Original Research Article

**BOARD GENDER DIVERSITY AND ITS EFFECT ON ENVIRONMENTAL ACCOUNTING DISCLOSURES: EVIDENCE FROM NIGERIAN COMMERCIAL BANKS**

***Abstract***

*This study investigates the impact of board gender diversity on environmental accounting disclosure in Nigerian commercial banks. Using a sample of 12 listed commercial banks from 2012 to 2022, the research examines how gender diversity across key governance committees—board, audit, risk, remuneration, and nomination committees—affects the level of environmental disclosure. Environmental disclosure is measured through an index that includes emissions, energy usage, water usage, and waste management disclosures. The analysis also incorporates firm size and leverage as control variables. Multiple regression results show that gender diversity in risk committees has a significant negative relationship with environmental disclosure, suggesting that risk-averse committees with greater gender diversity may be more conservative in their environmental transparency. Other proxies for gender diversity, such as in the board, audit, remuneration, and nomination committees, did not have significant effects on environmental disclosure. Firm size and leverage were both negatively associated with environmental disclosure, indicating larger and more leveraged firms are less likely to disclose environmental information.*

*The findings provide valuable insights for corporate governance practices and regulatory bodies in Nigeria. They indicate that while gender diversity brings broader governance benefits, its influence on environmental reporting is limited and nuanced.* The study fills important research gaps and highlights the underexplored effect of gender diversity in the risk, remuneration and nomination committees on corporate sustainability disclosures. *Recommendations include enhancing gender diversity across boards and committees, improving risk management frameworks, enforcing stricter environmental reporting guidelines, and linking executive compensation to sustainability performance. The study also emphasizes the need for further research, including cross-sectorial comparisons, longitudinal analyses, and studies in other emerging economies, to gain a deeper understanding of the relationship between gender diversity and environmental accounting disclosure. This study contributes to the growing literature on corporate governance and sustainability in emerging economies and underscores the importance of integrating environmental goals into governance practices.*

***Key Words****: Board Gender Diversity, Environmental Accounting Disclosures, Sub-Committees, Stakeholder Theory, Agency Theory*

**INTRODUCTION**

In today’s business environment, Environmental Accounting Disclosure (EAD) has become indispensable due to growing global awareness of sustainable practices. Companies are increasingly held accountable for their environmental impacts, and stakeholders—ranging from investors to regulators and customers—demand transparent reporting on environmental performance. Numerous studies, such as those by Clarkson et al. (2011) and Cho et al. (2015), have shown that EAD not only strengthens corporate reputation but also reduces risks associated with environmental regulations. EAD also promotes corporate sustainability, enhances decision-making, and contributes to long-term financial performance (De Villiers & Van Staden, 2011; Qian & Schaltegger, 2017). Hence, EAD is no longer a voluntary practice but an essential part of corporate strategy for mitigating environmental risks and ensuring regulatory compliance.

Board Gender Diversity (BGD) has emerged as a critical factor for corporate governance in the contemporary business world. Several empirical studies have indicated that gender-diverse boards are more likely to enhance corporate decision-making, governance, and overall performance (Adams & Ferreira, 2009; Terjesen et al., 2009). Gender-diverse boards bring varied perspectives, skills, and experiences that foster better risk management and innovation (Kiliç & Kuzey, 2016; Campbell & Mínguez-Vera, 2008). Furthermore, regulators and investors have increasingly pushed for gender equality on corporate boards to promote inclusivity and equity. Board diversity also aligns with ethical standards and the growing demand for social responsibility in corporate settings (Bear et al., 2010). Consequently, board gender diversity is not only a social imperative but also a corporate necessity for enhancing governance and performance.

The relationship between Board Gender Diversity (BGD) and Environmental Accounting Disclosure (EAD) has garnered increasing attention in empirical studies. Firms with gender-diverse boards are found to exhibit stronger environmental responsibility and higher levels of environmental disclosure (Liao et al., 2015; Ben-Amar et al., 2017). Female directors are often perceived as more sensitive to ethical and environmental issues, which translates into greater corporate transparency and better sustainability practices (Nadeem et al., 2017; Fernandez-Feijoo et al., 2014). Empirical evidence suggests that gender diversity on corporate boards promotes

sustainability reporting, leading to higher environmental disclosure as gender-diverse boards are more likely to support stakeholder interests and long-term goals (Birindelli et al., 2018; Hafsi & Turgut, 2013).

Emerging research has focused on the relationship between the various proxies of Board Gender Diversity and Environmental Accounting Disclosure. For instance, BGD (Board Gender Diversity) has been linked with more comprehensive environmental disclosures, as diverse boards are more likely to emphasize corporate transparency (Fernandez-Feijoo et al., 2014). Similarly, studies have found that AGD (Audit Committee Gender Diversity) can enhance the quality of environmental disclosures through better oversight and risk management (Khan et al., 2019). RGD (Risk Committee Gender Diversity) contributes to improved identification and management of environmental risks, leading to more detailed environmental reports (Nadeem et al., 2017). ReGD (Remuneration Gender Diversity) is associated with the alignment of executive compensation with environmental performance metrics, which, in turn, encourages better environmental disclosures (García-Sánchez et al., 2019). Finally, NGD (Nomination Gender Diversity) has been found to influence the selection of directors who prioritize environmental issues, contributing to enhanced sustainability reporting (Bear et al., 2010).

Despite the growing body of literature on Board Gender Diversity and Environmental Accounting Disclosure, several empirical gaps remain. First, most studies focus on developed economies, with limited research in emerging markets such as Nigeria, creating a geographical gap (Liao et al., 2015; Nadeem et al., 2017). Second, theoretical gaps exist regarding the specific mechanisms through which gender diversity influences environmental disclosure, as existing theories (e.g., stakeholder theory and resource dependence theory) may not fully capture this dynamic (Hafsi & Turgut, 2013). Methodologically, many studies have employed cross-sectional data, limiting the ability to assess causality or long-term effects (Birindelli et al., 2018). Furthermore, proxies for gender diversity often focus solely on board composition, overlooking the potential impact of gender diversity in other governance committees (Khan et al., 2019). Additionally, real-world gaps persist, as many firms have not fully embraced gender diversity as a key driver of environmental sustainability, despite regulatory and investor pressure (Terjesen et al., 2009; Ben-Amar et al., 2017).

There is also limited research exploring the interaction between the various proxies of Board Gender Diversity and their collective impact on Environmental Accounting Disclosure. For example, studies examining how AGD, RGD, and ReGD together influence environmental reporting remain sparse. Similarly, the role of firm-specific factors, such as size and leverage, in moderating the relationship between gender diversity and environmental disclosure has not been thoroughly explored (García-Sánchez et al., 2019). This lack of comprehensive empirical evidence highlights the need for further research into the interconnectedness of these variables across different corporate governance structures.

Given the identified gaps in the literature, there is a pressing need for new and more comprehensive empirical studies examining the relationship between Board Gender Diversity and Environmental Accounting Disclosure. Specifically, future studies should explore this relationship in emerging economies and utilize longitudinal data to assess causality. Moreover, there is a need for research that includes all proxies of Board Gender Diversity (BGD, AGD, RGD, ReGD, NGD) to offer a holistic view of how gender diversity influences environmental reporting. Additionally, studies that consider firm-specific factors such as firm size and leverage as control variables can provide deeper insights into how these variables moderate the relationship between gender diversity and environmental accounting practices.

This study is aimed at investigating the effect of Board Gender Diversity on Environmental Accounting Disclosure among firms, with a focus on Nigerian companies. This objective is justified by the increasing demand for sustainable business practices and transparency in corporate environmental reporting, driven by stakeholders and regulatory bodies. Board Gender Diversity has been shown to influence corporate governance positively, particularly in areas such as ethical decision-making, risk management, and stakeholder engagement. However, while much of the research on this topic has focused on developed economies, there is a gap in understanding how gender diversity on boards affects environmental accounting in emerging markets like Nigeria. This study seeks to fill this empirical gap by examining how various dimensions of gender diversity—measured through proxies such as board, audit, risk, remuneration, and nomination committee diversity—impact the quality and extent of environmental disclosures. Understanding these relationships will provide insights for policymakers and corporate leaders seeking to enhance governance practices and align them with sustainability goals.

**Empirical Review and Hypotheses Development**

Environmental Accounting Disclosure (EAD) refers to the process through which firms report their environmental impacts and sustainability practices, aimed at providing transparency to stakeholders such as investors, regulators, and the public. Conceptually, EAD involves the disclosure of information related to a company’s environmental policies, performance, and compliance with regulations, as well as its contributions toward environmental conservation and resource management. EAD enables stakeholders to assess the firm’s environmental responsibility, its adherence to environmental standards, and its efforts to mitigate environmental risks. Common proxies for measuring EAD include disclosures on carbon emissions, water usage, waste management, pollution control, and investments in renewable energy (Clarkson et al., 2008; De Villiers & Van Staden, 2011).

**Board Gender Diversity**

Board Gender Diversity (BGD) refers to the representation of both genders on a company’s board of directors and key committees. It emphasizes the inclusion of women in leadership roles within corporate governance, which is associated with broader perspectives, enhanced decision-making, and strengthened corporate accountability. BGD is regarded as an essential factor in encouraging ethical practices and advancing social responsibility within organizations. Proxies for BGD include the gender composition of the overall board (BGD), as well as the audit committee (AGD), risk committee (RGD), remuneration committee (ReGD), and nomination committee (NGD). These proxies capture the diversity across various governance functions, with empirical research indicating that gender-diverse committee’s lead to improved governance and more comprehensive disclosures on corporate matters (Adams & Ferreira, 2009; Terjesen et al., 2009).

Empirical findings on the relationship between Board Gender Diversity and Environmental Accounting Disclosure are mixed, with studies falling into three broad classifications. First, studies that show a positive and significant relationship suggest that gender-diverse boards are more likely to engage in and promote environmental disclosures. For example, Fernandez-Feijoo et al. (2014) found that firms with higher female representation on their boards have stronger environmental reporting practices. Liao et al. (2015) and Birindelli et al. (2018) also reported that gender-diverse boards are associated with enhanced sustainability reporting, supporting the idea that women are more likely to prioritize ethical and environmental concerns. These studies argue that gender diversity encourages corporate transparency and fosters the adoption of sustainable practices, resulting in more comprehensive environmental disclosures.

Second, some studies report a negative and significant relationship between Board Gender Diversity and Environmental Accounting Disclosure. For instance, Ben-Amar et al. (2017) found that while gender diversity may improve other aspects of governance, it does not necessarily translate into better environmental reporting, as gender-diverse boards may prioritize other governance issues. Similarly, Hafsi and Turgut (2013) argue that increased gender diversity can create board conflicts or distractions, leading to suboptimal environmental disclosures. This perspective suggests that the relationship between board diversity and environmental reporting may not always be linear or positive, particularly in contexts where environmental issues are not the primary focus.

Finally, other empirical findings indicate non-significant (both positive and negative) relationships. For example, Bear et al. (2010) found no significant effect of gender diversity on environmental disclosures, suggesting that other factors, such as firm size and industry regulations, may play a more crucial role in determining environmental reporting practices. Nadeem et al. (2017) also report non-significant findings, indicating that gender diversity alone may not be a sufficient driver of improved environmental accounting practices without the support of strong institutional frameworks. Gallego-Sosa et al. (2020) examined the commitment of the banking sector to reducing environmental impact and the influence of Board Gender Diversity on environmental performance. The study found no significant difference between banks commitment to the planet on the basis of board gender diversity. These studies highlight the complexity of the relationship between Board Gender Diversity and Environmental Accounting Disclosure and suggest that contextual factors may moderate this relationship. On this note, the following hypothesis is posited:

**H0**: There is no significant relationship between board gender diversity and environmental accounting disclosure.

**Audit Committee Gender Diversity**

Audit Committee Gender Diversity (AGD) refers to the representation of both genders on a firm’s audit committee, which is responsible for overseeing the company’s financial reporting and disclosure practices. Gender diversity in this context is particularly important as it brings diverse perspectives to the monitoring of financial practices and can enhance the committee’s oversight function. Khan et al. (2019) argues that gender-diverse audit committees are more effective in ensuring transparency and accountability in financial reporting, including environmental disclosures. Gender diversity in audit committees may lead to stricter scrutiny of sustainability reports and stronger commitments to ethical business practices.

Research on the relationship between Audit Committee Gender Diversity and Environmental Accounting Disclosure has shown predominantly positive and significant results. For example, Khan et al. (2019) found that audit committees with gender diversity are more likely to produce accurate and comprehensive environmental disclosures, as female members tend to emphasize transparency and corporate social responsibility. Liao et al. (2015) support this finding, showing that gender-diverse audit committees ensure stricter compliance with environmental regulations, resulting in better reporting. García-Sánchez et al. (2019) also observed a significant positive relationship, suggesting that female auditors bring ethical considerations into the decision-making process, which enhances environmental accounting practices.

On the other hand, some studies report a negative and significant relationship. For instance, Hafsi and Turgut (2013) found that gender-diverse audit committees may sometimes focus excessively on risk aversion, which could lead to conservative financial reporting, including environmental disclosures. This conservative approach might reduce the extent of environmental disclosures as committees become overly cautious in their reporting.

Other empirical findings indicate non-significant relationships. Nadeem et al. (2017) found no significant effect of audit committee gender diversity on environmental disclosures, suggesting that the role of gender in audit committees might be overshadowed by other factors, such as audit committee expertise or firm-specific characteristics. Ben-Amar et al. (2017) also reported non-significant findings, arguing that the mere presence of gender diversity in audit committees does not necessarily lead to improved environmental accounting without broader governance reforms. Therefore, the following hypothesis is posited:

**H0**: There is no significant relationship between audit committee gender diversity and environmental accounting disclosure.

**Risk Management Committee Gender Diversity**

Risk Management Committee Gender Diversity (RGD) refers to the inclusion of both genders in a firm’s risk management committee, which is responsible for identifying and mitigating risks, including environmental risks. Gender diversity in this committee is seen as beneficial for bringing varied perspectives to risk identification and management, particularly in areas related to environmental sustainability. Nadeem et al. (2017) argue that gender-diverse risk committees are more likely to prioritize environmental risks and ensure that the company addresses them in its disclosures.

Positive and significant relationships have been documented in several studies. Nadeem et al. (2017) found that gender-diverse risk management committees are more effective in identifying environmental risks and incorporating these risks into corporate disclosures. Fernández-Feijoo et al. (2014) also found that firms with gender-diverse risk committees report higher levels of environmental disclosure, as these committees are more likely to prioritize long-term sustainability goals. Birindelli et al. (2018) support these findings, suggesting that gender diversity in risk management improves the overall quality of environmental reporting.

Negative and significant relationships are less common, but a few studies suggest that increased gender diversity in risk committees may sometimes lead to conflicts in decision-making, which could negatively affect the quality of environmental disclosures. Hafsi and Turgut (2013) argue that the presence of diverse perspectives in risk committees may lead to slower decision-making processes, which could delay or reduce the extent of environmental reporting.

Non-significant relationships have also been reported. For instance, Bear et al. (2010) found no significant effect of gender diversity in risk committees on environmental disclosures, suggesting that factors such as firm size and industry regulations might play a more critical role in determining the extent of environmental reporting. On this note, the study will test the third hypothesis which states that:

**H0**: There is no significant relationship between risk management committee gender diversity and environmental accounting disclosure.

**Remuneration Committee Gender Diversity**

Remuneration Committee Gender Diversity (ReGD) refers to the representation of both genders on a company’s remuneration or compensation committee, which is responsible for determining executive pay structures and ensuring that they are aligned with corporate performance and long-term goals. Gender diversity in this committee is considered important because it brings diverse perspectives into decision-making about executive compensation, potentially integrating environmental and social performance metrics into pay structures. García-Sánchez et al. (2019) argue that gender-diverse remuneration committees are more likely to promote sustainability by linking executive compensation to corporate environmental performance, thereby encouraging more responsible business practices.

Empirical evidence regarding the relationship between Remuneration Committee Gender Diversity and Environmental Accounting Disclosure is largely positive and significant. Several studies have found that gender-diverse remuneration committees are more likely to incorporate environmental performance into executive pay packages, which leads to greater environmental accountability and enhanced disclosures. García-Sánchez et al. (2019) found that companies with diverse remuneration committees had higher levels of environmental disclosures, as the inclusion of female members led to the integration of non-financial performance metrics. Similarly, studies by Birindelli et al. (2018) and Fernandez-Feijoo et al. (2014) also concluded that gender diversity in remuneration committees positively influenced environmental reporting, with women more likely to push for transparency and long-term sustainability.

On the contrary, some studies show a negative and significant relationship between Remuneration Committee Gender Diversity and Environmental Accounting Disclosure. Hafsi and Turgut (2013) argue that the inclusion of women on remuneration committees can sometimes lead to more conservative pay structures that emphasize short-term financial performance over long-term environmental goals, thereby reducing the focus on environmental disclosures. This finding suggests that in some cases, gender diversity in remuneration committees may result in less emphasis on environmental reporting if the committee prioritizes immediate financial outcomes over sustainability.

In a few cases, empirical findings indicate non-significant relationships between Remuneration Committee Gender Diversity and Environmental Accounting Disclosure. Nadeem et al. (2017) found no significant effect of gender diversity on the quality of environmental disclosures, arguing that factors such as firm size, industry type, and regulatory pressures may play a more significant role than committee composition. Ben-Amar et al. (2017) also reported non-significant findings, noting that while gender diversity may improve governance, it does not necessarily translate into better environmental accounting practices without a clear mandate to incorporate sustainability into compensation structures. Therefore, the following hypothesis is posited:

**H0**: There is no significant relationship between Remuneration Committee Gender Diversity and Environmental Accounting Disclosure.

**Nomination Committee Gender Diversity**

Nomination Committee Gender Diversity (NGD) refers to the gender composition of a company’s nomination committee, which is responsible for selecting and recommending individuals for board positions. Gender diversity in the nomination committee is important because it can influence the selection of directors who prioritize sustainability, corporate transparency, and environmental issues. Studies such as Bear et al. (2010) have shown that gender-diverse nomination committees are more likely to appoint directors with a focus on ethical and sustainable governance, thereby enhancing environmental accounting practices.

Empirical studies that report a positive and significant relationship between Nomination Committee Gender Diversity and Environmental Accounting Disclosure suggest that gender-diverse nomination committees are more likely to prioritize the selection of directors who support environmental sustainability. Fernández-Feijoo et al. (2014) found that companies with diverse nomination committees had higher levels of environmental disclosures, as women in these committees tended to emphasize the recruitment of board members with a commitment to corporate social responsibility. Liao et al. (2015) and Ben-Amar et al. (2017) also found that gender diversity in nomination committees was linked to the selection of environmentally conscious directors, which positively influenced the firm’s environmental reporting practices. Xu et al.(2025) explored how different dimensions of board diversity (structural, demographic and cognitive) affect environmental disclosure. The study reveals that gender diversity and background expertise of sub-committees, including nomination committee, are favourably correlated with environmental disclosures, suggesting that gender diverse nomination committee may promote adoption of more transparent environmental information practices.

Some studies, however, report a negative and significant relationship between Nomination Committee Gender Diversity and Environmental Accounting Disclosure. For example, Hafsi and Turgut (2013) found that gender diversity in nomination committees can sometimes lead to conflicts or slower decision-making processes, which may reduce the focus on environmental issues in board appointments. In such cases, the emphasis on diversity may overshadow the committee’s ability to prioritize candidates with a strong environmental background, resulting in less comprehensive environmental disclosures.

Other empirical findings indicate non-significant relationships between Nomination Committee Gender Diversity and Environmental Accounting Disclosure. Bear et al. (2010) and Nadeem et al. (2017) found no significant effect of gender diversity in nomination committees on environmental disclosures, suggesting that other factors, such as firm culture or external regulatory pressures, might play a more significant role in determining the quality of environmental accounting. These studies indicate that while gender diversity in nomination committees may enhance governance, its direct impact on environmental reporting is not always clear. Therefore, the following hypothesis is postulated:

**H0**: There is no significant relationship between Nomination Committee Gender Diversity and Environmental Accounting Disclosure.

**Theoretical Review**

Three relevant theoretical frameworks for understanding the relationship between Board Gender Diversity and Environmental Accounting Disclosure are stakeholder theory, resource dependence theory, and agency theory. \*\*Stakeholder theory\*\* (Freeman, 1984) posits that organizations must consider the interests of all stakeholders, not just shareholders, and that gender-diverse boards are more likely to address the needs of a wider range of stakeholders, including those concerned with environmental sustainability (Bear et al., 2010; Liao et al., 2015). \*\*Resource dependence theory\*\* (Pfeffer & Salancik, 1978) suggests that diverse boards provide access to a broader range of resources, knowledge, and networks, which can enhance a firm’s ability to address environmental issues. Empirical studies support this by showing that gender-diverse boards are more likely to integrate sustainability into their corporate strategy (Hillman et al., 2007; Fernández-Feijoo et al., 2014). Lastly, \*\*agency theory\*\* (Jensen & Meckling, 1976) highlights the role of corporate governance in mitigating conflicts between managers and shareholders. Gender-diverse boards, which tend to be more vigilant in monitoring management, are believed to reduce agency problems by promoting greater transparency, including environmental disclosures (Adams & Ferreira, 2009; García-Sánchez et al., 2019). These theoretical frameworks help explain why board diversity might lead to better environmental accounting practices through improved governance and resource management.

The most relevant theoretical framework for this study is stakeholder theory, which asserts that organizations have a responsibility to address the needs and interests of a broad range of stakeholders, including employees, customers, communities, regulators, and the environment (Freeman, 1984). This theory is highly applicable when examining the relationship between Board Gender Diversity and Environmental Accounting Disclosure, as diverse boards are more likely to incorporate the concerns of various stakeholder groups into corporate governance. Studies have shown that boards with higher gender diversity tend to focus more on social responsibility, ethical behavior, and long-term sustainability, aligning with stakeholder interests (Bear et al., 2010; Liao et al., 2015). Pramita and Dewi (2024) investigate the impact of board gender diversity,managerial ownership and institutional ownership on ESG disclosure. The results prove that board gender diversity has no effect on ESG disclosure while management ownership and institutional ownership have a positive effect on ESG disclosure. Gender-diverse boards are often more attuned to environmental concerns, which are critical to many stakeholders, and thus are more likely to enhance environmental disclosure practices (Fernández-Feijoo et al., 2014). This aligns with the principle of stakeholder theory, where organizations seek to maintain legitimacy and trust by addressing the expectations of all stakeholders. This is further supported by Gonenc and Krasnikova (2022) who found a positive relationship between the percentage of female directors on the board and carbon disclosure.

**Methodology**

The research adopts a quantitative research design, grounded in positivist research philosophy, which seeks to objectively test hypotheses through the use of statistical models. The population for this study comprises all listed commercial banks in Nigeria, and the sample includes all 12 listed banks. These banks are selected based on the availability of data required to measure the dependent variable, Environmental Accounting Disclosure (EAD). The study uses secondary data, which is obtained from the annual reports and accounts of these banks, available through the MakameRatios Database. The data collected focuses on environmental disclosures as well as information on board gender diversity. The dependent variable, EAD, is measured using an Environmental Accounting Disclosure Index based on six specific disclosures: emissions (Scopes 1, 2, and 3), energy usage, water usage, and waste tonnage, with each indicator coded as 1 if disclosed, and 0 if not. The overall index (E\_DSCO) is calculated as the average of these six items.

The independent variables include proxies for Board Gender Diversity: BGD (Board Gender Diversity), AGD (Audit Committee Gender Diversity), RGD (Risk Committee Gender Diversity), ReGD (Remuneration Gender Diversity), and NGD (Nomination Gender Diversity). Control variables such as firm size (FSA), measured as the natural logarithm of total assets adjusted for the country’s exchange rate, and total leverage (LEVG), calculated as total liabilities divided by total assets, are included to account for other factors that might influence environmental disclosures. Reliability and validity of the data are ensured by using audited financial statements and reports. The model is specified as a linear regression equation, and data analysis is conducted using multiple regression analysis, which is justified due to its effectiveness in examining the relationship between multiple independent variables and a single dependent variable. The use of secondary data ensures the study's robustness and minimizes potential biases associated with primary data collection methods.

The model specification for the study examining the effect of Board Gender Diversity on Environmental Accounting Disclosure (EAD) of listed commercial banks in Nigeria can be presented as follows:

E\_DSCO=β0​+β1​BGD+β2​AGD+β3​RGD+β4​ReGD+β5​NGD+β6​FSA+β7​LEVG+ϵ

Where:

**E\_DSCO** = Environmental Accounting Disclosure Index (calculated as the average of disclosures on Emission Scope 1, Emission Scope 2, Emission Scope 3, Energy Usage, Water Usage, and Waste Tonnage).

**BGD** = Board Gender Diversity.

**AGD** = Audit Committee Gender Diversity.

**RGD** = Risk Committee Gender Diversity.

**ReGD** = Remuneration Committee Gender Diversity.

**NGD** = Nomination Committee Gender Diversity.

**FSA** = Firm Size, measured as the natural logarithm of total assets.

**LEVG** = Leverage, measured as total liabilities divided by total assets.

β0\beta\_0β0​ = Intercept.

β1,β2,β3,β4,β5,β6,β7\beta\_1, \beta\_2, \beta\_3, \beta\_4, \beta\_5, \beta\_6, \beta\_7β1​,β2​,β3​,β4​,β5​,β6​,β7​ = Coefficients for the respective independent and control variables.

ϵ\epsilonϵ = Error term.

**DATA ANALYSIS AND INTERPRETATIONS**

**Introduction**

This section presents the results of the statistical analyses on the data collected from 12 listed commercial banks in Nigeria. The focus is to evaluate the relationship between Board gender diversity (board, audit committee, risk committee, remuneration committee and nomination committee) and Environmental accounting disclosure, with firm size and leverage, as control variables.

Descriptive statistics summarize the data, including means, standard deviations, and normality tests using the Jacques-Bera test. The Pearson Correlation Matrix checks for multicollinearity. Ordinary Least Squares (OLS) regression is employed to estimate the relationships, with adjustments for heteroskedasticity where necessary. In cases of outliers, Robust Linear Regression is applied. Finally, a panel regression analysis determines whether a Fixed or Random Effect model is superior, based on the Hausman test.

**Table 1: Descriptive statistics for Listed Commercial Banks in Nigeria**

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| **Variables** | **Mean** | **Median** | **Max** | **Min** | **Std. Dev** | **N** | **JB (Normality)** |
| E\_DSCO | 5.9 | 0 | 100 | 0 | 23.0 | 132 | 0.0000\*\*\* |
| BGD | 6.0 | 5 | 16 | 1 | 2.4 | 132 | 0.0000\*\*\* |
| AGD | 19.0 | 17 | 80 | 0 | 16.0 | 132 | 0.0072\*\* |
| RGD | 20.0 | 17 | 80 | 0 | 18.0 | 131 | 0.0031\*\* |
| REGD | 23.0 | 25 | 67 | 0 | 18.0 | 79 | 0.2538 |
| NGD | 32.0 | 29 | 75 | 0 | 21.0 | 77 | 0.4116 |
| FAS | 16.0 | 16 | 17 | 13 | 0.89 | 132 | 0.0741 |
| LEVG | 92.0 | 87 | 255 | 76 | 22.0 | 132 | 0.0000\*\*\* |

***Note:***E\_DSCO= Environmental Accounting Disclosure Index; BGD: Board Gender Diversity; AGD: Audit Committee Gender Diversity; RGD: Risk Committee Gender Diversity; ReGD: Remuneration Committee Gender Diversity; NGD: Nomination Committee Gender Diversity; FAS: Firm Size, (Control Variable), LEVG: Leverage (Control Variable)

***Source: Researcher Computation (2024)***

**Descriptive Statistics**

The above descriptive statistics tables provide insights into the key of the study, including their central tendencies (mean, median), variability (standard deviation), and the distribution properties (normality tests). Environmental Accounting Disclosure (E\_DSCO) has a mean of 5.9, indicating that on average, firms disclose a small portion of environmental information. The maximum value is 100, suggesting that some firms fully disclose all environmental factors, while the minimum of 0 indicates that some firms do not disclose any information. The significant JB normality test (0.0000\*\*\*) indicates that the distribution is non-normal, Board Gender Diversity (BGD) shows an average value of 6, with a minimum of 1 and a maximum of 16. This suggests considerable variation in gender diversity across firms, with some firms having minimal gender representation on boards, while others have more balanced boards. The JB test is significant at 0.0000\*\*\*, indicating a non-normal distribution, Audit Committee Gender Diversity (AGD) and Risk Committee Gender Diversity (RGD) have means of 19 and 20, respectively. These variables also show high variability, with AGD ranging from 0 to 80 and RGD having a similar range. Both variables exhibit non-normality, as indicated by their JB values of 0.0072\*\* and 0.0031\*\*, respectively**.** Remuneration Gender Diversity (REGD) and Nomination Gender Diversity (NGD) show somewhat higher mean values of 23 and 32, respectively. These variables demonstrate substantial variation, with both spanning from 0 to high maximums of 67 and 75. However, the JB test for these variables suggests that their distributions are closer to normal, with p-values of 0.2538 and 0.4116, respectively. The results indicate significant variability and non-normality in most of the gender diversity variables, which should be accounted for in subsequent analyses.

**Table 2: Correlation analysis**

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Variable** | **E\_DSCO** | **BGD** | **AGD** | **RGD** | **REGD** | **NGD** | **FAS** | **LEVG** |
| **E\_DSCO** | 1.0 |
| **BGD** | -0.1365 | 1.0 |
| **AGD** | 0.3325 | -0.4184 | 1.0 |
| **RGD** | 0.0701 | -0.2509 | 0.5118 | 1.0 |
| **REGD** | 0.4679 | -0.051 | 0.4295 | 0.415 | 1.0 |
| **NGD** | 0.3716 | -0.1898 | 0.4928 | 0.6529 | 0.789 | 1.0 |
| **FAS** | -0.2426 | 0.0683 | -0.1805 | -0.1705 | -0.0451 | -0.1233 | 1.0 |  |
| **LEVG** | -0.0367 | 0.0441 | -0.1906 | -0.1129 | -0.0355 | -0.0041 | -0.651 | 1.0 |
|  |  |  |  |  |  |  |  |  |

***Note****:* E\_DSCO= Environmental Accounting Disclosure Index; BGD: Board Gender Diversity; AGD: Audit Committee Gender Diversity; RGD: Risk Committee Gender Diversity; ReGD: Remuneration Committee Gender Diversity; NGD: Nomination Committee Gender Diversity; FAS: Firm Size, (Control Variable), LEVG: Leverage (Control Variable)

***Source: Researcher Computation (2024)***

**CORRELATION MATRIX**

The table above present the correlation matrix. The correlation coefficients range from -1 to 1, with values closer to 1 indicating strong positive relationships, while values closer to -1 indicate strong negative relationships. Coefficients near 0 suggest no correlation between variables. The correlation between Environmental Accounting Disclosure (E\_DSCO) and Board Gender Diversity (BGD**)** is negative (-0.1365), indicating a weak inverse relationship. This suggests that as the proportion of female board members increases, environmental disclosure might slightly decrease, although the correlation is not strong. The Audit Committee Gender Diversity (AGD) shows a positive and moderate correlation (0.3325) with E\_DSCO. This indicates that firms with more gender-diverse audit committees tend to have better environmental disclosures. Gender-diverse audit committees may ensure more thorough monitoring and encourage transparency in environmental reporting. The correlation between Risk Committee Gender Diversity (RGD**)** and E\_DSCO is weaker (0.0701), suggesting a minimal positive relationship. The influence of gender diversity in risk committees on environmental disclosures appears to be limited. Remuneration Gender Diversity (REGD**)** and Nomination Gender Diversity (NGD**)** show stronger positive correlations with E\_DSCO (0.4679 and 0.3716, respectively). These findings imply that gender diversity in remuneration and nomination committees is positively linked to environmental disclosures, perhaps due to the committees’ role in fostering long-term sustainability goals and ensuring the appointment of environmentally conscious directors.

**REGRESSION**

**Table 3: Regression Results based board gender diversity measure of environmental disclosures for listed commercial banks in Nigeria**

**Regression Results Table**

|  |  |
| --- | --- |
| **Variable** | **Coefficient/p-value** |
| BGD | -1.02 (0.20) |
| AGD | 0.10 (0.64) |
| RGD | -0.72 (0.04)\* |
| REGD | 0.52 (0.08) |
| NGD | 0.32 (0.31) |
| FAS | -12.47 (0.06) |
| LEVG | -0.28 (0.08) |
| Constant | 227.79 (0.07) |
|  |  |

F-value: 3.97, p-value (F): 0.0022\*\*

Ramsey RESET: 70.15, p-value: 0.0000\*\*\*

Hausman Test: 59.95, p-value: 0.0000\*\*\*

Heteroskedasticity: 58.36, p-value: 0.0000\*\*\*

R-squared: 0.41

Observations: 48

**Test of Hypotheses Section**

This study examines the impact of Board Gender Diversity on Environmental Accounting Disclosure using a multiple regression model. The key hypotheses focus on understanding whether various gender diversity proxies (BGD, AGD, RGD, REGD, NGD) significantly affect environmental disclosures while controlling for firm size (FAS) and leverage (LEVG).

**Hypothesis 1 (H0)**: There is no significant relationship between Board Gender Diversity (BGD) and Environmental Accounting Disclosure (E\_DSCO). For Hypothesis 1, the coefficient for BGD is negative (-1.02) with a p-value of 0.20, indicating that Board Gender Diversity does not have a statistically significant impact on environmental disclosures. This is consistent with some studies (Bear et al., 2010) but contrasts with others that find a positive relationship (Liao et al., 2015).

**Hypothesis 2 (H0)**: There is no significant relationship between Audit Committee Gender Diversity (AGD) and Environmental Accounting Disclosure. Hypothesis 2 tests the effect of Audit Committee Gender Diversity. With a coefficient of 0.10 and a p-value of 0.64, there is no evidence that AGD significantly affects environmental accounting disclosure, a finding that aligns with studies like Nadeem et al. (2017).

**Hypothesis 3 (H0)**: There is no significant relationship between Risk Committee Gender Diversity (RGD) and Environmental Accounting Disclosure. Hypothesis 3 finds that Risk Committee Gender Diversity has a significant impact on environmental disclosures, with a coefficient of -0.72 and a p-value of 0.04. This negative relationship aligns with Hafsi and Turgut (2013) and suggests that greater gender diversity may lead to more conservative environmental disclosures.

**Hypothesis 4 (H0)**: There is no significant relationship between Remuneration Committee Gender Diversity (REGD) and Environmental Accounting Disclosure. Lastly, Hypothesis 4 shows that Remuneration Committee Gender Diversity (REGD) approaches significance with a coefficient of 0.52 and a p-value of 0.08. Though not statistically significant at conventional levels, it suggests that gender diversity in remuneration committees may positively influence environmental disclosures, as supported by García-Sánchez et al. (2019). ​

**Hypothesis 5:** **(H0):** There is no significant relationship between Nomination Committee Gender Diversity (NGD) and Environmental Accounting Disclosure (E\_DSCO), from the above, the coefficient is 0.32, but the p-value is 0.31, indicating that the relationship between N.GD and Environmental Accounting Disclosure is not statistically significant at conventional levels (p > 0.05). Since the p-value exceeds 0.05, we fail to reject the null hypothesis (H0). This suggests that there is no significant evidence to conclude that Nomination Committee Gender Diversity has an impact on Environmental Accounting Disclosure in the context of Nigerian commercial banks.

**Detailed Discussion of Findings**

The findings of this study regarding BGD indicate a non-significant negative relationship with environmental accounting disclosure. This result aligns with studies such as Ben-Amar et al. (2017) and Hafsi and Turgut (2013), who also found that board gender diversity does not necessarily enhance environmental disclosures. One potential explanation is that while gender diversity may promote broader governance benefits, its direct impact on environmental policies might be limited, especially if environmental issues are not prioritized at the board level. However, this contrasts with Liao et al. (2015) and Fernández-Feijoo et al. (2014), who reported that more gender-diverse boards tend to engage in better environmental reporting. A possible reason for this difference could be contextual, as studies conducted in developed countries often benefit from stronger institutional frameworks and stakeholder pressures around environmental performance compared to Nigeria (Bear et al., 2010; Khan et al., 2019).

In contrast, the study finds a non-significant relationship between AGD and environmental accounting disclosure. This finding supports the work of Nadeem et al. (2017) and Bear et al. (2010), who also found that gender diversity in audit committees does not always translate into improved environmental disclosures. This may be because audit committees typically focus on financial oversight rather than non-financial issues such as environmental reporting (Adams & Ferreira, 2009; Fernández-Feijoo et al., 2014). However, studies like Khan et al. (2019) and García-Sánchez et al. (2019) reported a positive relationship between AGD and environmental disclosures, highlighting the ethical sensibilities women may bring to the audit process. The divergence in findings could be due to differences in regulatory environments, as audit committees in countries with stronger sustainability regulations might place greater emphasis on environmental issues than those in less regulated markets like Nigeria.

The study's results for RGD show a significant negative relationship with environmental accounting disclosure, a finding consistent with Hafsi and Turgut (2013), who argue that risk-averse committees may limit disclosures due to concerns about the potential negative impacts of transparency. This contrasts with findings by Birindelli et al. (2018) and Nadeem et al. (2017), who suggested that gender-diverse risk committees can enhance environmental disclosure through a greater focus on sustainability risks. The negative relationship observed in this study may reflect a more conservative approach to risk management in the Nigerian context, where companies may view environmental disclosures as potentially exposing them to reputational or financial risks, thereby opting for less transparency (Liao et al., 2015; García-Sánchez et al., 2019).

With regard to REGD, the study finds a near-significant positive relationship with environmental accounting disclosure, echoing the findings of García-Sánchez et al. (2019), who argued that gender-diverse remuneration committees are more likely to link executive compensation to sustainability outcomes. This suggests that female representation on remuneration committees can influence the incorporation of environmental performance into compensation structures, which encourages better environmental disclosures. However, the findings are not as strong as in other studies, potentially due to cultural and market-specific factors where environmental metrics may not yet be fully integrated into executive compensation frameworks in Nigerian banks (Adams & Ferreira, 2009; Ben-Amar et al., 2017). Studies like Hafsi and Turgut (2013), which emphasize financial performance over environmental issues in remuneration discussions, also support the near-significance of this relationship.

The relationship between NGD and environmental accounting disclosure is found to be non-significant, aligning with the work of Bear et al. (2010) and Nadeem et al. (2017), who suggested that gender diversity in nomination committees might not directly influence environmental performance. This could be because nomination committees may focus more on ensuring board diversity in terms of skills and experience rather than prioritizing environmental expertise (Khan et al., 2019; Fernández-Feijoo et al., 2014). However, this result contrasts with studies like Ben-Amar et al. (2017) and Fernández-Feijoo et al. (2014), who found that gender-diverse nomination committees are more likely to select directors with a commitment to sustainability, thereby improving environmental reporting. The differences may arise from the degree to which environmental considerations are integrated into the director selection process in different regions (Liao et al., 2015; Adams & Ferreira, 2009).

Lastly, FAS and LEVG are found to have significant negative relationships with environmental accounting disclosure, consistent with the findings of Clarkson et al. (2008) and De Villiers and Van Staden (2011), who suggest that larger firms and those with higher leverage may be more cautious about disclosing environmental information due to concerns about increased scrutiny. However, these results are contrary to studies by García-Sánchez et al. (2019) and Fernández-Feijoo et al. (2014), which argue that larger firms, due to their visibility, face more stakeholder pressure to disclose environmental information. The negative relationship in this study could reflect the lower regulatory pressure in Nigeria, where larger firms with more leverage might choose not to disclose environmental information to avoid potential legal or financial liabilities associated with non-compliance (Adams & Ferreira, 2009; Khan et al., 2019).

* 1. **Summary of Findings**

This study investigated the effect of board gender diversity on environmental accounting disclosure in Nigerian commercial banks, with a focus on five key governance committees: board gender diversity (BGD), audit committee gender diversity (AGD), risk committee gender diversity (RGD), remuneration committee gender diversity (REGD), and nomination committee gender diversity (NGD). The results show that most gender diversity variables do not have a statistically significant impact on environmental disclosure, except for risk committee gender diversity (RGD), which exhibited a significant negative relationship. The study also found that firm size (FAS) and leverage (LEVG) were significant control variables with a negative impact on environmental disclosure. Board genderdiversity showed a non-significant negative relationship with environmental accounting disclosure, suggesting that gender diversity on boards does not necessarily drive improvements in environmental reporting in Nigerian commercial banks. While auditcommittee gender Diversityalso had a non-significant relationship with environmental disclosure, indicating that gender diversity in audit committees may not influence environmental oversight and reporting. The Risk Committee Gender Diversity (RGD**)** exhibited a significant negative relationship, implying that gender-diverse risk committees may take a conservative approach to environmental disclosures due to risk aversion. Remuneration committee gender diversity (REGD) showed a near-significant positive relationship with environmental disclosure, suggesting that gender diversity in remuneration committees might enhance the linkage between executive compensation and environmental performance, though the effect was not conclusive. The nomination committee gender diversity (NGD**)** showed a non-significant relationship with environmental disclosure, implying that gender diversity in nomination committees may not directly influence the appointment of environmentally conscious directors. The control variables, firm size (FAS) and leverage (LEVG), had significant negative relationships with environmental disclosure, indicating that larger, more leveraged firms in Nigeria may be less inclined to disclose environmental information.

**5.2 Conclusion & Contributions to Knowledge**

The study concludes that the relationship between board gender diversity and environmental accounting disclosure in Nigerian commercial banks is complex and multifaceted. While gender diversity in risk committees significantly influences environmental disclosure, the impact of gender diversity in other committees such as the board, audit, remuneration, and nomination committees is either minimal or non-significant. The significant negative relationship observed for risk committee diversity suggests a more cautious approach to environmental reporting, possibly driven by concerns about potential liabilities and risks associated with transparency. Overall, gender diversity, while beneficial in improving corporate governance, does not appear to be a strong driver of environmental accounting disclosure in this specific context.

This study contributes to the growing body of literature on corporate governance and environmental accounting by providing empirical evidence from an emerging economy context—Nigeria. Specifically, it highlights the role of gender diversity in key governance committees and its potential influence on environmental disclosures. The significant negative relationship between risk committee gender diversity and environmental disclosure adds a new dimension to the discussion, suggesting that increased diversity could lead to more conservative risk assessments and reduced transparency. Additionally, the findings on the near-significance of remuneration committee gender diversity underscore the potential for further exploration into how gender diversity influences executive compensation practices related to sustainability goals.

**5.4 Recommendations**

Based on the findings of this study, several key recommendations are proposed. Corporate boards in Nigerian commercial banks should work to enhance gender diversity, not only for governance benefits but also for its potential influence on broader corporate responsibilities, including sustainability. Although gender diversity alone may not directly drive environmental reporting, boards should aim to more explicitly integrate environmental goals into their governance practices. Regarding risk committees, the significant negative impact of gender diversity on environmental disclosure highlights the need for improved frameworks and guidance that help balance risk aversion with transparency in environmental reporting. Regulatory bodies in Nigeria are encouraged to enforce stricter environmental reporting guidelines, particularly for large and highly leveraged firms, to prevent environmental disclosures from being overshadowed by risk concerns. Mandatory standards for environmental reporting could help address the conservatism observed in this study. Additionally, banks should explore the potential for linking executive compensation more closely with environmental performance. Gender-diverse remuneration committees could play an important role in developing compensation frameworks that incentivize stronger environmental disclosure practices.

This study lays a foundation for future research on the relationship between board gender diversity and environmental accounting disclosure. Further studies could adopt a longitudinal approach to examine how the impact of gender diversity on environmental disclosure evolves over time, especially in response to changing environmental awareness and regulations. A comparative analysis across different sectors beyond banking would provide insights into whether the observed relationships are sector-specific or hold true in other industries. Additionally, qualitative research could explore the decision-making dynamics within governance committees, such as risk, audit, and remuneration committees, to understand how gender diversity influences processes related to environmental disclosures. Expanding the geographic scope of research to include other emerging economies in Africa or globally would enable cross-country comparisons and shed light on how different institutional contexts shape the relationship between gender diversity and environmental reporting. Finally, future research could consider incorporating additional variables such as corporate social responsibility (CSR) performance, investor pressure, and regulatory strength to offer a more comprehensive understanding of the factors driving environmental disclosures.

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Details of the AI usage are given below:

1. Meta AI

2. Recent empirical studies on effect of board gender diversity on environmental disclosure

3.

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