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IMPACT OF BOARD ATTRIBUTES ON ENVIRONMENTAL, SOCIAL AND GOVERNANCE DISCLOSURE OF ENVIRONMENTALLY SENSITIVE INDUSTRIES OF NIGERIA

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Abstract

This study examines the impact of board attributes on Environmental, Social, and Governance (ESG) disclosure in environmentally sensitive industries in Nigeria. The study population consists of 150 listed companies across 11 sectors of the Nigerian Exchange Group (NGX). Employing a purposive sampling technique, 26 companies were selected from four environmentally sensitive sectors of oil and gas, industrial goods, natural resources, and agriculture. The analysis is based on panel data from 27 firms over a six-year perisod (2018–2023), providing a comprehensive perspective on environmental, social, and governance disclosure trends. Board attributes include board independence, board gender diversity, board meetings, board committees, board size, and the presence of a social and responsibility committee. Additionally, firm size and profitability are incorporated as control variables to account for the potential effects on disclosure practices. The findings of this study reveal that board independence, board meetings, board committee, board size, and social responsibility committee, positively and significantly influence environmental, social, and governance disclosure. However, board gender diversity exhibits positive and non-significant effect on environmental, social, and governance disclosure. These findings highlight the importance of robust governance structures, particularly larger and more competent boards, in driving environmental, social, and governance disclosure in Nigeria's environmentally sensitive industries. Therefore, the study recommends that policymakers should strengthen governance frameworks to enhance sustainability practices and transparency. Also, organisations should endeavour to comply with the standard of the relevant regulatory framework on environmental, social, and governance disclosure so as to attract investors.

Keywords: board attributes, environmentally sensitive industries, ESG disclosure, Nigeria

1. Introduction

Environmental, Social, and Governance (ESG) disclosure refers to the practice of reporting non-financial information related to a company's environmental sustainability efforts, social impact, and governance structures. It provides stakeholders such as investors, regulators, employees, and the public with a clear understanding of the company's performance and commitments in these critical areas (Faccia et al., 2024). On the environmental front, ESG disclosure highlights how organisations manage issues like carbon emissions, resource efficiency, and biodiversity conservation. The social dimension covers aspects such as employee welfare, diversity, community engagement, and respect for human rights. Governance involves transparency in decision-making processes, ethical leadership, board accountability, and adherence to laws and standards (Arayssi et al., 2020; Helfaya et al., 2023; Shaw, 2022). This form of disclosure is increasingly recognised as essential for fostering transparency, accountability, and trust between organisations and their stakeholders.

The importance of ESG disclosure cannot be overemphasised. It allows companies to demonstrate their commitment to sustainable practices, which enhances corporate reputation and builds investor confidence, especially as sustainability-oriented investment continues to grow worldwide (Ouyang et al., 2022). Furthermore, it equips organisations to identify and mitigate risks such as environmental liabilities, social unrest, or governance failures while uncovering opportunities like energy efficiency or entering sustainability-driven markets (Rella & L'Abate, 2022). Importantly, ESG disclosure aligns corporate actions with global and regional sustainability priorities, such as the United Nations' Sustainable Development Goals (SDGs) and Nigeria's environmental and social governance objectives. For Nigeria, where industries like oil and gas, natural resources, industrial goods and agriculture are both economically significant and environmentally sensitive (Babangida & Abdulsalam, 2023; Haladu, 2017; Iyoha & Ohiokha, 2023).

ESG disclosure is vital because it does not only support regulatory compliance in response to growing domestic and international demands but also addresses critical challenges like environmental degradation, social inequality, and poor governance practices. By embracing ESG disclosure, companies in these sectors such as oil and gas, industrial goods, natural resources, and agricultural services can position themselves as leaders in responsible business practices while fostering long-term growth and resilience in a dynamic global economy.

In recent years, the importance of Environmental, Social, and Governance (ESG) disclosure has gained significant attention from stakeholders, regulators, and investors worldwide. In Nigeria, where environmentally sensitive industries play a pivotal role in the economy, the need for transparent and accountable ESG reporting is particularly pressing. Despite growing calls for improved ESG practices, companies in these sectors often face challenges in disclosing relevant and accurate information that reflects their true environmental and social impact (The Nigerian Exchange [NGX] Group, 2018). A critical issue lies in how the attributes of the board of directors, such as independence, gender diversity, committee structures, and overall governance practices, shape the quality and effectiveness of ESG disclosure. This research seeks to examine the impact of board attributes on the ESG disclosure practices of companies in environmentally sensitive industries in Nigeria.

From a practical perspective, companies in Nigeria's environmentally sensitive sectors often fail to provide comprehensive and consistent ESG disclosures (Emmanuel et al., 2024). The lack of adequate and reliable ESG reporting creates a gap in transparency, which undermines the credibility of corporate commitments to sustainability and social responsibility. This is particularly problematic for industries like oil and gas, where environmental degradation, human rights issues, and poor governance practices are prevalent.

The lack of proper ESG disclosure exacerbates challenges such as reputational damage, regulatory scrutiny, and lost investor confidence. Furthermore, companies may struggle to align their internal governance structures with international best practices in ESG reporting due to inadequate expertise or the absence of dedicated governance committees focused on ESG issues. Therefore, it is crucial to investigate the role that board attributes play in shaping these disclosures and how they can be leveraged to improve corporate transparency.

Despite existing literature, considerable gaps remain in the understanding the specific influence of board attributes on ESG disclosure in developing countries, especially within industries with significant environmental impacts. Much of the current research on ESG governance such as Aboud et al. (2024), Ali and Firmansyah (2023), Alsmady (2023) focus on developed markets, where regulatory frameworks and corporate governance standards are more robust. While there is a growing body of literature examining ESG disclosures in Nigerian firms, studies focusing on the impact of specific board attributes, such as independence, gender diversity, and the existence of dedicated ESG committees, are inadequate. Moreover, existing studies often fail to differentiate between various industries, overlooking the unique challenges faced by environmentally sensitive industries. As such, there is a need for more granular, context-specific research that investigates the role of board composition in shaping ESG disclosure within Nigeria's environmentally sensitive sectors.

2. Literature Review

This section begins with a conceptual review of the variables involved in this study, followed by a literature review, and concludes with a discussion of the theories underpinning the study.

Conceptual Review

ESG disclosure, which stands for Environmental, Social, and Governance disclosure, serves as the dependent variable in this study. According to Buallay et al., (2022), ESG disclosure is an ethical assessment that seeks to validate a company's CSR quality or its non-financial performance across the three ESG pillars. However, in this study, ESG disclosure (ESGD) refers to the process by which companies report their ESG-related practices, risks, and performance to stakeholders, including investors, regulators, and the public. It involves the transparent sharing of data on how a company manages its environmental impact, social responsibilities, and corporate governance structures.

Independent variable of board attributes as used in this study is represented board independence, board gender diversity, board meeting, board size, board committee, and social responsibility committee. First, board independence refers to the presence of independent non-executive directors on a company's board who are free from any relationships that could compromise their ability to make objective and unbiased decisions (Financial Reporting Council of Nigeria [FRCN] Code, 2018). Second, board gender diversity refers to the proportion of women on a company's board of directors (Shakil et al., 2020). It is a key aspect of ESG practices that influence decision-making, risk management, and overall corporate performance. Third, board meeting is a formal gathering of a company's board of directors where discussions are carried out and decisions on corporate strategy, governance, financial performance, and other key matters are taken. In this study, it refers to the number of meetings held annually (Alexandrina, 2013).

Furthermore, board size in this study refers to the total number of directors serving on a company's board at a given time (Qaderi et al., 2022). It includes both executive and non-executive directors that play a crucial role in corporate governance, decision-making, and oversight. Additionally, a board committee is a subgroup of a company's board of directors formed to focus on specific governance areas by ensuring effective oversight and decision-making. In this study, it refers to the number of committees established on the board for specific purposes (Modozie et al., 2022).

Nevertheless, a social responsibility committee in this study refers to a board-level committee responsible for overseeing a company's corporate social responsibility (CSR) initiatives, ethical practices, and sustainability efforts. It ensures that the organization meets its social, environmental, and governance (ESG) obligations while aligning with stakeholder expectations (Harila & Marklund, 2023). The control variables used in this study include profitability, measured by a metrics of return on assets (ROA) and leverage refers to the use of borrowed funds to finance a company's operations. It is measured as total debt divided by total equity (Isaac et al., 2023).

Empirical Review

Board Independence and Environmental, Social and Governance (ESG) Disclosure

In reviewing previous studies, we found that; (Pozzoli et al., 2022) investigated how board independence affects the ESGD of Chinese firms. The study analyzed data from 703 firms over a 14-year period, from 2006 to 2019, using Ordinary Least Squares (OLS) regression. Their results revealed a significant positive correlation, indicating that greater board independence improves ESGD. Stakeholder theory was used to argue that independent boards are more capable of addressing stakeholder concerns by providing transparent ESG disclosures. However, despite the large sample size, it represents only a fraction of the total 4,600 firms in the industry, which may limit the generalizability of the results. Future studies could benefit from a broader and more diverse sample.

Expanding on the concept of board independence, (Rahman, 2020) examined its impact on ESG disclosure in Indian firms. The study employed fixed-effects regression to analyze data from 386 listed companies over a decade (2007-2016). The findings showed a significant positive relationship between board independence and ESG disclosure. The research drew on dependency theory to suggest that companies with stronger governance structures are more likely to provide detailed ESG information. However, the use of data up until 2016 may not fully capture current trends in ESG disclosure. Incorporating more recent data could offer a more accurate picture of evolving practices.

Similarly, in the context of Nigeria, (Modozie et al., 2022) explored how board independence influences sustainability reporting in listed industrial goods firms. Using panel data from 15 companies over 20 years (2002-2022) and multiple regression analysis, their results also demonstrated a positive and significant link between board independence and ESG disclosure. The study employed legitimacy theory to explain how firms with independent boards seek to enhance their legitimacy through comprehensive ESG reporting. However, the small sample size restricts the generalization of these findings to other industries. A larger, more diverse sample could provide a more robust understanding of the relationship across different sectors. Therefore, this hypothesis was formulated.

H_{01}: There is no significant relationship between board independence and ESG disclosure

Board Gender Diversity and Environmental, Social and Governance (ESG) Disclosure

We review the study conducted by Razaq et al. (2023) who explored the impact of board gender diversity on sustainability reporting in Nigeria. The study analyzed data spanning a decade, from 2011 to 2020, to investigate how gender diversity on boards influences sustainability reporting among Nigeria's listed non-financial companies. Using random effects regression on panel data from 51 firms, the authors found a positive but statistically insignificant relationship between board gender diversity and ESG disclosure, as measured by the Global Reporting Initiative (GRI) scores. The research was based on Stakeholder theory and identified a gap in the measurement of independent variables, suggesting that future studies could address this oversight to strengthen the findings.

In a different regional context, Menicucci and Paolucci (2022) examined the relationship between board diversity and ESG performance in the Italian banking sector between 2017 and 2021. Using Ordinary Least Squares (OLS) regression on data from 105 banks, their study found a significant positive effect of board gender diversity on ESG disclosure. The results suggested that increasing female representation on boards could lead to enhanced ESG reporting. The study integrated agency, stakeholder, and legitimacy theories to offer a holistic understanding of the relationship between board composition and ESG outcomes. However, a limitation of the study was its exclusive focus on the banking sector, which may limit the applicability of the findings to other industries. The authors recommended that future research should expand the sample to include a broader range of sectors and explore additional variables to enhance the generalizability of the results.

Similarly, Modozie et al. (2022) investigated the impact of board gender diversity on sustainability reporting in Nigeria, specifically focusing on environmental reporting in listed industrial goods firms between 2002 and 2022. Employing multiple regression analysis on a dataset of 12 firms, the study found a significant positive relationship between female board representation and ESG disclosure. This suggests that firms with higher female board participation are more likely to provide detailed environmental disclosures, emphasizing the importance of gender diversity in promoting transparency in sustainability reporting. Grounded in both Stakeholder and Agency theories, the study highlights the role of diverse boards in addressing stakeholder needs and enhancing governance practices. This hypothesis was formulated.

H_{02}: board gender diversity has no significant relationship on ESG disclosure

Board Meeting and Environmental, Social and Governance (ESG) Disclosure

A study by Ouyang et al. (2022) examined how board meeting frequency influences ESG disclosure (ESGD) among listed companies in China. The research analyzed data from 3,818 companies out of a population of 4,070, focusing on the years 2019 to 2020, using a multiple logit regression model. The results showed a significant positive relationship, suggesting that the frequency and diversity of board meetings lead to enhanced ESG disclosure. This implies that diverse discussions during board meetings contribute to more comprehensive ESG practices. However, the authors identified a theoretical gap and suggested the integration of more robust theoretical frameworks to better understand the dynamics at play.

Building on the understanding of board structure's role in sustainability reporting, Modozie et al. (2022) explored how board meetings affect environmental reporting in Nigeria's listed industrial goods firms. The study analyzed data from 2002 to 2022, applying multiple regression analysis to a sample of 12 firms. The results revealed a positive and significant relationship between the frequency of board meetings and the quality of environmental disclosure. This highlights the importance of board oversight in ensuring thorough and effective environmental reporting. The study was grounded in Stakeholder and Agency theories, emphasizing how frequent board meetings can enhance transparency and accountability in sustainability disclosures.

Similarly, Rella (2022) investigated the link between board characteristics and ESG disclosure among firms listed on the S&P index. The study used cross-sectional data from 2021 and multiple regression analysis to examine the relationship between board meeting frequency and ESG disclosure. The findings indicated that more frequent board meetings significantly improve ESG disclosure among S&P-listed firms. The research was grounded in agency theory to explain the relationship, although the author acknowledged that the use of data from a single year might limit the generalizability of the results.

H_{03}: there is no significant relationship between board meeting and ESG disclosure

Board committee and Environmental, Social and Governance (ESG) Disclosure

A study by Anyigbah et al. (2023) examined the impact of board committees on Environmental, Economic, and Social (EES) performance among listed companies in China, focusing on the period from 2006 to 2019. The study utilized the Global Reporting Initiative (GRI) 3.1 standards, which include 82 performance indicators across economic, environmental, and social categories, to measure EES performance. The independent variable, board committees (BC), was assessed based on the number of committees present on the board. The findings revealed a positive and statistically significant relationship between the number of board committees and EES performance. The study highlighted the importance of board committees in enhancing corporate sustainability disclosures, with committee characteristics playing a crucial role in shaping the quality and transparency of ESG reporting.

Nevertheless, the research utilized a sample of 703 firms drawn from a population of 4,600 listed companies in China and employed panel data with Ordinary Least Squares (OLS) regression techniques. The study was grounded in several theoretical frameworks, including Stakeholder Theory, Legitimacy Theory, Resource Dependency Theory (RDT), and Agency Theory. However, the authors noted a gap in the literature, suggesting that future research could further explore additional board characteristics, such as audit committee (AC) size and the frequency of AC meetings, to provide a more comprehensive understanding of their influence on ESG performance. The study's findings contribute to the growing body of literature on corporate governance and ESG disclosure, particularly in Asian markets, and emphasize the need for further exploration of board committee dynamics in shaping sustainability practices.

H_{03}: there is no significant relationship between board meeting and ESG disclosure

Board size and Environmental, Social and Governance (ESG) Disclosure

Another study by Anyigbah et al. (2023) examined the impact of audit board size on the environmental, economic, and social (EES) performance of listed companies in China. The study explored the relationship between board size and EES performance, using the GRI 3.1 standards to measure performance. Analyzing data from 703 companies, selected from a population of 4,600, over the period from 2006 to 2019, the study applied Ordinary Least Squares (OLS) regression on panel data. The results indicated a significant positive relationship between board size and EES performance. However, the study did not consider governance aspects in its analysis, despite showing that larger boards contribute positively to ESG disclosure. The study was based on Stakeholder Theory, Legitimacy Theory, and Resource Dependency Theory, which highlight the value of diverse perspectives and resources in improving corporate performance across various dimensions.

In a similar context, Razaq et al. (2023) investigated the effect of board size on ESG disclosure (ESGD) among listed non-financial firms in Nigeria between 2011 and 2020. Using the Global Reporting Initiative (GRI) Sustainability Reporting Guidelines to assess ESGD, the study found a positive and significant relationship between board size and ESG disclosure. The sample comprised 51 firms drawn from a population of 116, with panel data analyzed using random effect regression techniques. The findings suggest that larger boards may contribute to enhanced ESGD by providing diverse expertise and oversight in sustainability practices. However, the authors identified a gap in the measurement of independent variables and recommended that future research refine these measures for more accurate results.

In another regional context, Chebbi and Ammer (2022) explored the relationship between board size and ESG disclosure among listed companies in Saudi Arabia from 2015 to 2021. The study analyzed data from 38 companies out of a population of 206, employing fixed effects regression analysis on panel data. The findings revealed a positive and significant relationship between board size and ESG disclosure, suggesting that larger boards are associated with higher levels of ESG disclosure. The theoretical framework integrated agency theory and resource dependency theory, arguing that larger boards are more capable of managing agency conflicts and leveraging resources to improve ESG disclosure. Accordingly, this hypothesis is formulated.

H_{05}: there is no significant relationship between board size and ESG disclosure

Social Responsibility Committee and Environmental, Social and Governance (ESG) Disclosure

The study conducted by Josiah et al., (2022) investigated the relationship between the presence of a Sustainability Responsibility Committee (SRC) and environmental sustainability disclosure within Nigeria's non-financial sector. The study focused on how the establishment of such committees influences environmental sustainability reporting, measured according to Global Reporting Initiative (GRI) standards. Using panel data from 66 firms over the 2017-2020 period and applying fixed effects regression analysis, the study found a significant positive relationship. This suggests that companies with dedicated sustainability committees are more likely to disclose environmental sustainability information. This finding aligns with legitimacy theory, which proposes that companies use these disclosures to build legitimacy with stakeholders. The study also identified a research gap, suggesting that further investigation into additional mechanisms that influence sustainability reporting is needed, and recommended exploring other factors that could drive these disclosures.

In a similar vein, Helfaya et al., (2023) examined the factors that determine ESG disclosure scores in European listed companies, with a focus on the role of Corporate Social Responsibility (CSR) committees. The study used ESG disclosure data from Asset4 (Thomson Reuters) and analyzed data from 784 firms over the period 2011-2020 using multiple regression models. The results revealed a positive and significant effect of CSR committees on ESG disclosure, supporting a range of theoretical perspectives, including agency, stakeholder, signaling, institutional, and legitimacy theories. These findings highlight the critical role CSR committees play in improving the quality and extent of ESG disclosure.

Fahad and Rahman (2020) assessed the impact of corporate governance on CSR disclosure, specifically focusing on sustainability committees. Using Bloomberg ESG scores as a measure and fixed effects regression analysis on 386 firms from 2007 to 2016, the study found a negative and statistically insignificant relationship between sustainability committees and ESG disclosure. This suggests that, contrary to expectations, the presence of sustainability committees does not necessarily lead to enhanced ESG disclosure in India. The authors noted the lack of a robust theoretical framework in the study, suggesting that future research could benefit from integrating more comprehensive models to better understand the underlying factors at play. Therefore, this hypothesis is formulated.

H_{06}: there is no significant relationship between social responsibility committee and ESG disclosure

3. Research methodology

Research Design

This study adopts a correlational research design, utilizing panel data to investigate the relationship between board attributes and ESG disclosure of environmentally sensitive industries in Nigeria. The quantitative approach is selected for this research, as it allows for the statistical examination of relationships and causal links between the independent variables (board attributes) and the dependent variable (ESG disclosure). The study integrates theoretical frameworks such as Stakeholder Theory, Agency Theory, and Legitimacy Theory to guide the analysis and interpret findings. The longitudinal aspect of the panel data enables the capture of changes and trends over time, providing robust insights into the dynamics of ESG disclosure practices.

The population of this study consists of environmentally sensitive companies listed on the Nigerian Exchange Group between 2018 and 2023. These companies are drawn from key sectors including; Industrial Goods, Oil and Gas, Natural Resources, and Agriculture, totaling 30 firms which was adjusted to 27 due to incomplete information in the annual reports. The focus on environmentally sensitive sectors is essential, as companies within these industries significantly impact the environment through their operations, emissions, and resource consumption.

Source and Method of Data Collection

The data for this research was sourced from secondary data repositories, particularly annual reports and sustainability disclosures of firms listed on the Nigerian Exchange (NGX) Group. This approach ensures that the data used is both credible and reflective of actual corporate practices. The time frame for the study spanned a defined period (from 2018 to 2023), which captured evolving patterns in ESG disclosure. The data collection involves extracting relevant information on board attributes and ESG disclosures. ESG metrics was measured using established standards of Global Reporting Initiative [GRI] of 2016.

Techniques for Data Analysis

The data analysis uses regression model suitable for panel data. It was employed to account for heterogeneity across firms and over time. The choice between fixed effect regression and random effect regression models was determined using the Hausman test, which assesses the suitability of each approach based on the data. Additionally, descriptive statistics was used to summarize the data and provide an overview of key variables. Correlation analysis was conducted to examine relationships between variables and detect potential multicollinearity issues. Diagnostic tests such as variance inflation factor (VIF) analysis validate the reliability of the models. Statistical software STATA 15 was used for the computations, ensuring accuracy and replicability of the results.

Model specification and variable measurement

The model explores the relationship between board attributes and ESGD, incorporating additional control variables to account for firm-specific characteristics. The dependent variable ($ESGDit$) represents the level of ESG disclosure for firm i at time t, measured using Global Reporting Initiative (GRI). This quantifies the extent of ESG-related information disclosed by firms, making it a critical indicator of corporate transparency and sustainability efforts.

$$\mathbf{ESGD_{it} = \beta_0 + \beta_1 BI_{it} + \beta_2 BGD_{it} + \beta_3 BM_{it} + \beta_4 BC_{it} + \beta_5 BS_{it} + \beta_6 SRC_{it} + \beta_7 FS_{it} + \beta_8 PROF_{it} + \beta_9 LEV_{it}} + \boldsymbol{\varepsilon_{it}}$$

The model identifies several independent variables that capture board attributes, which are hypothesized to influence ESG disclosure. Board independence ($BIit$) reflects the proportion of independent non-executive directors, ensuring unbiased oversight and decision-making. Board gender diversity ($BGDit$) measures the proportion of female directors, whose presence may foster diverse perspectives and enhanced accountability in ESG practices. The frequency of board meetings ($BMit$) is included to capture the level of board oversight, as frequent meetings are often associated with improved governance and ESG transparency. The presence and number of board committees ($BCit$), play a vital role in ensuring focused oversight of ESG-related issues. Similarly, board size ($BSit$) is analyzed, with larger boards expected to bring diverse expertise that may positively influence ESG disclosure. The presence of a Social Responsibility Committee ($SRCit$) is also considered, as such committees are directly responsible for addressing ESG concerns and guiding sustainability initiatives.

In addition to these board attributes, the model incorporates control variables to account for firm-specific characteristics that may affect ESG disclosure. Firm size ($FSit$), measured using natural logarithm of total assets. Profitability ($PROFit$), measured by a metrics of return on assets (ROA), reflects the financial capacity of firms to invest in sustainability practices. The error term (ϵit) captures unobserved factors and random disturbances that may influence ESG disclosure.

4. Result and Discussion

Descriptive statistics

This section provides an analysis of the descriptive statistics for the variables used in the study, offering a comprehensive understanding of the sample characteristics. The summary includes the number of observations, mean, standard deviation, minimum, and maximum values for each variable, enabling insights into their central tendencies and dispersion.

Table 1

Descriptive Statistics

Variables	Observations	Mean	Std. Dev	Min.	Max
ESGD	162	0.3859	0.1689	0	0.69
BI	162	1.8580	1.8104	0	8
BGD	162	0.1836	0.1446	0	0.76
BM	162	4.8395	2.1581	1	13
BC	162	3.7654	0.2002	1	10
BS	162	8.8395	3.1725	3	17
SRC	162	0.0740	0.2627	0	1
FS	162	17.7407	2.4726	13.84	23.32
LEV	162	-0.0136	0.7630	-9.4	1.52

Source: author computation using Stata 15 Software, 2023

The dependent variable, ESG Disclosure (ESGD), exhibits a mean value of 0.386, indicating that firms, on average, disclose 38.6% of the expected ESG information. The standard deviation is 0.169, reflecting moderate variation in ESG disclosure levels among the firms in the sample. The minimum value of 0 suggests that some firms do not engage in ESG disclosure, while the maximum value of 0.69 represents the highest disclosure level observed. This variability implies significant differences in the commitment to ESG transparency across firms.

The descriptive statistics provide valuable insights into the characteristics of the sample firms and the variability in their governance and financial attributes. The dependent variable, ESG Disclosure, shows moderate levels across the sample, with some firms excelling in transparency while others fall short. This variability highlights the uneven adoption of ESG practices within the corporate sector.

Among the independent variables, BI and BC show significant variation, reflecting differing governance practices. The low mean values for BGD and SRC suggest areas where corporate governance practices could improve to align with global best practices. Meanwhile, the variability in BS and BM points to differing governance structures that may impact the quality of decision-making related to ESG disclosure.

Firm characteristics such as PROF and FS reveal the diversity in financial performance and operational scale within the sample. Larger firms may face complexity in disclosure processes, while less profitable firms may lack resources to prioritize ESG reporting. Overall, the descriptive statistics highlight critical governance and firm-specific factors that warrant further exploration to understand their impact on ESG disclosure practices.

Diagnostic Tests

Multicollinearity

The table presents the Variance Inflation Factor (VIF) values for the independent variables included in the regression model. VIF measures the extent of multicollinearity among the predictors, where a VIF value exceeding 10 typically indicates problematic multicollinearity. Additionally, the table includes the reciprocal of VIF (1/VIF), which reflects the tolerance of each variable. The mean VIF for all variables in the model is 1.65, suggesting a low overall level of multicollinearity in the data.

Table 2

Multicollinearity Result

Variable	VIF	1/VIF
BS	2.64	0.378374
BI	2.57	0.388365
FS	1.57	0.637733
BM	1.56	0.642330
BC	1.35	0.738024
SRC	1.25	0.802719
BGD	1.21	0.823998
PROF	1.05	0.9554403
Mean VIF	1.65	

Source: author computation using Stata 15 Software, 2023

For BS (2.64) and BI (2.57), indicates moderate but acceptable multicollinearity, with corresponding tolerance values (0.378 and 0.388) confirming their independence from other predictors. Variables like BM (VIF 1.56), BC (VIF 1.35), and the SRC (VIF 1.25) exhibit low VIF values, further supported by high tolerance values, ensuring minimal correlation with other variables. BGD (VIF 1.21) and PROF (VIF 1.05) show very low VIF values, highlighting their independence.

Correlation Matrix Analysis

The table below presents the correlation coefficients among the variables used in the study. Correlation coefficients range from -1 to +1, where values closer to +1 or -1 indicate strong positive or negative relationships, respectively. Values near 0 suggest little or no linear relationship. Below is an interpretation of the key relationships in the correlation matrix.

Table 3

Correlation Result

	FP	BGD	BS	BM	COW	BI	FS	FA	LEV
ESGD	1.000								
BI	0.4947	1.000							
BGD	0.2023	0.1630	1.000						
BM	0.5550	0.5219	0.1867	1.000					
BC	0.3491	0.3398	-0.0765	0.2831	1.000				
BS	0.6601	0.7225	0.0461	0.4823	0.4398	1.000			
SRC	-0.110	0.2704	-0.1541	0.2512	0.1750	0.0894	1.000		
FS	0.6179	0.4635	0.2505	0.3917	0.3654	0.4901	0.0247	1.000	
LEV	0.0153	-0.0060	0.1235	0.0687	-0.0376	-0.0761	0.0168	0.0950	1.000

Source: Author computation using Stata 15 Software, 2023

The correlations between the dependent and independent variable shows, the correlation between ESGD and BI is 0.495, indicating a moderate positive relationship. This suggests that firms with more independent directors tend to disclose more ESG information, BDG shows a correlation of 0.202 indicates a weak positive relationship between ESGD and BDG, suggesting that gender diversity on boards has a limited but positive impact on ESG disclosure, the correlation between ESGD and BM is 0.555, showing a moderate positive relationship.

Firms with more frequent board meetings appear to exhibit higher levels of ESG disclosure, Board Committee shows a correlation of 0.349 indicates a weak to moderate positive relationship, suggesting that having competent board members contributes to better ESG disclosure, BS with a correlation of 0.660, bs has the strongest positive relationship with ESGD among the predictors. This indicates that larger boards are associated with higher levels of ESG disclosure, possibly due to a wider range of expertise and oversight, SRC shows a correlation of -0.111 indicates a weak negative relationship between SRC and ESGD, which is surprising as firms with a sustainability committee might be expected to disclose more ESG information. This finding warrants further investigation.

The analysis of independent variables reveals several notable relationships. BS and BI a strong positive correlation (0.723), indicating that larger boards are more likely to include independent directors, which could enhance governance effectiveness. The relationship between BGD and BI is weakly positive (0.163), suggesting limited overlap between these two dimensions of board composition. A moderate positive correlation (0.440) exists between BS and BC, implying that larger boards may include members with diverse expertise, enhancing board effectiveness. Similarly, FS and BS are moderately correlated (0.490), reflecting that larger firms tend to have larger boards, likely due to the complexity of governance needs.

The correlation between SRC and BI, though weak (0.270), suggests that firms with independent boards may be slightly more inclined to establish such committees. Finally, profitability exhibits generally weak correlations with all variables, including a negligible negative relationship with board size (-0.076), highlighting its relative independence from governance and firm-specific characteristics. These findings emphasize the interplay between board attributes and organizational structures, with profitability showing limited alignment with these factors.

The correlation matrix reveals important insights into the relationships among the variables. Board size (bs) and firm size (fs) show the strongest positive correlations with ESG disclosure (esgd), indicating that larger boards and firms are more likely to engage in ESG reporting. Surprisingly, the presence of a sustainability reporting committee (SRC) shows a weak negative correlation with ESG disclosure, which is contrary to expectations and may reflect inefficiencies or symbolic adoption of such committees in some firms.

Overall, the findings underscore the importance of governance structures, particularly board size, independence, and firm size, in influencing ESG disclosure practices. This analysis forms a foundation for further exploration of these relationships in regression models.

Normality

Table 4

Jarque-Bara Normality Test

Jarque-Bera Normality test: .9626 Chi (2)	.6198
Jarque-Bera test for $H_{o:}$ normality:	

Source: author computation using Stata 15 Software, 2023

The Jarque-Bera normality test assesses whether the residuals of a regression model follow a normal distribution, which is an assumption for certain statistical methods. The results of the test showed that the p-value of 0.6198 is significantly higher than the conventional significance levels, this means we fail to reject the null hypothesis (H_0), indicating no evidence against the normality of the residuals. In other words, the residuals appear to follow a normal distribution.

Regression Analysis

Table 5

Regression Result (PCSE)

ESGD	Coef.	Robust std. Err	Z	p>|t|
BI	287.0765	4.857306	6.20	0.000
BGD	.2613011	0.1971697	0.10	0.920
BM	.0098475	0.5697095	2.80	0.005
BC	141.0431	0.9468834	6.37	0.000
BS	.0136807	3.953605	5.25	0.000
SRC	.2256093	9.488385	32.38	0.000
FS	-1.638636	1.048191	-6.86	0.000
PROF	.0007093	0.2960499	0.10	0.916
Cons	-181.2362	1.618727	-6.58	0.000

Source: author computation using Stata 15 Software, 2023

Discussions and findings

The findings from the regression analysis reveal critical insights into the factors driving ESG disclosure in firms. This discussion elaborates on the significant and insignificant variables and their implications, contextualizing the results within governance literature and practical considerations. The regression results highlight the statistical significance of various board attributes in influencing ESG disclosure. Board independence emerges as a highly significant predictor (p = 0.000), with a strong positive effect on ESG disclosure. This finding aligns with the view of some studies that independent directors enhance objectivity and accountability (Josiah Oyekale et al., 2022), thereby fostering transparency in ESG practices. Their independence from management allows them to advocate for policies that align with broader stakeholder interests, including environmental and social considerations. Similarly, board meetings (p=0.005) significantly contribute to ESG disclosure, suggesting that frequent meetings provide a platform for active engagement, effective decision-making, and the monitoring of ESG-related strategies. This emphasizes the importance of regular board deliberations in integrating ESG concerns into corporate governance as in line with the study of Musa et al.(2021).

Board committees (p = 0.000) also show a significant positive impact, reflecting their specialized role in addressing specific governance issues, including sustainability and corporate responsibility. The presence of effective committees can streamline decision-making and ensure a focused approach to ESG-related initiatives. Furthermore, board size (p = 0.000) is another significant determinant of ESG disclosure, indicating that larger boards can bring diverse perspectives, skills, and expertise to the table, which collectively enhance the organization's capacity to address ESG challenges and disclose relevant information.

The presence of a social responsibility committee (p=0.000) demonstrates a profound positive influence, underscoring its vital role in ensuring that ESG considerations are prioritized at the strategic level. Such committees provide leadership and structure for managing sustainability and social responsibility, driving transparency and robust ESG disclosures. However, board gender diversity (p = 0.920) is not statistically significant, suggesting that the inclusion of women on boards, while valuable for diversity, may not directly translate into enhanced ESG disclosure in this context. This could indicate that gender diversity needs complementary factors, such as empowerment or specific mandates, to drive ESG initiatives effectively.

5. Conclusion and Recommendations

Conclusion

This study highlights the significant influence of board attributes on ESG disclosure within Nigeria's environmentally sensitive industries. Board independence, committee, size, frequency of meetings, and the presence of social responsibility committee emerged as crucial drivers of ESG disclosure. These attributes reflect the critical role of robust governance frameworks in fostering transparency and accountability. Notably, independent directors demonstrated their value in advocating for higher ethical standards and aligning corporate strategies with long-term sustainability goals. Frequent board meetings facilitated active oversight and improved ESG-related decision-making, while larger and more board committee were better equipped to handle the complexities of sustainability challenges. Furthermore, the presence of a sustainability reporting committee signified a structured approach to addressing ESG matters, ensuring focused attention and compliance with reporting requirements.

Interestingly, the findings reveal areas of concern and complexity. Firm size negatively correlates with ESG disclosure, possibly due to operational complexities or heightened scrutiny faced by larger organizations. This underlines the need for tailored approaches to address these challenges. Similarly, board gender diversity and profitability were found to have insignificant impacts on ESG disclosure. These results suggest that diversity and financial performance alone may not suffice to drive sustainability practices and that structural or cultural barriers may inhibit the influence of female directors on governance outcomes. The moderate average ESG disclosure level (38.6%) further underscores the need for improvement in sustainability reporting practices across the sampled firms. These insights are particularly relevant given the critical role of Nigeria's environmentally sensitive industries in achieving national and global sustainability objectives.

Recommendations

Policymakers should introduce and enforce comprehensive ESG reporting guidelines tailored to Nigeria's context. These guidelines must mandate minimum thresholds for board independence to ensure unbiased decision-making and strengthen the ethical foundation of corporate governance. Regulatory frameworks should also encourage the establishment of sustainability reporting committees within firms, especially in environmentally sensitive sectors. These committees would ensure dedicated oversight of ESG practices and disclosures. Additionally, policies should address the challenges faced by larger firms in standardizing ESG practices, offering incentives such as tax benefits or public recognition for exemplary disclosures. Policymakers could collaborate with international organizations to align Nigeria's ESG frameworks with global standards, enhancing the country's competitiveness and attracting sustainability-focused investments.

The findings of this study open new avenues for academic research. Scholars should explore the relationship between board gender diversity and ESG disclosure, particularly examining the roles, positions, and influence of female directors within boards. Research could also investigate how cultural, structural, or organizational factors moderate the impact of board diversity on sustainability practices. Academics should also consider conducting comparative studies across sectors and regions to identify best practices and contextual factors influencing ESG outcomes.

Corporate leaders and practitioners should prioritize capacity-building initiatives to enhance board competence in ESG matters. This can be achieved through training programs, workshops, and certifications focused on global reporting standards. Firms should also optimize their board size to balance diversity with decision-making efficiency, ensuring the inclusion of members with expertise in environmental and social governance. Organizations without sustainability reporting committees should establish them promptly, integrating ESG considerations into their overall strategy.

Efforts to improve gender diversity on boards should go beyond numerical representation to include mentoring and leadership development programs for women, fostering their active participation in governance. This would not only improve compliance but also strengthen stakeholder trust and corporate reputation. By implementing these targeted recommendations, policymakers, academics, and practitioners can collectively advance the quality and impact of ESG disclosure in Nigeria's environmentally sensitive industries.

References

Adebayo, A. O., Mbah, F. I., Adamu, D., & Abidoye, O. O. (2023). Board size, board composition and voluntary disclosure: Evidence from listed manufacturing firms in Nigeria. *FUDMA Journal of Accounting and Finance Research [FUJAFR]*, *1*(2), 102–112. https://doi.org/10.33003/fujafr-2023.v1i2.36.102-112

Arayssi, M., Jizi, M., & Tabaja, H. H. (2020). The impact of board composition on the level of ESG disclosures in GCC countries. *Sustainability Accounting, Management and Policy Journal*, *11*(1), 137–161. https://doi.org/10.1108/SAMPJ-05-2018-0136

Ayobami, O. A., Eniola, A. S., & Olumide, M. L. (2021). Board characteristics and sustainability reporting of listed non-financial firms in Nigeria. *Journal of Finance and Accounting*, *9*(5), 182. https://doi.org/10.11648/j.jfa.20210905.11

Babangida, M. A., & Abdulsalam, N. (2023). Mandatory environmental sustainability in Nigeria : A comparative study between environmentally sensitive and less environmentally sensitive sectors, *6*(1), 148–158.

Bala, H., Shaheen, R., Khatoon, G., Belgacem, S., Ben, Y. J., & Shafiu, R. M. (2023). Corporate board attributes and environmental accounting disclosure of oil and gas firms in Nigeria. *IOP Conference Series: Earth and Environmental Science*, *1185*(1). https://doi.org/10.1088/1755-1315/1185/1/012030.

Buallay, A., Hamdan, R., Barone, E., & Hamdan, A. (2022). Increasing female participation on boards: Effects on sustainability reporting. *International Journal of Finance and Economics*, *27*(1), 111–124. https://doi.org/10.1002/ijfe.2141.

Faccia, A., Manni, F., & Capitanio, F. (2024). Mandatory ESG reporting and XBRL taxonomies: ESG ratings and income statement, a Sustainable Value-Added Disclosure. https://doi.org/10.3390/su13168876

FRCN Code. (2018). Financial Reporting Council of Nigeria Code. *234*, 1–4.

Gungor, N., & Şeker, Y. (2022). The relationship between board characteristics and ESG performance: Evidence from the oil, gas and coal sector. *Stratejik ve Sosyal Araştırmalar Dergisi*, *6*(1), 17–37. https://doi.org/10.30692/sisad.1073684

Haladu, A. (2017). Determinants of sustainability reporting by environmentally sensitive firms in Nigeria.

Helfaya, A., Morris, R., & Aboud, A. (2023). Investigating the factors that determine the ESG disclosure practices in Europe. *Sustainability*, *15*(6), 5508. https://doi.org/10.3390/su15065508

Iyoha, I., & Ohiokha, G. (2023). Firm Attributes and Environmental Accounting Disclosure of Listed Firms in Firm Attributes and Environmental Accounting Disclosure of Listed Firms in High and Low Environmentally Sensitive Industries in Nigeria. May.

Josiah, O. P., Adebayo, O. S., & Nwabuisi, N. A. (2022). Corporate governance and environmental sustainability disclosure in non-financial companies quoted in Nigeria. *Journal of Finance and Accounting*, *10*(2), 121. https://doi.org/10.11648/j.jfa.20221002.15

Menicucci, E., & Paolucci, G. (2022). Board diversity and ESG performance: Evidence from the Italian Banking Sector. *Sustainability (Switzerland)*, *14*(20), 1–19. https://doi.org/10.3390/su142013447

Modozie, C. E., Amahalu, & Ndubuisi, N. (2022). Effect of board structure on sustainability reporting of listed industrial goods firms in Nigeria. *International Journal of Management Studies and Social Science Research*, *204*, 204–215. www.ijmsssr.org

Mohammed, S. D., Hassan, A., & Bala, A. (2020). The determinants of corporate social and environmental disclosure in the Nigerian oil and gas industry: An empirical investigation. *International Journal of Auditing and Accounting Studies*, *2*(2), 129–153.

Musa, I., Fodio, A., Shaibu, A., & Bello, M. B. (2021). Effect of board capabilities on environmental, social and governance disclosure practices of listed non-financial firms in Nigeria. *Lafia Journal of Economics and Management Sciences*, *6*(1), 121–140.

Ouyang, Y., Zhang, Y., & Xue, X. (2022). The impact of board cultural diversity on company ESG performance under different risk backgrounds. *Fmess*, 593–601.

Pozzoli, M., Pagani, A., & Paolone, F. (2022). The impact of audit committee characteristics on ESG performance in the European Union member states: Empirical evidence before and during the COVID-19 pandemic. *Journal of Cleaner Production*, *371*, 133411. https://doi.org/10.1016/j.jclepro.2022.133411

Qaderi, S. A., Ghaleb, B. A. A., Hashed, A. A., Chandren, S., & Abdullah, Z. (2022). Board characteristics and integrated reporting strategy: Does sustainability committee matter? *Sustainability (Switzerland)*, *14*(10), 1–24. https://doi.org/10.3390/su14106092

Rahman, P. F. P. M. (2020). Author's personal copy Impact of corporate governance on CSR disclosure Author's personal copy. 0123456789.

Rella, A., & L'Abate, V. (2022). The impact of board characteristics on ESG disclosure: An empirical study on US companies. *80th International Scientific Conference on*

Economic and Social Development and 10th International OFEL Conference "Diversity, Equity and Inclusion: The Essence of Organisational Well-Being, 1–2.

Shaw, W. (2022). Relationship between Female Board Changes and ESG Scores with CSR Influences. February. https://search.proquest.com/openview/2dd0fd7374b0a482deb011cd2260214c/1?pq-origsite=gscholar&cbl=18750&diss=y

Sholotan, C. (2016). Enhancing trust in the capital market: NSE disclosure guidelines. *The Nigerian Stock Exchange*, 1–59. http://www.nse.com.ng/NSEPresentation/Sustainability Reporting Seminar- NSE Disclosure Guidelines.pdf

The Nigerian Stock Exchange [NSE]. (2018). Sustainability Disclosure Guidelines. 1–21.