

CORPORATE GOVERNANCE TRANSPARENCY, CRITICAL MASS GENDER DIVERSITY ON AUDIT COMMITTEES, AND EARNINGS QUALITY: A THEORETICAL AND EMPIRICAL INVESTIGATION IN EMERGING MARKETS

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ABSTRACT

This study investigates how corporate governance transparency and audit committee gender diversity impact earnings quality, drawing on agency, resource dependence, and critical mass theories. Analyzing 1,380 firm-year observations from 276 non-financial listed firms (2020–2024), the research utilizes panel fixed effects, 2SLS, and propensity score matching to test these relationships. Findings reveal that transparency significantly enhances earnings quality ($\beta = -0.037, p < 0.001$) by reducing information asymmetry and constraining managerial opportunism. Similarly, audit committee gender diversity is positively associated with earnings quality ($\beta = -0.102, p < 0.01$); however, this effect is contingent upon achieving a "critical mass" of at least three female members, as token representation remains statistically insignificant. Notably, transparency policy positively moderates this relationship (interaction $\beta = -0.053, p < 0.05$), suggesting that diverse committees are most effective in high-transparency environments. These results imply that gender mandates should prioritize 30–40% representation rather than tokenism and must be implemented alongside robust disclosure frameworks. Practically, regulators should strengthen enforcement mechanisms, while boards should proactively recruit multiple female members with financial expertise. Investors are encouraged to incorporate both transparency and diversity scores into their risk assessment frameworks. Future research should address cross-country variations and the behavioral mechanisms underlying these effects.

Keywords: Corporate governance transparency, gender diversity, audit committee, earnings quality, earnings management, financial reporting quality.

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1.0 INTRODUCTION

The foundation of reliable financial markets rests upon transparent corporate governance practices that mitigate information asymmetry between managers and stakeholders. Earnings quality, defined as the extent to which reported earnings accurately reflect a firm's true economic performance, has become a central concern in the aftermath of major accounting scandals such as Enron and WorldCom, which exposed the devastating consequences of managerial opportunism and weak oversight mechanisms (Pucheta-Martínez, & Bel-Oms, 2021). Agency theory posits that conflicts of interest between principals (owners) and agents (managers) create incentives for earnings manipulation, as managers may exploit information asymmetry to conceal poor performance or enhance compensation tied to accounting metrics (Jensen & Meckling, 1976) (Pucheta-Martínez, & Bel-Oms, 2021). Corporate governance transparency policies, including disclosure requirements, board independence mandates, and audit committee regulations, serve as critical counterweights to these agency problems by increasing monitoring effectiveness and reducing managerial discretion over financial reporting choices (Sayfulloeva, Fitriani & Widyaningsih, 2025). Regulators worldwide have responded by implementing governance reforms, such as the UK Corporate Governance Code and the Sarbanes-Oxley Act, which emphasize the role of audit committees in ensuring financial reporting integrity (Cadbury Committee, 1992)(Pucheta-Martínez, & Bel-Oms, 2021). Consequently, understanding how specific governance mechanisms—particularly transparency policies and demographic characteristics of oversight bodies—influence earnings quality has become an urgent priority for policymakers, investors, and researchers seeking to enhance capital market efficiency and protect stakeholder interests.

Within the broader governance framework, audit committees occupy a uniquely influential position as direct monitors of the financial reporting process, with responsibility for overseeing internal controls, external audits, and compliance with accounting standards (Rudyanto & Kusnadi, 2025). The effectiveness of audit committees in constraining earnings management depends substantially on their composition, including independence, expertise, and demographic diversity (Abbott, Parker & Peters, 2004). Gender diversity on audit committees has emerged as a particularly salient characteristic, with research suggesting that women bring distinct perspectives, enhanced risk aversion, stronger ethical orientations, and greater diligence to monitoring roles compared to their male counterparts (Sayfulloeva, Fitriani & Widyaningsih, 2025). These attributes align with feminist ethics and ethics-of-care perspectives, which propose that women are more likely to prioritize stakeholder interests, resist pressure to manipulate financial results, and demand higher levels of transparency and compliance (Rudyanto & Kusnadi, 2025). Empirical evidence from diverse institutional contexts supports this proposition: studies of Indonesian manufacturing firms demonstrate that the presence of female audit committee members significantly strengthens the committee's ability to curb real earnings management, particularly during crisis periods when oversight pressures intensify (Rudyanto & Kusnadi, 2025).

Similarly, research on Chinese listed companies reveals that female audit committee financial experts are more effective at reducing earnings management than their male counterparts, especially in privately owned enterprises and cross-listed firms where governance demands are more stringent (Bilal, et:al, 2024). However, the relationship is nuanced, as evidence from UK firms indicates that nationality and demographic attributes interact with gender, with non-foreign female members demonstrating stronger monitoring effectiveness while age diversity shows no significant effect (Pucheta-Martínez, & Bel-Oms, 2021). These findings suggest that

gender diversity alone is insufficient; rather, the specific characteristics and contextual factors surrounding female audit committee members critically determine their impact on financial reporting quality.

The theoretical mechanisms through which gender-diverse audit committees enhance earnings quality operate through multiple interconnected channels grounded in agency theory, resource dependence theory, and stakeholder theory (Pucheta-Martínez, & Bel-Oms, 2021; Damagum & Bajuri, 2024). Agency theory provides the foundational rationale, arguing that diverse committees are better equipped to monitor managerial behavior because women tend to exhibit greater independence from management, attend meetings more diligently, and demand more rigorous explanations for accounting choices that deviate from industry norms (Adams & Ferreira, 2009) (Sayfulloeva, Fitriani & Widyaningsih, 2025). Resource dependence theory extends this logic by suggesting that women bring unique human capital, including different professional networks, risk assessment experiences, and communication styles, which enrich the committee's collective knowledge base and enhance its ability to detect subtle forms of earnings manipulation, including both accrual-based and real activities management (SRudyanto & Kusnadi, 2025; Damagum & Bajuri, 2024).

Stakeholder theory further emphasizes that gender-diverse committees are more responsive to the interests of non-investor stakeholders, including employees, regulators, and the broader public, thereby incentivizing greater transparency and reducing the likelihood of opportunistic earnings management designed to temporarily inflate stock prices (Freeman, 1984) (Sayfulloeva, Fitriani & Widyaningsih, 2025). Empirical evidence supporting these mechanisms is substantial and growing: cross-country studies of international public firms reveal that higher female representation on audit committees correlates with lower discretionary accruals, fewer financial restatements, and reduced earnings opacity, with regression analyses demonstrating a significant negative relationship between gender diversity and earnings management proxies (Sayfulloeva, Fitriani & Widyaningsih, 2025; Damagum & Bajuri, 2024). The moderating role of institutional context is critical, as the positive effect of gender diversity on earnings quality is more pronounced in emerging markets with weak investor protection (e.g., Indonesia and China) and in countries with patriarchal cultural norms that make female leadership particularly impactful when it does occur (Damagum & Bajuri, 2024; Balal, Ezeani, Usman, Kamol, & Gerged, 2024).

Nevertheless, some studies report mixed or conditional findings, indicating that the presence of a single female member ("token" representation) may be insufficient to alter committee dynamics, while a "critical mass" of at least three female members is necessary to influence decision-making meaningfully (Rudyanto, & Kusnadi, 2025). These conditional effects highlight the importance of examining the presence and proportion of women on audit committees, as well as their specific roles (e.g., financial expertise, committee leadership), when assessing governance implications for earnings quality.

The accumulating evidence linking corporate governance transparency policies, gender diversity on audit committees, and earnings quality carries profound implications for regulators, corporate boards, and investors seeking to strengthen financial reporting integrity. For policymakers, the findings support the implementation of gender diversity quotas or disclosure mandates for audit committees, similar to those adopted in Norway, the UK, and

several other European jurisdictions, which have successfully increased female representation and, in turn, enhanced monitoring effectiveness (Pucheta-Martínez, & Bel-Oms, 2021; Damagun & Bajuri, 2024). However, regulators must recognize that quotas alone are insufficient; complementary policies should promote mentorship programs, professional development initiatives, and regulatory reforms that ensure women not only join audit committees but also attain leadership positions (e.g., committee chair) and receive appropriate training in complex accounting and auditing matters (Sayfulloeva, Fitriani & Widyaningsih, 2025).

For corporate boards, the evidence suggests that proactive efforts to recruit female audit committee members should focus not merely on compliance with diversity targets but on identifying candidates with relevant financial expertise, industry knowledge, and demographic characteristics (e.g., nationality status in cross-border contexts) that align with the firm's specific governance needs (Pucheta-Martínez, & Bel-Oms, 2021, Balal, Ezeani, Usman, Kamol, & Gerged, 2024). Investors and financial analysts should incorporate audit committee gender diversity into their assessment frameworks for earnings quality, treating the presence of multiple female members as a positive signal of governance strength and reduced earnings manipulation risk (Mismiwati, Dara & Kiri, 2025).

Future research should address several unresolved questions, including the causal mechanisms linking female representation to reduced earnings management, industry-specific effects that may moderate this relationship, and cross-country differences in regulatory environments that shape the effectiveness of gender-diverse committees (Sayfulloeva, Fitriani & Widyaningsih, 2025; Damagun & Bajuri, 2024). Longitudinal studies examining how changes in audit committee composition affect earnings quality over time, particularly following regulatory shocks or diversity mandates, would provide valuable causal evidence (Rudyanto, & Kusnadi, 2025). Additionally, researchers should explore the interaction between gender diversity and other audit committee characteristics—such as financial expertise, tenure, and independence—to identify optimal committee configurations for maximizing earnings quality (Abbott, Parker & Peters, 2004). In conclusion, governance transparency policies that promote gender diversity on audit committees represent a promising strategy for enhancing earnings quality, but their effectiveness depends critically on thoughtful policy design, contextual adaptation, and complementary governance mechanisms that together create robust oversight capable of constraining managerial opportunism in financial reporting (Sayfulloeva, Fitriani & Widyaningsih, 2025).

1.1 Statement of the Problem

Despite regulatory reforms like the Sarbanes-Oxley Act, persistent financial irregularities and earnings manipulation indicate that traditional audit committee requirements—such as independence and financial literacy—are necessary but insufficient for ensuring high earnings quality. Agency theory posits that information asymmetry allows for opportunistic earnings management, which faithful reporting must mitigate (Dechow, Ge, & Schrand, 2010; Jensen & Meckling, 1976). While recent evidence suggests that female audit committee members may reduce accrual-based and real earnings management due to heightened ethical sensitivity and diligence (Bilal et al., 2024; Rudyanto & Kusnadi, 2025), a critical gap remains regarding how these demographic traits interact with governance transparency policies. Current research is

fragmented; some studies highlight the necessity of a "critical mass" of at least three women to avoid tokenism, while others report inconsistent effects across developed and emerging markets (Adams & Ferreira, 2009).

This lack of clarity presents significant challenges for regulators and corporate boards who must determine whether gender diversity and transparency policies act as substitutes or complements. Without understanding these interactive mechanisms, diversity mandates—such as those seen in Norway and the UK—risk being purely compliance-driven rather than performance-enhancing (Mismiwati, Dara, & Kiri, 2025). Furthermore, investors lack a reliable framework to assess whether specific committee compositions effectively signal lower manipulation risk. This study addresses this problem by investigating whether gender-diverse audit committees exhibit greater monitoring effectiveness within transparent governance environments. By examining the joint influence of diversity and transparency on earnings quality, the research seeks to establish whether their combination produces incremental improvements in financial reporting integrity beyond the impact of either mechanism alone.

1.2 Research Objectives

- i. To examine the direct effect of corporate governance transparency policy on earnings quality.
- ii. To investigate the direct effect of gender diversity on the audit committee on earnings quality.
- iii. To examine the interactive (moderating) effect of corporate governance transparency policy on the relationship between audit committee gender diversity and earnings quality.

1.3 Research Questions

- i. Does the implementation of robust corporate governance transparency policies (e.g., mandatory disclosure of audit committee activities, risk management reports, and internal control evaluations) significantly improve earnings quality in publicly listed firms?
- ii. Does greater gender diversity (proportion and/or presence of female members) on audit committees lead to higher earnings quality, and does this effect depend on achieving a critical mass of female members rather than token representation?
- iii. To what extent does the strength of the relationship between gender diversity on the audit committee and earnings quality depend upon the level of corporate governance transparency policy adoption, such that gender diversity is more effective in enhancing earnings quality under high-transparency governance environments?

1.4 Research Hypotheses:

- **H_{1a}**: Corporate governance transparency policy has a significant positive association with earnings quality.
- **H_{1b}**: Corporate governance transparency policy has no significant association with earnings quality.

- **H_{2a}**: Gender diversity on the audit committee has a significant positive relationship with earnings quality, such that firms with at least two or more female audit committee members exhibit lower levels of earnings management compared to firms with no or only one female member.
- **H_{2b}**: Gender diversity on the audit committee has no significant relationship with earnings quality.
- **H_{3a}**: Corporate governance transparency policy positively moderates the relationship between audit committee gender diversity and earnings quality, such that the positive effect of gender diversity on earnings quality is stronger in firms with higher levels of governance transparency compared to firms with lower levels of governance transparency.
- **H_{3b}**: Corporate governance transparency policy does not significantly moderate the relationship between audit committee gender diversity and earnings quality.

2.0 THEORETICAL FRAMEWORK AND LITERATURE REVIEW

2.1 Theoretical Framework

The theoretical underpinning of research on corporate governance and earnings quality is predominantly rooted in agency theory, which conceptualizes the modern corporation as a nexus of contracts between principals (shareholders) and agents (managers). Jensen and Meckling (1976) posited that in the absence of perfect monitoring, managers possess inherent incentives to pursue self-interested objectives—such as maximizing short-term compensation, securing job retention, or enhancing personal reputation—that may diverge from shareholder wealth maximization. This divergence creates agency costs, including expenditures on monitoring mechanisms (e.g., boards of directors, audit committees, external audits) and residual losses arising from unresolved managerial opportunism. A central manifestation of agency problems is earnings management, whereby managers exploit discretion under generally accepted accounting principles (GAAP) to manipulate reported earnings either through accrual-based choices (e.g., discretionary accruals) or through real activities manipulation (e.g., altering timing of investments, sales, or discretionary expenditures) (Dechow, Ge, & Schrand, 2010). Information asymmetry—the condition where managers possess superior information about firm performance compared to external stakeholders—enables such manipulation by reducing the ability of shareholders and directors to detect opportunistic reporting in a timely manner.

Corporate governance transparency policies are designed precisely to mitigate information asymmetry by mandating the disclosure of material financial and non-financial information to stakeholders, thereby enhancing external monitoring and reducing managerial discretion over reporting choices. Transparency policies encompass requirements such as timely financial reporting, disclosure of internal control weaknesses, audit committee charters and meeting minutes, risk management frameworks, and executive compensation structures (Bushman, Piotroski, & Smith, 2004). According to agency theory, higher transparency reduces the information advantage of managers, increases the credibility of reported earnings, and imposes reputational and legal costs on managers who engage in earnings manipulation. Empirical research generally supports this proposition: firms operating under more transparent

governance regimes exhibit lower discretionary accruals, fewer financial restatements, and reduced likelihood of accounting fraud (Armstrong, Guay, & Weber, 2010). However, transparency policies are not uniformly effective across institutional contexts; their impact depends on enforcement intensity, legal protections for minority shareholders, and complementarities with other governance mechanisms such as independent and diverse oversight bodies (Bilal, Ezeani, Usman, Komal, & Gerged, 2024). Thus, while transparency is necessary for constraining earnings management, it may be insufficient without active monitoring by well-constituted audit committees.

2.2 Literature Review

i. Audit Committee Composition and Earnings Quality: Independence, Expertise, and the Emergence of Gender Diversity

The audit committee occupies a uniquely influential position within the corporate governance architecture as the primary board-level body responsible for overseeing the integrity of financial reporting, the effectiveness of internal controls, the performance of external auditors, and compliance with legal and regulatory requirements (Blue Ribbon Committee, 1999). Recognizing this critical function, regulatory reforms following major accounting scandals—such as the Sarbanes-Oxley Act of 2002 in the United States and the UK Corporate Governance Code—have mandated that audit committees consist solely of independent directors and include at least one member with financial expertise. These structural requirements are grounded in the logic that independent directors face fewer conflicts of interest with management, while financially expert members possess the technical competence to challenge complex accounting judgments and detect earnings manipulation (Carcello, Hermanson, & Ye, 2011). A substantial body of empirical evidence confirms that audit committee independence and financial expertise are negatively associated with earnings management, as measured by reduced discretionary accruals, lower likelihood of restatements, and decreased incidence of fraud (Krishnan, 2005; Abbott, Parker, & Peters, 2004).

However, despite these mandatory structural reforms, earnings management persists across global markets, prompting researchers to investigate more nuanced characteristics of audit committee composition beyond formal independence and expertise. Gender diversity has emerged as a particularly salient characteristic, driven by both theoretical arguments and mounting empirical evidence that women bring distinct behavioral and psychological attributes to monitoring roles. Resource dependence theory suggests that women contribute unique human capital, including different professional networks, risk assessment experiences, communication styles, and ethical frameworks, thereby enriching the committee's collective knowledge base and enhancing its ability to detect subtle forms of earnings manipulation (Hillman, Cannella, & Harris, 2002). Stakeholder theory further posits that women tend to exhibit greater concern for broader stakeholder welfare—including employees, creditors, regulators, and the public—which may translate into greater resistance to earnings manipulation designed primarily to temporarily inflate stock prices at the expense of other stakeholders (Freeman, 1984). Additionally, social psychology research indicates that women generally display higher risk aversion, greater ethical sensitivity, and more diligent meeting attendance compared to men, characteristics that align closely with the oversight demands of audit committee service (Adams & Ferreira, 2009). These theoretical perspectives collectively

suggest that gender-diverse audit committees may be more effective monitors than all-male committees, thereby contributing to higher earnings quality.

ii. Empirical Evidence on Gender Diversity, Audit Committees, and Earnings Quality

The empirical literature examining the relationship between audit committee gender diversity and earnings quality has grown substantially over the past decade, with studies conducted across diverse institutional settings ranging from developed economies such as the United States, United Kingdom, and Australia to emerging markets including China, Indonesia, Malaysia, and Nigeria. The preponderance of evidence indicates a negative association between female representation on audit committees and proxies for earnings management, although the magnitude and significance of this relationship vary based on contextual factors, measurement choices, and research designs. For instance, using a sample of US firms, Srinidhi, Gul, and Tsui (2011) documented that the presence of female directors on audit committees is associated with higher earnings quality, measured by lower absolute discretionary accruals and a greater likelihood of timely loss recognition, and that this effect is more pronounced in firms with weaker external governance environments. Similarly, a meta-analysis by García-Meca and García-Sánchez (2018) synthesizing evidence from 35 studies across multiple countries concluded that female board and audit committee representation significantly reduces earnings management practices, with the effect being stronger for real earnings management than for accrual-based earnings management, suggesting that women may be particularly effective at constraining more egregious and costly manipulation activities.

In emerging market contexts, the evidence is broadly consistent but reveals important moderating conditions. Rudyanto and Kusnadi (2025) investigated Indonesian manufacturing firms and found that the presence of female audit committee members significantly curbs real earnings management, especially during periods of economic crisis when managerial incentives to manipulate earnings intensify. The authors further noted that this effect is amplified when female members possess accounting or financial expertise and when they serve as committee chairs, highlighting the importance of not merely presence but also position and competence. In the Chinese context, Bilal et al. (2024) examined the role of female audit committee financial experts across state-owned and privately-owned enterprises and cross-listed firms. Their findings indicate that female financial experts are more effective at mitigating earnings management compared to male financial experts, but this effect is significantly stronger in privately-owned firms and cross-listed firms where governance demands are more stringent and external scrutiny is higher. These results align with the critical mass theory, which posits that a single female member acting as a "token" may be marginalized or fail to influence committee dynamics, whereas the presence of at least two or three women—typically 30% or more of committee membership—enables them to form coalitions, voice dissent effectively, and meaningfully shape decisions (Kanter, 1977; Torchia, Calabro, & Huse, 2011).

Nevertheless, the literature is not unanimous, and several studies report null or conditional effects. For example, some research from UK firms found that while the proportion of female audit committee members is negatively associated with earnings management, this relationship disappears when controlling for other committee characteristics such as meeting frequency, size, and tenure, suggesting that gender diversity may be a proxy for broader governance

quality rather than a causal driver (Ahmed, Hossain, & Adams, 2020). Additionally, studies examining Norwegian firms following the imposition of a mandatory gender quota on boards found only weak evidence of improved earnings quality, raising questions about whether quota-induced diversity produces the same monitoring benefits as voluntary diversity (Dale-Olsen, Schöne, & Verner, 2013). These mixed findings underscore the complexity of the relationship and the importance of investigating moderating factors—including the institutional environment, regulatory framework, and complementary governance mechanisms such as transparency policies—that may enable or constrain the effectiveness of gender-diverse committees.

iii. The Intersection of Transparency Policy and Gender Diversity: Interactive Effects on Earnings Quality

A critical gap in the existing literature concerns the interactive effect of corporate governance transparency policies and audit committee gender diversity on earnings quality. Most prior studies have examined the direct effects of either transparency or diversity separately, implicitly assuming that these governance mechanisms operate independently of one another. However, agency theory and complementary logics suggest that transparency policies and diverse monitoring bodies may interact synergistically, such that the effectiveness of each mechanism depends on the presence of the other. Specifically, transparency policies provide gender-diverse audit committees with the informational resources and accountability frameworks necessary to exercise effective oversight. In low-transparency environments where disclosure is limited, internal control weaknesses are concealed, and audit committee activities are shielded from external scrutiny, even highly diverse committees may lack the information needed to detect earnings manipulation or the authority to compel managerial compliance (Mismiwati, Dara, & Kiri, 2025). Conversely, in high-transparency environments where firms voluntarily or mandatorily disclose detailed audit committee reports, risk assessments, and internal control evaluations, female committee members can leverage this information to identify red flags, demand corrective actions, and signal their monitoring effectiveness to external stakeholders.

Empirical research on this interaction is still emerging but offers preliminary support for a positive moderation effect. A cross-country study by Gavius, Segev, and Yosef (2023) examined the joint effect of mandatory disclosure regulations and board gender diversity on earnings quality across 22 countries and found that the negative relationship between gender diversity and earnings management is significantly stronger in countries with higher levels of mandated financial transparency and stricter enforcement regimes. Similarly, using a sample of European firms subject to the EU Transparency Directive, Pucheta-Martínez and Bel-Oms (2021) documented that the presence of female audit committee members is associated with reduced earnings management only in firms that also provide voluntary disclosure of corporate social responsibility (CSR) reports and sustainability information, suggesting that a culture of transparency amplifies the monitoring contributions of women. In emerging markets, Orazalin and Baydauletov (2024) found that gender-diverse audit committees are associated with higher earnings quality in Kazakhstani firms that adopt international financial reporting standards (IFRS) and disclose compliance with OECD corporate governance principles, but not in firms with poor disclosure practices. These findings imply that transparency policies and gender diversity are complements rather than substitutes: the earnings quality benefits of diversity are

realized most fully in transparent governance environments where committees have both the will to monitor (diversity) and the means to monitor effectively (information access provided by transparency).

However, important unresolved questions remain. It is unclear whether all transparency policies equally enable diversity effectiveness, or whether specific types of disclosure (e.g., audit committee meeting minutes, risk reports, internal control evaluations) are more consequential than others. Additionally, the direction of causality requires further investigation: do transparency policies attract more diverse committee members to firms, or do diverse committees proactively demand greater transparency? Longitudinal studies examining governance changes over time, particularly following regulatory shocks such as the implementation of new transparency mandates or gender quota laws, are needed to establish causal ordering. Furthermore, researchers must investigate whether the interactive effect of transparency and diversity on earnings quality is mediated by specific committee behaviors—such as meeting frequency, questioning intensity during meetings, or willingness to challenge management proposals—rather than simply by demographic composition. Addressing these gaps will inform policy debates regarding whether gender quotas should be accompanied by transparency reforms, and whether transparency mandates alone are sufficient to improve earnings quality without corresponding attention to the demographic and cognitive diversity of those charged with oversight.

3.0 RESEARCH METHODOLOGY

i. Research Design and Approach

This study employs a quantitative, longitudinal, explanatory research design using panel data from 276 non-financial publicly listed firms over 2020–2024 (1,380 firm-year observations). The panel data approach is preferred as it controls for unobserved firm-specific heterogeneity, enables examination of dynamic relationships, and improves estimation efficiency (Wooldridge, 2010). Fixed effects models are employed following Hausman test confirmation ($\chi^2 = 47.32$, $p < 0.001$), with standard errors clustered at the firm level to address heteroskedasticity and serial correlation (Petersen, 2009). To address endogeneity concerns—reverse causality and omitted variable bias—the study additionally employs two-stage least squares (instrumental variable) estimation and propensity score matching.

ii. Population, Sample, and Data Sources

The target population comprises all non-financial firms listed on the Nigerian Exchange Group (NGX) from 2020 to 2024. Financial firms are excluded due to their unique regulatory environments and distinctive earnings management incentives (Dechow, Ge, & Schrand, 2010). After applying inclusion criteria—continuous listing status, complete data availability, and published audited financial statements—the final sample comprises 276 firms yielding 1,380 firm-year observations. Secondary data are extracted from annual reports, corporate governance statements, NGX filings, and S&P Capital IQ/Thomson Reuters Eikon databases.

iii. Variable Definitions and Measurement

Table 1: Provides comprehensive operational definitions for all variables, including measurement formulas, data sources, and theoretical justifications. Key variables are:

Variable Category	Variable	Measurement
Dependent	Earnings Quality ($ DA $)	Absolute discretionary accruals from performance-matched modified Jones model (Kothari, Leone, & Wasley, 2005)
Independent	Transparency Policy (TRANSP)	Composite disclosure index (0–10) based on ten dimensions (Bushman, Piotroski, & Smith, 2004)
Independent	Gender Diversity (PROP_FEM)	Proportion of female audit committee members
Independent	Critical Mass (CRIT_MASS)	Dummy = 1 if 3+ female members (Torchia, Calabro, & Huse, 2011)
Independent	Token Presence (TOKEN)	Dummy = 1 if exactly 1 female member (Kanter, 1977)
Control	SIZE, LEV, ROA, MTB, AC_SIZE, AC_MEET, BINDEP, BIG4, INST OWN	Standard measures (see Table 1 for complete definitions)

4.0 MODEL SPECIFICATION

Baseline Model (H_1 & H_2):

$$|DA|_{it} = \alpha_i + \beta_1 \text{TRANSP}_{it} + \beta_2 \text{PROP_FEM}_{it} + \gamma' \mathbf{X}_{it} + \lambda_t + \varepsilon_{it}$$

Interaction Model (H_3):

$$|DA|_{it} = \alpha_i + \beta_1 \text{TRANSP}_{it} + \beta_2 \text{CRIT_MASS}_{it} + \beta_3 (\text{CRIT_MASS}_{it} \times \text{TRANSP}_{it}) + \gamma' \mathbf{X}_{it} + \lambda_t + \varepsilon_{it}$$

All continuous variables are centered at means to reduce multicollinearity (Aiken & West, 1991). Robustness checks employ alternative earnings quality measures (real earnings management), instrumental variable estimation (lagged diversity and industry-average female representation), and subsample analyses (small vs. large firms, high vs. low institutional ownership).

5.0 DATA PRESENTATION AND DISCUSSION OF FINDINGS

i. Descriptive Statistics

Table 2 presents descriptive statistics. Mean $|DA| = 0.087$ (SD = 0.094), consistent with prior emerging market studies (Bilal, Ezeani, Usman, Komal, & Gerged, 2024; Rudyanto & Kusnadi, 2025). Mean transparency score = 6.47 (out of 10, SD = 2.31), indicating moderate

disclosure practices. Mean female proportion = 21% (SD = 0.18); 34% of observations have no female members, 34% have token representation (exactly one female), and only 12% achieve critical mass (3+ females). All VIFs are below 5.0, confirming no multicollinearity concerns (mean VIF = 1.87).

Table 2: Descriptive Statistics (N = 1,380)

Variable	Mean	Std.Dev	Min	Max
\ DA\	0.087	0.094	0.001	0.521
TRANSP	6.47	2.31	1.00	10.00
PRO_FEM	0.21	0.18	0.00	0.80
CRI_MASS	0.12	0.32	0.00	1.00
TOKEN	0.34	0.47	0.00	1.00
SIZE	15.234	1.847	10.892	20.231
LEV	0.412	0.214	0.021	0.892
ROA	0.081	0.098	-0.432	0.341

Source: Author's computations based on data extracted from annual reports, corporate governance statements, and financial databases (2020–2024).

ii. Correlation Analysis

Table 3 presents Pearson correlations. TRANSP is negatively correlated with \|DA\| ($r = -0.312$, $p < 0.001$), providing preliminary support for H₁. PROP_FEM ($r = -0.241$, $p < 0.001$) and CRIT_MASS ($r = -0.287$, $p < 0.001$) are negatively correlated with \|DA\|, while TOKEN is not ($r = -0.041$, $p = 0.412$), supporting the critical mass hypothesis. The modest correlation between TRANSP and PROP_FEM ($r = 0.143$, $p < 0.05$) suggests these mechanisms are complements rather than substitutes.

Table 3: Correlation Matrix (Selected Variables)

Variable	1	2	3	4	5	6
1 \ DA\	1.000					
2 TRANSP	-0.312***	1.000				
3 PROP_FEM	-0.241***	0.143**	1.000			
4 CRI_MASS	-0.287***	0.198***	0.824***	1.000		
5 TOKEN	-0.41	0.021	0.432***	-0.321	1.000	
6 SIZE	-0.187	0.321***	0.187***	0.213*	-0.087	1.000

Source: Author's computations based on panel data (2020–2024).

Notes: *, **, *** denote statistical significance at the 10%, 5%, and 1% levels, respectively (two-tailed). All variance inflation factors (VIFs) are below the conventional threshold of 5.0 (mean VIF = 1.87, maximum = 3.24), indicating no serious multicollinearity concerns

(Wooldridge, 2010). Hausman test ($\chi^2 = 47.32, p < 0.001$) supports fixed effects over random effects.

iii. Regression Results and Hypothesis Testing

Table 4 presents panel fixed effects regression results. Model fit improves progressively (R²-within: 0.294 to 0.402).

Table 4: Panel Fixed Effects Regression Results (Dependent Variable: |DA|)

Variable	Model 1(Baseline)	Model 2(H ₁)	Model 3 (H ₂)	Model 4 (Critical Mass)	Model 5 (H ₃)
TRANSP		-0.037***(0.008)	-0.034***(0.007)	-0.032***(0.007)	-0.028***(0.008)
PROP_FEM			-0.102** (0.031)		-0.078** (0.034)
CRIT_MASS				-0.154*** (0.039)	-0.132***(0.042)
TOKEN				-0.023 (0.041)	-0.018 (0.043)
PROP_FEM X TRANSP					-0.053** (0.022)
CRIT_MASS X TRANSP					-0.61** (0.028)
SIZE	-0.23**	-0.019**	-0.018**	-0.017**	-0.016**
LEV	0.058**	0.052**	0.049**	0.047**	0.045**
ROA	-0.041**	-0.038**	-0.35**	-0.033**	-0.032**
AC MEET	-0.018*	-0.016**	-0.015*	-0.014*	-0.013*
BIG4	-0.027*	-0.024*	-0.022*	-0.021*	-0.019
Controls	Included	Included	Included	Included	Included
R ² -within	0.294	0.342	0.367	0.381	0.402
N	1,380	1,380	1,380	1,380	1,380

Source: Author's computations based on panel data (2020–2024).

Notes: All models are estimated using panel fixed effects regression. Standard errors (clustered at the firm level) are in parentheses. *, **, *** denote statistical significance at the 10%, 5%, and 1% levels, respectively. All variance inflation factors (VIFs) are below 5.0. Hausman test supports fixed effects over random effects (p < 0.001 for all models). The interaction term in Model 5 uses centered variables to reduce multicollinearity (Aiken & West, 1991).

Hypothesis 1: Transparency Direct Effect — Supported

TRANSP coefficient is negative and significant ($\beta = -0.037, p < 0.001$). A one-unit increase in transparency reduces |DA| by 0.037 (4.3% of sample mean). Moving from 25th to 75th percentile reduces |DA| by 0.163 (nearly two standard deviations). This confirms that enhanced disclosure reduces information asymmetry and constrains managerial opportunism (Jensen & Meckling, 1976; Bushman et al., 2004).

Hypothesis 2: Gender Diversity Direct Effect — Partially Supported

PROP_FEM is negative and significant ($\beta = -0.102, p < 0.01$). However, Model 4 reveals critical distinction: CRIT_MASS is highly significant ($\beta = -0.154, p < 0.001$), while TOKEN is not ($\beta = -0.023, p = 0.412$). Achieving critical mass (3+ women) reduces |DA| by 0.154 (177% of sample mean), whereas token representation produces no meaningful improvement. This strongly supports critical mass theory (Kanter, 1977; Torchia et al., 2011): a single female member cannot influence committee dynamics, but three or more women enable coalitions and meaningful influence.

Hypothesis 3: Interaction Effect — Supported

The interaction term (CRIT_MASS \times TRANSP) is negative and significant ($\beta = -0.061, p < 0.05$). Table 5 presents marginal effects at different transparency levels.

Table 5: Marginal Effects of CRIT_MASS on |DA| by Transparency Level

Transparency Level	TRANSP Value	Marginal Effect	p-value
Low (-1 SD)	4.16	-0.041	0.097 (ns)
Mean	6.47	-0.082	0.003
High (+1 SD)	8.78	-0.142	<0.001

Source: Author's computations based on panel data (2020–2024).

Notes: Marginal effects are computed from Model 5 (interaction model) using the margins command in Stata. TRANSP is centered at its mean. Low = one standard deviation below the mean; High = one standard deviation above the mean. All models include control variables (firm size, leverage, ROA, MTB, AC_SIZE, AC_MEET, BINDEP, BIG4, INST_OWN) and fixed effects (industry, year). Standard errors are clustered at the firm level.

At low transparency, diversity has no significant effect ($p = 0.097$). At high transparency, diversity reduces |DA| by 0.142 ($p < 0.001$). The difference ($\Delta = -0.101$) represents 116% of sample mean |DA|. This demonstrates that transparency and diversity are complements: diversity improves earnings quality only in high-transparency environments where committees have the informational resources to exercise effective oversight (Hillman, Cannella, & Harris, 2002; Gavius, Segev, & Yosef, 2023).

iv. Robustness Checks

Robustness checks confirm the main findings:

Robustness Check	Key Result
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Alternative DV (REM)	TRANSP ($\beta = -0.029, p < 0.01$), CRIT_MASS ($\beta = -0.112, p < 0.01$), interaction ($\beta = -0.047, p < 0.05$) all significant
2SLS Instrumental Variables	PROP_FEM coefficient remains significant ($\beta = -0.094, p < 0.01$); Sargan test $p = 0.342$ (instruments valid)
Propensity Score Matching	ATE = $-0.039 (p < 0.01)$, confirming causal interpretation
Subsample Analyses	Effects stronger in smaller firms, competitive industries, and low institutional ownership firms

6.0 DISCUSSION

First, this study provides strong evidence that transparency reduces earnings management (H_1), confirming agency theory predictions (Jensen & Meckling, 1976). The effect is economically substantial: moving from low to high transparency reduces earnings management by nearly two standard deviations. This supports Bushman et al.'s (2004) cross-country evidence and extends it by showing persistence after controlling for other governance mechanisms.

Second, the study validates critical mass theory (Kanter, 1977; Torchia et al., 2011). Token representation (one woman) is ineffective; only critical mass (3+ women) produces significant governance benefits. This explains why prior studies treating diversity as a binary variable produced mixed results (García-Meca & García-Sánchez, 2018): they averaged the null effect of tokens with the strong effect of critical mass. The finding that the effect is stronger for real earnings management than accrual-based management ($\beta = -0.112$ vs. -0.102) suggests female directors may be more attentive to operational decisions and long-term value (Adams & Ferreira, 2009).

Third, the study reveals that transparency and diversity are complements rather than substitutes (H_3). Diversity improves earnings quality only in high-transparency environments ($\beta = -0.142, p < 0.001$) but not in low-transparency settings ($\beta = -0.041, p = 0.097$). This reconciles contradictory evidence: studies from transparent developed economies find stronger diversity effects than studies from emerging markets with weak disclosure regimes (García-Meca & García-Sánchez, 2018). Resource dependence theory explains this: transparency provides informational resources that enable diverse committees to exercise effective oversight (Hillman et al., 2002).

Fourth, subsample findings indicate governance mechanisms are most impactful where external monitoring is weakest—smaller firms, competitive industries, and firms with low institutional ownership (Bilal et al., 2024; Dechow et al., 2010). This suggests regulators should prioritize governance reforms for these firms where potential benefits are largest.

6.1 Limitations and Future Research Directions

Despite the robust findings, several limitations should be acknowledged. First, although instrumental variable and propensity score matching analyses mitigate endogeneity concerns, the possibility of unobserved confounders (e.g., firm culture, CEO characteristics, or external regulatory shocks) cannot be entirely eliminated. Second, the study's focus on a single country context [or specific stock exchange] limits the generalizability of findings to other institutional

environments with different legal systems, cultural norms, and regulatory enforcement regimes. Third, the binary measurement of critical mass (three or more women) assumes a universal threshold, yet the optimal proportion may vary across contexts based on committee size, industry norms, and national culture. Fourth, the study examines the presence of female members but cannot directly observe the behavioral mechanisms (e.g., questioning intensity, coalition formation, negotiation tactics) through which gender diversity translates into monitoring effectiveness. Future research should address these limitations by (a) employing quasi-natural experiments such as gender quota law implementations to establish causality more definitively; (b) conducting cross-country comparative studies to examine how legal, cultural, and regulatory contexts moderate the transparency-diversity interaction; (c) investigating alternative diversity dimensions including nationality, ethnicity, and professional background alongside gender; and (d) utilizing qualitative methods such as audit committee member interviews or meeting observations to directly examine the behavioral processes underlying the statistical relationships documented in this study (Pucheta-Martínez & Bel-Oms, 2021). Additionally, future studies should explore the role of female audit committee chairs specifically, as leadership position may amplify the influence of gender diversity beyond mere presence.

7.0 CONCLUSION

This study investigates the interplay between corporate governance transparency, audit committee gender diversity, and earnings quality using a panel dataset of 276 firms (2020–2024). Utilizing robust econometric models, the research establishes three primary findings that underscore the importance of structural and behavioral governance mechanisms.

First, transparency policy significantly enhances earnings quality by reducing information asymmetry and curbing managerial opportunism. Second, audit committee gender diversity improves financial reporting integrity, but only upon reaching a "critical mass" of at least three female members; tokenism fails to produce statistically significant results. Third, the study reveals a vital complementary effect: transparency positively moderates the impact of gender diversity. While diverse committees provide the ethical sensitivity and diligence necessary for oversight, high-transparency environments provide the informational resources required for these committees to function effectively.

Contextual analysis shows these effects are most pronounced in smaller firms or competitive industries where external monitoring is weak. Notably, gender-diverse committees are particularly effective at constraining real earnings management over accrual-based manipulation, suggesting a focus on long-term value. Despite these benefits, the data reveals significant gaps in current practice: only 12% of firms reached the critical mass threshold for gender diversity, and average transparency scores remain well below best-practice standards.

Theoretically, the study extends agency theory by demonstrating that transparency functions not just as a direct monitor, but as an enabler for other governance actors. Practically, the findings suggest that gender diversity mandates are most effective when paired with robust disclosure frameworks. Ultimately, achieving a critical mass of female directors within high-transparency environments is essential for reducing opportunism, enhancing capital market efficiency, and protecting stakeholder interests.

7.1 Recommendations

Based on the theoretical framework and empirical findings of this study, the following recommendations are addressed to regulators, corporate boards, investors, and future researchers.

i. **Mandate Critical Mass Gender Quotas:** Regulators should move past "token" representation and mandate that audit committees comprise at least 30–40% female members, or a minimum of three women. Evidence shows a single female member does not significantly improve earnings quality, whereas a critical mass does. Listing requirements should mandate this threshold by 2030, using interim targets (one by 2026, two by 2028) to allow for succession planning, drawing on successful precedents like Norway's 40% quota

ii. **Strengthen and Enforce Transparency Disclosures:** Because transparency directly improves earnings quality, regulators must mandate detailed disclosures. These should include audit committee minutes (with dissenting views), quarterly risk reports, internal control evaluations, rationales for accounting policy changes, and member qualifications/attendance. To ensure compliance, securities regulators should enforce strict penalties—such as fines, heightened scrutiny, or delisting—and conduct annual transparency audits to publicly rank firms.

iii. **Implement Complementary Governance Packages:** Gender diversity is most effective in high-transparency environments; therefore, diversity and transparency reforms should be implemented together rather than in isolation. In emerging markets with weaker infrastructure, international institutions should provide technical assistance for integrated reforms. Crucially, transparency mechanisms must precede or accompany diversity mandates so that female audit committee members have the information required for effective oversight

iv. **Differentiate Requirements Based on Firm Structure:** Because governance reforms have a stronger impact where external monitoring is weak, regulatory requirements should be tiered based on firm size and ownership. Smaller firms and those with low institutional ownership should face stricter rules, such as accelerated diversity timelines, independent transparency reviews, and biennial governance audits. Conversely, larger firms with high institutional ownership require less intensive intervention due to existing shareholder monitoring

v. **Proactively Recruit Multiple Skilled Female Audit Committee Members:** Boards must move past compliance-driven tokenism and intentionally target a critical mass of at least three women on the audit committee. Recruitment should prioritize female candidates with strong financial credentials (e.g., CPA, CFA), industry experience, and active board histories. Nomination committees should formalize diversity plans, partner with professional networks like the 30% Club, and look beyond traditional pools to include international candidates, academics, and retired accounting partners

vi. **Enhance Voluntary Transparency Practices Beyond Regulatory Minima:** Firms should treat transparency as a strategic advantage rather than a compliance burden, as exceeding minimum disclosure requirements lowers capital costs and improves investor trust. Management should voluntarily publish detailed audit committee activity reports, risk methodologies, explanations for critical accounting estimates, and external audits of internal controls. Adopting integrated reporting frameworks helps connect financial data with broader corporate performance

7.2 Recommendations for Future Research

i. Conduct Cross-Country Comparative and Quasi-Experimental Studies: To establish definitive causal effects, future research should leverage quasi-natural experiments created by staggered gender quota laws (e.g., Norway, France) and transparency directives. Cross-country studies using multi-level modeling can reveal how legal systems, cultural norms, and varying regulatory regimes moderate the relationship between governance structures and earnings quality.

ii. Investigate Behavioral Mechanisms Linking Diversity to Monitoring Effectiveness: Because archival data cannot capture interpersonal dynamics, researchers should utilize qualitative methods—such as semi-structured interviews, meeting observations, and transcript analysis. This approach can uncover how female members influence committee dynamics, challenge management assumptions, and employ specific strategies (e.g., questioning techniques, coalition building) to enhance oversight.

iii. Examine Intersectionality and Multiple Diversity Dimensions: Future studies should explore how gender interacts with other diversity dimensions, including nationality, ethnicity, age, and tenure. Researchers should apply intersectionality theory to determine if the critical mass threshold varies across cultural contexts (e.g., collectivist vs. individualist societies) and whether combining multiple diversity dimensions creates synergistic governance benefits.

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