to several inherent limitations that present opportunities for future research. First, this investigation utilizes a narrow time horizon spanning only to years. Future studies are urged to extend the sample period to 3-5 years, or to comparatively analyze the divergence between long-horizon (10-15 years) and narrow-horizon windows. Second, the generalizability of our empirical outputs is confined, as the sample is restricted to the three most crisis-affected sectors in the post-pandemic era. Future research could expand this scope by executing cross-sectoral or cross-country analyses within identical industries, or by comparatively evaluating firms experiencing financial distress against market leaders. Third, this study focuses exclusively on the technical expertise of the audit committee due to its direct financial oversight relevance, thereby omitting committee independence from the empirical model. Future corporate governance literature should integrate independence metrics alongside expertise to capture a more comprehensive overview of internal monitoring architectures. Finally, while our robustness framework relies heavily on alternative

proxy sensitivity testing, future scholar should deploy advanced econometric methodologies to explicitly address endogeneity and reverse causality, such as the Dynamic Panel Generalized Method of Moments (GMM), the Heckman Two-Stage Model or Coarsened Exact Matching (CEM), depending on the underlying data structures.

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