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# Board Diversity and Sustainability Reporting Practices of Manufacturing Firms in Nigeria

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**ABSTRACT**

The study examines the Board Diversity and Sustainability Reporting Practices of Manufacturing Firms in Nigeria from 2014 to 2023. The objective of this study is to investigate the impact of board diversity on sustainability reporting practices in manufacturing firms. Secondary data from published annual reports and stand-alone reports from 2014 to 2023 of companies listed on the Nigerian Exchange Group was obtained. The population of the study consist of all 71 listed manufacturing firms in the Nigerian Exchange group. Random Sampling technique was employed to select 10 firms as the sample size. Panel Least Squares (PLS) method was used to analyse the data. The study employs the Global Reporting Initiative (GRI) framework to measure sustainability reporting, and it analyzes data from the annual reports of the companies. The results demonstrate that board member nationality has a small but positive influence on sustainability reporting, as does the educational qualification of board members. Additionally, the research finds a small but significant relationship between firm size and sustainability reporting. This study recommends that board members should have access to regular training and development opportunities to improve their comprehension of sustainability-related concerns and reporting requirements.

**Keywords:** Board Diversity, Sustainability Reporting, Board Members, Firm Size
**JEL Classifications:** G34, M14, M41, Q56

## 1. INTRODUCTION

Sustainability reporting is viewed as a comprehensive approach to stakeholder accountability and openness concerning a company's social projects. Reporting on a company's economic, environmental, social, and governance (ESG) performance in a transparent and open manner to various stakeholders is known as sustainability. It also involves the open communication of an organization's economic, environmental, social, and governance (ESG) performance to various stakeholders. Sustainability reporting contains methodological measurement, disclosure, and analysis of sustainability performance of organisations (Global Reporting Initiative [GRI], 2018). Companies are responding to stakeholder pressures for sustainability performance to be reported through the corporate communication media. The response of companies to provide sustainability reports to corporate stakeholders has been attributed to the roles played by the board of directors.

The ratio of female directors to overall board members of a corporation is known as gender diversity. Board diversity is the presence of women in corporate boardrooms, and they look at how it affects governance and business success (Adams and Ferreira, 2009). The study looks at the ways in which gender diversity on boards impacts governance practices, decision-making procedures, and ultimately, organizational outcomes like stakeholder relations and financial performance. Board diversity refers to the presence of people on a company's board of directors who have varying traits, experiences, and backgrounds. Diversity in the boardroom usually takes several forms, including age, gender, ethnicity, and professional experience as well as abilities and knowledge. By including a diverse range of viewpoints, experiences, and talents, board diversity aims to improve the board's capacity for making decisions. In the end, diversity can enhance organizational performance by promoting innovation, enhancing corporate governance, and better reflecting the company's varied markets and stakeholders (Ibrahim and Okafor, 2023).

Internationally, one of the primary features of boards, investors, and regulators is gender parity among publicly traded companies. Gender diversity is becoming a problem, though, and women advocate for increased positions in both public and commercial enterprises. This advocacy is also a Nigerian phenomenon. In Nigeria, women recently convened in the House of Representatives and Senate and decided to aim for a 35% appointment rate in public positions. In the end, the women wrote President Muhammadu Buhari a letter to discuss their expectation. Diversity in gender is crucial when talking about the makeup of the board. The idea of organizational demography was first presented by Pfeffer (1983), where the author claimed that an organization's demographic makeup is a more accurate indicator of its results. Similar to other regions of Africa, diversity throughout the terrain is still mostly in its infancy. Nonetheless, some progress has been achieved, since the Securities and Exchange Commission has recommended board diversity as the second criterion in the second section of its corporate governance code (Nigerian Code of Corporate Governance, 2018). Due to its tendency to bring balance and a comprehensive perspective, board diversity has been advocated to contribute to an entity's reporting and disclosures. Board diversity comprises gender, skills, experience, qualifications, and ethnicity.

According to Ionel-Alin et al. (2012), reporting on sustainable development is still optional in many countries, despite its importance. Even in nations where sustainability reporting is not mandated by law, businesses nevertheless report in a variety of ways. As a result, companies across different industries and countries disclose different amounts and kinds of sustainable development data. According to Martínez et al. (2016), sustainability reporting has grown to be a vital tool for businesses and organizations to fulfill the growing demands of transparency from stakeholders, investors, customers, and the general public. In sustainability reports, businesses voluntarily disclose details about the social, environmental, and economic effects of their operations. By making this statement, they hope to reduce informational gaps and improve transparency about their sustainability performance, both positively and negatively (Nobanee and Ellili, 2016).

Additionally, increased disclosure facilitates more informed evaluations by investors and directs funds toward companies with more positive effects. Sustainability reporting, as noted by Anazonwu et al. (2018) it entails the methodical disclosure of a business's ESG performance. They stress that this reporting is necessary to promote stakeholder involvement, increase company responsibility and transparency, and advance ongoing sustainability practice improvement. The authors point out that many stakeholders, including investors and regulators, are evaluating a company's long-term sustainability and ethical behavior by looking at its sustainability reports.

In Nigeria, sustainable disclosures are still voluntary, although there are a lot of potential benefits. As of right now, there is no standard or set of guidelines for sustainability reporting from the Financial Reporting Council of Nigeria (FRCN). Nonetheless, by coordinating corporate operations with environmental concerns, implementing such methods could improve a company's reputation. Unfavorable policies about sustainable development have caused a fall in the reputation of some corporations in recent times. Rebuilding their reputation, encouraging innovation, promoting continuous growth, and creating value are all possible outcomes of improving reporting in areas like the environmental, social, and economic dimensions.

Consequently, studies have shown that board diversity is positively correlated with performance in sustainability reporting Bello and Yusuf (2022). In Nigeria, despite the government's commitment to gender equality, the practical scenario incorporates sexual stereotyping, discriminatory customs, and cultural biases in social positions (Lincoln and Adedoyin, 2012). The national cultural perspective is linked to this predicament, as it mostly assigns men to the role of social leader. This is a significant element that limits the participation of women in senior leadership positions. Şener and Karaye, (2014) Because of sociocultural traditions and Nigeria's strong patriarchal culture, women are disproportionately underrepresented in executive positions (Lincoln and Adedoyin, 2012).

According to studies (Eccles et al., 2011; Ioannou and Serafeim, 2015), capital markets use environmental, social, and governance data in business valuation models, which is in line with the growing prominence of the sustainability agenda on the firm level. The Nigerian Stock Exchange launched a staged initiative to incorporate sustainability reporting for its listed companies (NSE). This led to the creation of the Sustainability Disclosure Guidelines (SDG), which address issues related to governance, social issues, and the environment (ESG). At the moment, 41 stock exchanges lack direction, 23 have committed to instituting sustainability (of which the NSE is a part), and 15 stock exchanges offer sustainability guidelines in their market. Nonetheless, Nwannebuike and Ike, (2014) note that corporate governance in the nation is still in its infancy.

Comprehending the relationship between board diversity and sustainability reporting is essential for scholarly research as well as for guiding corporation practices and policy choices that can support the nation's socioeconomic advancement. Given Nigeria's unique sociocultural and economic background, it is imperative to conduct a thorough analysis to identify subtleties and potential roadblocks to corporate board diversity and the ensuing effects on sustainability reporting standards.

This research aims to analyze board diversity and sustainability reporting practices of manufacturing firms in Nigeria. The rest of this paper is presented as follows. Section 2 presents the literature review comprising the conceptual and theoretical reviews, and the review of empirical literature. Section 3 presents the methodology used to actualise the study's objectives. Section 4 discusses the results and how they fit into the existing literature.

Section 5 presents the recommendation, conclusion, contribution to knowledge and suggestions for further studies.

## 2. LITERATURE REVIEW

The literature review on board diversity and corporate sustainability reporting is presented in three areas namely the conceptual review, stakeholder theory, and review of empirical literature on board diversity and corporate sustainability reporting.

### 2.1. Conceptual Review

#### *2.1.1. Board diversity*

Ibrahim and Okafor, (2023) defined board diversity as the inclusion of people with a range of experiences, viewpoints, and backgrounds on a company's board of directors is known as board diversity. Gender, ethnicity, nationality, age, educational background, work experience, and skill sets are just a few examples of the various dimensions this diversity can take. Enhancing the board's decision-making process, advancing corporate governance, and more accurately representing the company's varied stakeholders and markets are the objectives of board diversity.

The term board diversity describes the variety found in an organization's board composition (Song et al., 2020). Additionally, Ozgur (2020) described board diversity as a range of qualities, abilities, and expertise that each member of the board contributes in order to impact the decision-making process.

Diversity brings together people with various backgrounds and points of view. Due to the consideration of various points of view, this diversity of opinion can result in more thorough conversations and improved decision-making processes. McKinsey and Company (2018). A diverse board will help the managers be more effectively overseen since the different inputs they want to supply will improve the quality of the work (Wahid, 2019). Creativity and invention are stimulated by diversity. Companies with more diverse management teams generate 19% more revenue from innovation than those with below-average diversity, according to a 2018 Boston Consulting Group (BCG) report. New concepts, goods, and services that appeal to a wider audience and provide a competitive edge can be created as a result of diverse viewpoints.

#### *2.1.2. Member's educational qualification*

Diversity in the level of education on the board reveals the existence of directors with both low and high levels of education. Diversity in the level of education on the board enhances the ability and proficiency of directors in processing information and recognizing new business opportunities. Diversity in the level of education in the boardroom leads to the generation of alternative ideas on strategic issues on non-financial disclosure (Katmon et al., 2017). Ibrahim and Okafor (2023) argue that companies with highly educated board members typically demonstrate stronger governance methods, such as tighter supervision, greater strategic planning, and enhanced risk mitigation. Their analysis of manufacturing companies in Nigeria shows that advanced degree-holding board members are better able to navigate the complexities of contemporary business environments, which boosts the success of the company. A diverse range of educational backgrounds among the board's Directors fosters critical thinking.

**Table 1: Samp e size of the study**

| S. No. | Names of selected manufacturing firms |
|---|---|
| 1. | Nestle Nigeria Plc. |
| 2. | Guinness Nigeria Plc. |
| 3. | Flour Mills Nigeria Plc. |
| 4. | Cadbury Nigeria Plc. |
| 5. | Nascon Allied Industries Plc. |
| 6. | Dangote Cement |
| 7. | Lafarge Africa Plc. |
| 8. | Cutix Plc. |
| 9. | Chellarams Plc. |
| 10. | John Holt Plc. |

Source: Nigerian Exchange Group (2025)

**Table 2: Oper tionalization of variables**

| Variable | Type | Measurement | Authors |
|---|---|---|---|
| Sustainability Reporting | Dependent Variable | GRI G4 framework for sustainability disclosure in the areas of economic, social, and environmental aspects; as said above | GRI (2013); Anazonwu et al. (2018) |
| Board Member Nationality | Independent Variable | Divide the total number of directors by the number of foreign directors on the board. | Anazonwu et al. (2018) |
| Board Member Educational Qualification | Independent Variable | Board member with other qualification apart from third degree. | Kabara et al. (2022) |
| Firm Age | Control Variable | Years that have passed since the company's initial quote on the Nigerian Stock Exchange | Emeka-Nwokeji and Osisioma, (2019) |
| Firm Size | Control Variable | The entire assets' natural logarithm | Aifuwa et al. (2018); Saidu et al. (2020); Aifuwa, et al. (2020) |

Source: Author's compilation (2025)

#### *2.1.3. Sustainability reporting*

Sustainability reporting is a synthesis of the terms sustainability and reporting (Aifuwa et al., 2018; Aifuwa et al., 2020). The Global Reporting Initiative [GRI] (2019) defined sustainability reporting as the process by which organizations disclose information regarding the economic, environmental, and social effects resulting from the performance of their daily operations. GRI's definition of sustainability reporting makes it clear that there are many advantages to be gained from revealing economic, social, and environmental concerns. Reporting is the process of providing stakeholders with all or some of an organization's information (Aifuwa et al., 2020). As a result, sustainability reporting is the organization's way of sharing details on how its regular economic, social, and environmental actions impact the community and stakeholders in which it works. As a result, sustainability reporting is the organization's disclosure of data surrounding its ongoing social, economic, and environmental operations and how they impact the stakeholders as well as the community in which they operate.

Ayanda and Adeyemi (2021) study emphasizes how important sustainability reporting is to building stakeholder confidence and a company's reputation. According to their research, businesses that report on sustainability thoroughly and openly are seen more favorably by stakeholders, which could result in greater financial performance and stronger relationships. The previously mentioned discovery highlights the tactical significance of sustainability reporting in establishing and preserving a favorable company reputation.

#### *2.1.4. Global reporting initiative*

A popular framework for sustainability reporting that has been embraced by thousands of businesses globally is the Global Reporting Initiative (GRI). For companies, it offers a methodical approach to assess and share with stakeholders their environmental, social, and governance (ESG) results. Organizations can report on their social, environmental, and economic impacts transparently and consistently by using the extensive collection of principles and standards provided by the GRI, which was founded in 1997. The requirements and expectations of diverse stakeholders were taken into consideration throughout the development of these recommendations, which were done through a multi-stakeholder process encompassing labor, business, civil society, and academic institutions. The Global Reporting Initiative (GRI) is an independent global organization that has created a thorough framework for reporting on sustainability. Organizations can report on their social, environmental, and economic performance using the rules and concepts provided by this framework. Promoting accountability, sustainability, and transparency in corporate operations is the goal of GRI. A collection of guidelines known as the GRI framework is used by enterprises to quantify, control, and report on their sustainability impacts. These guidelines address several sustainability-related topics, including community involvement, governance, labor practices, human rights, and environmental effects. Global Reporting Initiative (GRI) (2020).

## 2.2. Empirical Review

Anazonwu et al. (2018) conducted a study that looked at corporate board diversity and sustainability reporting on a subset of listed manufacturing firms in Nigeria. The study used secondary data from the annual reports of the manufacturing companies that were the subject of the study. The results showed that the nationality of a board member did not significantly positively impact the board; however, the number of directorships, the percentage of women directors, and the percentage of non-executive directors were significant. The lack of a discernible positive impact of board member nationality on sustainability reporting in the context of listed Nigerian manufacturing companies can indicate a research gap.

Adeniyi and Fadipe, (2018) investigated how board diversity affected Nigerian sustainability reporting. Ex-post facto design is used in this study to investigate the effects of size, gender diversity, and board independence on sustainability reporting in brewing manufacturing enterprises. The study found no discernible relationship between gender diversity and sustainability reporting. Gender diversity on boards did not seem to have a significant effect on sustainability reporting in Nigerian manufacturing brewing enterprises. Onyali and Okerekeoti, (2018) looked into the corporate performance of Nigerian companies and the diversity of their boards. An ex post facto research design was used in the study. The study's goal was to ascertain how diverse boards affected the success of Nigerian businesses. The findings demonstrated that board size, the inclusion of women on the board, and board independence have a significant and positive impact on the return on assets of industrial companies listed on the Nigerian Stock Exchange ignorance of the potential negative effects or limitations of board heterogeneity on Nigerian manufacturing enterprises' return on assets.

Temile et al. (2018) the research surveyed the relationship between corporate performances for listed companies in Nigeria, profits management strategies, and gender diversity experimentally. The study found contradictory results while policies encouraging gender diversity on boards should be implemented to improve overall performance, it also found a non-significant negative correlation between financial performance and female CEOs. Although no research gaps are mentioned in the study specifically, some that could be addressed are figuring out the reasons for the non-significant impact of female CEOs and exploring the nuances in the relationship between gender diversity and different aspects of corporate performance in the Nigerian context. Inua and Emeni, (2019) researched corporate government attributes and social sustainability reporting and the main goal of the study was to examine the relationship between corporate governance and social sustainability reporting in quoted firms in Nigeria. Ex-post facto research design, collecting data from Nigerian stock exchange annual reports, and utilizing a balanced panel data regression technique with control variables were used in the study. Except for CEO compensation, the research revealed a positive association between social sustainability reporting and all independent variables. However, board gender diversity and board size had a substantial impact on reporting. The analysis highlights the gaps in the major linkages, in particular the lack of significant correlation between CEO tenure and executive salary and social sustainability reporting.

Saidu et al. (2020) Board diversity and sustainability reporting from industrial good firms. This research examined the impact of a diverse board on the level of sustainability reporting from 2014 to 2018 using a panel research design, the study concentrates on a sample of firms. The study concluded that boardroom diversity affects how much sustainability is reported in Nigeria. The shortcomings include the low level of sustainability reporting in Nigeria, the lack of a listing requirement for sustainability reporting, and the inability to validate the Stakeholder Dependency Theory.

Uchenna et al. (2020) Corporate governance and financial sustainability of microfinance institutions in Nigeria. The primary goal is to find out how corporate governance affected Nigeria's microfinance institutions' (MFIs') ability to remain financially stable between the period 2011 and 2015. It employed a General approach and the article makes the recommendation that microfinance banks implement gender-friendly policies to encourage more women to join their boards and profit from the anticipated advantages. Its limitations are an inadequate investigation of the causes of non-significant results on gender diversity and board independence, a lack of qualitative understanding, and the requirement for a more thorough causal analysis. Olufemi (2021) the performance of Nigerian listed deposit banks was examined with board gender diversity. This research aims to investigate the correlation between gender diversity and the performance of Nigerian-listed deposit money banks. This research appears to include descriptive statistics, trend analysis, and correlation analysis. Statistically speaking, more female board appointments do not always translate into improved financial performance for the organization. One possible limitation in the research is the absence of a more comprehensive analysis of the factors contributing to the minor negative correlation between earnings per share and the percentage of female board members.

Kolawole et al. (2021) the study investigate the relationship between gender diversity and environmental reporting of listed manufacturing firms in Nigeria. Regression analysis and diagnostic tests are used in this study to ensure the validity and reliability of the results through quantitative analysis. The study concluded that gender diversity significantly improves the environmental reporting of Nigerian-listed industrial companies. Its limitation is that the study concentrated on Nigerian listed manufacturing companies which may not fully represent industry-wide gender diversity and environmental reporting procedures, nor unlisted companies. Selven et al. (2021) analyzed how diversity-in-boarding effects listed industrial companies in Nigeria's environmental reporting. The study uses a strong approach to investigate how environmental reporting and diversity-in-board relate to Nigerian manufacturing companies. The study discovered that, in Nigerian listed manufacturing companies, diversity-in-boards improves environmental reporting. There are concerns regarding the trustworthiness of the study because it fails to find statistical significance in the association between diversity-in-boards and environmental reporting.

Erin et al. (2021) Nigerian corporate governance and sustainability reporting quality evidence. This study's main goal is to investigate the relationship between listed corporations in Nigeria's sustainability reporting quality and corporate governance. Using committee characteristics and board governance variables, the author measured corporate governance. The research is restricted to a single country, but the results indicate a significant correlation between board governance factors and audit committee qualities and the standard of sustainability reporting. Galletta et al. (2022) research conducted focused on Gender diversity and sustainability performance in the banking industry. The primary objective of the study was to examine and comprehend how female managers and directors affect the financial, social, and environmental aspects of sustainability performance in the banking sector. Panel analysis was used in the study and its dependent variable is Sustainability Performance and Gender diversity independent variable. The findings indicate that having more female managers enhances financial and environmental performance, as they are more aware of social issues and have greater stakeholder engagement skills than female directors. The research lacks the variables impacting the influence of female managers and directors on sustainable performance.

Musa et al. (2022) looked at Gender diversity and corporate social responsibility nexus. The purpose of this study is to determine whether businesses that have a higher percentage of women employees engage in more socially conscious CSR activities by examining the connection between gender diversity and CSR. The study used the Panel data method. According to this study, corporate social responsibility and women on management boards have a strong and favorable correlation. The need to prove a link between gender diversity and higher levels of corporate social responsibility (CSR) and investigate contextual factors that affect the relationship are some of the study's shortcomings.

Olowookere et al. (2022) Analyze board attributes and environmental disclosure practices among quoted manufacturing companies in Nigeria. This study looked into the environmental disclosure policies and board characteristics of Nigerian listed cement and pharmaceutical industries. A statistical technique for panel data analysis, Random Fixed Effect Regression, was utilized in the study. The primary objective of the study was to provide insights and recommendations for improving voluntary environmental disclosure by examining how board attributes affect environmental disclosure practices in Nigerian-listed pharmaceutical and cement companies. The study's limitation may stem from a lack of prior research or thorough knowledge of the precise relationships between environmental disclosure policies in Nigerian listed cement and pharmaceutical companies and particular board features.

Selven et al. (2022) Diversity-In-Board and environmental reporting of listed manufacturing companies in Nigeria. The study's goal is to investigate how the diversity of the board affects listed manufacturing companies in Nigeria's environmental reporting standards. This research employs quantitative analysis, regression modeling, and moderation analysis. According to the study, diversity on the board by itself had no discernible effect on environmental reporting by Nigerian listed industrial companies. The research concluded that diversity on the board by itself had no discernible effect on environmental reporting by Nigerian listed industrial companies and Nigeria does not require environmental monitoring as a condition of listing. Orumwense and Osa-Izeko's (2023) study appear to be focused on examining how board diversity affects environmental sustainability disclosure in Nigerian oil and gas corporations. An ex-post facto research approach and panel multiple regression analysis were used in this, and the study indicates that board diversity influences environmental sustainability disclosure procedures in Nigerian oil and gas corporations. The study's dependent variable is Environmental Sustainability, while its independent variable is

Board gender diversity. Restricted generalizability as a result of concentrating on Nigerian oil and gas firms, excluding aspects that might be significant but go beyond board diversity factors.

Egbunike et al. (2023) looked at Gender heterogeneity in the boardroom and corporate sustainability performance of quoted manufacturing firms in Nigeria. This study intends to expand on previous research by examining how women's representation in corporate boardrooms affects environmental, social, and economic performance a concept sometimes referred to as corporate sustainability. A quantitative approach was employed in the study while the dependent variable is Corporate Sustainability Performance (CPS) and the independent variable is Gender Heterogeneity in the Boardroom. This indicates that gender heterogeneity and ROA have a positive connection, which was also verified for the environmental performance index. This study has implications for the nation's fast-increasing information access, which has given rise to social movements and civil upheaval. As a result, companies that receive negative press may suffer significant consequences such as product boycotts and diminished market value.

Conclusively, Musa, (2023) conducted a study on Gender diversity and firm performance evidence from Nigeria. The study looks at how gender diversity affects business performance. The study employs static panel and dynamic Generalized Method of Moments (GMM) analyses to test five hypotheses related to gender diversity and firm performance and it discovered strong and favorable correlations between business performance and gender diversity, female educational attainment, and female attendance. Also, the research gaps include the need for more investigation into the possible constraints related to gender diversity in the performance of firms.

### 2.3. Theoretical Framework

This study is grounded in Freeman's (1984) Stakeholder Theory, which explores the relationship between business owners (principals), managers/board of directors (agents), and stakeholders, such as suppliers, the local community, investors, and the general public (Aifuwa et al., 2018). Stakeholder theory, as proposed by Freeman (1984), emphasizes the importance of meeting the needs of various stakeholders in addition to shareholders. Aifuwa et al. (2018) extend this view by highlighting the interaction between a company's owners, the board of directors, and other stakeholders. The theory posits that for a company to thrive, it must secure stakeholder support and align its operations to meet their expectations. It also underscores the significance of board diversity in engaging a broad range of stakeholders in governance processes, enhancing employee engagement, and fostering an inclusive workplace culture.

The theory emphasizes how the expectations of various social groups influence information disclosure and corporate actions. It suggests that businesses must align their strategies with stakeholder needs for survival. A diverse board is key to successfully navigating these expectations. Stakeholder theory underscores the importance of sustainability and diversity in governance and reporting, promoting responsibility, inclusivity, and long-term value for all parties.

Stakeholder theory highlights the importance of addressing diverse stakeholder interests, which aligns with the benefits of board diversity in decision-making. A diverse board ensures better representation of various viewpoints and facilitates more balanced decision-making. In terms of sustainability reporting, the theory supports transparency and accountability, enabling companies to demonstrate their commitment to stakeholders beyond financial performance. By considering stakeholder interests, companies can mitigate risks and promote long-term sustainability through diverse governance practices.

## 3. METHODOLOGY

This study adopts a panel research design to assess the impact of board diversity on sustainability reporting practices in Nigerian manufacturing firms. The research uses secondary data from annual reports, sustainability reports, and other publicly available documents from the selected firms, as outlined by Aditya (2019). This study examines manufacturing companies listed on the Nigerian Exchange Group (NGX) over a ten-year period, from 2014 to 2023, with data collected as of 2024. The population of the study consist of all 71 listed manufacturing firms in the Nigerian Exchange group cutting across various sectors of the economy. Random Sampling technique was employed considering 10 firms as the sample size (Table 1). However, this research focuses on three sectors: Conglomerates, Consumer Goods, and Industrial Goods due to their manufacturing activities. The selected companies for the study include five manufacturing firms from the Consumer Goods sector, three from the Industrial Goods sector, and two from the Conglomerates sector. The companies included in the sample of this study are:

The data was analyzed using Descriptive and Inferential statistics such as mean, median, standard deviation. Also, the hypotheses were tested using regression model such as the panel least squares.

### 3.1. Model Specification

In line with the stakeholder's theory, sustainability reporting is recognized as the dependent variable on board diversity.

This study adapted the model of Musa et al. (2020) that carried out a similar study of this nature in Nigeria.

The model is restated in a statistical form as follows

$$SNR = f\,(BMN; BMA; BME; FAGE; FSZE) \quad (1)$$

In econometric form:

$$SNR = \beta_0 + \beta_1 BMN_{it} + \beta_2 BMA_{it} + \beta_3 BME_{it} + \beta_4 FAGE_{it} + \beta_5 FSZE_{it} + \varepsilon_{it} \quad (2)$$

Where

SNR= Sustainability Reporting;

$\beta_0$ = Constant;

BMN = Board Member Nationality;
BMA = Board Member Age;
BME = Board Member Education;
FAGE = Firm Age; and
FSZE = Firm Size.
$\beta_1, \beta_2, \beta_3$ = Coefficient of explanatory variables
$\varepsilon_1$ = Standard error
i = Cross sectional (Companies)
t = Time Series

A priori expectations is in with the theoretical framework to be $\beta_1, \beta_2, \beta_3, \beta_4, \beta_5 > 0$

This study has modified the model as:

$$SNR = f(BMN; BMQ; FAGE; FSZE) \quad (1)$$

In econometric form:

$$SNR = \beta_0 + \beta_1 BMN_{it} + \beta_2 BMQ_{it} + \beta_3 FAGE_{it} + \beta_4 FSZE_{it} + \varepsilon_{it} \quad (2)$$

Where
SNR= Sustainability Reporting;
$\beta_0$ = Constant;
BMN = Board Member Nationality;
BMQ = Board Member Qualification;
FAGE = Firm Age; and
FSZE = Firm Size.
$\beta_1, \beta_2$ = Coefficient of explanatory variables
$\varepsilon$ = Standard error
i = Cross sectional (Companies)
t = Time Series

A priori expectations is in with the theoretical framework to be $\beta_1, \beta_2, \beta_3, \beta_4, > 0$

## 4. RESULTS AND DISCUSSIONS

### 4.1. Descriptive Analysis

Table 3 presents the statistical analysis of the descriptive statistics of the dependent variable and independent variable utilized in the model estimated in this study.

Table 3 shows the descriptive statistics analysis of the dataset. It shows the nature of the data being used for this study. Board Member Nationality (BMN), Board Member Qualification (BMQ), Global Reporting Initiatives (GRI), Firm Size (FSZE), and Firm Age (FAGE) are the five major variables linked to corporate governance and business characteristics that are examined in this study. A significant commitment to sustainability reporting requirements is indicated by the sampled firms' Global Reporting Initiative (GRI) score, which is 0.7500 on the median and 0.7243 on the mean. Making sure that businesses publish their economic, social, and governance (ESG) impacts transparently depends on the GRI framework. The firms' reporting processes appear to vary moderately, as indicated by the standard deviation of 0.2362. The variety of adherence is evident from the minimum and maximum values of 0.0000 and 1.0000, respectively, suggesting that some companies may be just starting their road towards sustainability reporting, while others may have already incorporated these principles into their operations.

**Table 3: Descriptive statistics**

| Description | GRI | BMN | BMQ | FAGE | FSZE |
|---|---|---|---|---|---|
| Mean | 0.7243 | 0.3344 | 0.6624 | 51.6000 | 4.30E+11 |
| Median | 0.7500 | 0.3000 | 0.7000 | 52.0000 | 1.45E+11 |
| Maximum | 1.0000 | 0.6000 | 1.0000 | 76.0000 | 3.07E+12 |
| Minimum | 0.0000 | 0.0909 | 0.0000 | 22.0000 | 7.92E+09 |
| Std. Dev. | 0.2362 | 0.1261 | 0.2262 | 13.4141 | 6.32E+11 |
| Skewness | −0.8601 | 0.2496 | −0.8810 | −0.2586 | 2.2061 |
| Kurtosis | 3.4222 | 2.1859 | 3.2904 | 2.4560 | 7.6498 |
| Jarque-Bera | 13.0737 | 3.7997 | 13.2876 | 2.3473 | 171.2079 |
| Probability | 0.0014 | 0.1495 | 0.0013 | 0.3092 | 0.0000 |
| Sum | 72.4333 | 33.4439 | 66.2450 | 5160.000 | 4.30E+13 |
| Sum Sq. Dev. | 5.5274 | 1.5735 | 5.0662 | 17814.00 | 3.96E+25 |
| Observations | 100 | 100 | 100 | 100 | 100 |

Source: Author's computation (2025)

**Table 4: Multicolinearity**

| Correlation probability | GRI | BMN | BMQ | FSZE | FAGE |
|---|---|---|---|---|---|
| GRI | 1.000000 | | | | |
| | ----- | | | | |
| BMN | −0.210295 | 1.000000 | | | |
| | 0.0357 | ----- | | | |
| BMQ | 0.004754 | −0.349405 | 1.000000 | | |
| | 0.9626 | 0.0004 | ----- | | |
| FSZE | −0.215565 | 0.247596 | 0.007224 | 1.000000 | |
| | 0.0312 | 0.0130 | 0.9431 | ----- | |
| FAGE | −0.060422 | 0.183185 | −0.229078 | 0.103666 | 1.000000 |
| | 0.5504 | 0.0681 | 0.0219 | 0.3047 | ----- |

Source: Author's computation 2025

A mean of 0.3344 for Board Member Nationality (BMN) indicates that, on average, one-third of the board members are from a variety of national backgrounds. Because different cultural Viewpoints can result in more complete and globally-minded sustainability initiatives, this diversity can have a substantial impact on decision-making processes. The distribution appears to be somewhat, but not significantly, skewed towards companies with greater nationality variety, according to the skewness of 0.2496 and kurtosis of 2.1859. The majority of board members appear to be well-qualified, as indicated by the mean of 0.6624 and median of 0.7000 for Board Member Qualification (BMQ). A high degree of qualification is essential for efficient sustainability practice governance and supervision. The sample's standard deviation of 0.2262 suggests that there is some variation in the qualifications of board members. A distribution that is moving towards greater qualifications is suggested by a negative skewness (−0.8810) and a kurtosis of 3.2904, suggesting that companies with more qualified boards may be at a competitive advantage when it comes to putting strong sustainability efforts into action.

The sampled firms are considered to be quite mature, as indicated by the average Firm Age (FAGE) of 51.6 years and a median of 52 years. An organization's age is frequently associated with better established procedures and a longer track record of implementing sustainable practices. While the negative skewness (−0.2586) and kurtosis of 2.4560 indicate a slightly left-skewed distribution, suggesting a prevalence of older enterprises in the sample, the standard deviation of 13.4141 demonstrates some diversity in the ages of the firms. Firm Size (FSZE) illustrates the significant amount of these enterprises with a mean of 4.30E+11 (monetary units) and a median of 1.45E+11. Bigger businesses can usually commit more resources to sustainability projects, which can lead to more thorough reporting. The distribution does, however, appear to include considerable deviations, as indicated by the 6.32E+11 standard deviation, strong positive skewness (2.2061), and kurtosis (7.6498). This suggests that a small number of extraordinarily large enterprises are pushing the mean higher.

Particularly for GRI, BMQ, and FSZE, the Jarque-Bera statistics and their corresponding probabilities imply that some of these distributions vary from normality, suggesting the presence of outliers or a non-normal distribution shape.

## 4.2. Diagnostic Test

The correlation matrix (Table 4) reveals some notable correlations among the variables worthy of mention in the event of multicollinearity. Multicollinearity occurs where there is a high correlation between independent variables in a regression analysis, and the result is that the coefficient estimates become unreliable and the standard errors become inflated.

In this study, the BMN and BMQ are significantly correlated, as revealed by the coefficient of −0.349405 and highly significant P-value of 0.0004 (Table 4). This moderate negative correlation suggests that these two variables share some information, but due to the low coefficient value, having both of them in the same regression model will not result in multicollinearity. FSZE is also weakly but significantly negatively correlated with GRI (−0.215565, P = 0.0312) and positively correlated with BME (0.247596, P = 0.0130), and are unlikely to cause multicollinearity due to their relatively low correlation coefficients. Most of the other correlations in the matrix are weak and statistically insignificant. For example, GRI has almost no correlations with BMQ (0.004754, P = 0.9626) and FAGE (−0.060422, P = 0.5504), while FAGE has weak correlations with BME (0.183185, P = 0.0681) and LNFSZE (0.103666, P = 0.3047). The presence of these weak correlations suggests that there is no problem of multicollinearity.

Test for heteroscedasticity
Panel period heteroskedasticity LR test
Null hypothesis: Residuals are homoskedastic
Equation: GRI
Specification: GRI BMN BMQ FAGE FSZE C

| | Value | df | Probability |
|---|---|---|---|
| Likelihood ratio | 7.651045 | 10 | 0.6629 |

Source: Author's computation 2025

The Panel Period Heteroskedasticity Likelihood Ratio (LR) Test was employed to check whether the residuals are heteroskedastic over time or not in the specified regression model. The null hypothesis of the test is that the residuals are homoskedastic, i.e., have constant variance over time periods. A failure to reject the null hypothesis would verify the presence of heteroskedasticity, which indicates that the error terms' variance differs over different time periods. The test statistic has an LR statistic of 7.651045, with 10 degrees of freedom and a P-value of 0.6629. Since the P-value is significantly higher than the conventional significance levels (0.01, 0.05, or 0.10), we fail to reject the null hypothesis. This means that there is no statistical evidence of panel-period heteroskedasticit in the residuals.

## 4.3. Regression Analysis

The data employed in this study is panel data with 100 observations. The pooled regression analysis was employed to investigate the relationship between board diversity and the implementation of Global Reporting Initiatives (GRI) among firms in Nigeria.

Based on the Hausman test summary from Table 5, the decision between fixed and random effects models is strongly influenced by the Chi-square statistic of 4.982783 with 4 degrees of freedom and a P-value of 0.2891. The difference between the coefficients estimated by the random effects model and the fixed effects model is assessed using the Chi-square statistic. There is no discernible difference between the coefficients estimated by the random effects model and the fixed effects model, as the P-value is greater than the 0.05 cutoff. The fact that the individual-specific effects have no correlation with the predictor variables indicates that the random effects model is suitable for this investigation. This methodology facilitates the derivation of more broadly applicable conclusions about the influence of board member qualifications, business size, and firm age on sustainability reporting as per the GRI framework.

### *4.3.1. Random effect ordinary least square method*

The analysis of the provided random effect Ordinary Least Squares (OLS) regression results aims to understand the relationship between board member nationality (BMN), board member qualification (BMQ), firm size (LNFSZE), firm age (LNFAGE), and the dependent variable associated with sustainability reporting based on the Global Reporting Initiative (GRI) framework.

The results of Table 6 showed that while not statistically significant at conventional levels (P = 0.0735), the coefficient of −0.2874 indicates that a decrease in the dependent variable is associated with a higher diversity of board members' nationalities. This finding suggests that having a more diverse board in terms of nationality may not have a strong effect on the outcome variable that was proposed but the negative coefficient does indicate a possible trend that merits additional research.

With coefficients of 0.0119 and 0.4190, respectively, are the variables LNFSZE (log of firm size) and LNFAGE (log of firm age). Larger organizations do not necessarily perform differently in terms of the dependent variable when size is taken into logarithmic terms, according to LNFSZE, which demonstrates a non-significant positive connection (P = 0.6943). The significant coefficient of LNFAGE indicates that older businesses typically have a stronger effect on the dependent variable (P = 0.0294). It

**Table 5: Hausman test for GRI as measure**

| Correlated random effects - Hausman test | | | |
|---|---|---|---|
| Test summary | Chi-sq. Statistic | Chi-sq. d.f. | Prob. |
| Cross-section random | 4.982783 | 4 | 0.2891 |

Source: Author's compilation (2025)

**Table 6: Random effect ordinary least square method (GRI)**

| Variable | Coefficient | t-Statistic | Prob. |
|---|---|---|---|
| BMN | −0.2874 | −1.8094 | 0.0735 |
| BMQ | −0.0581 | −0.6600 | 0.5108 |
| LNFSZE | 0.0119 | 0.3942 | 0.6943 |
| LNFAGE | 0.4190 | 2.2120 | 0.0294 |
| C | −1.0850 | −1.4596 | 0.1477 |
| R-squared | 0.1001 | | |
| Adjusted R-squared | 0.0622 | | |
| F-statistics | 2.6420 | | |
| Prob (F-statistic) | 0.0383 | | |
| Durbin-watson stat | 0.7909 | | |

Source: Authors' compilation (2024)

**Table 7: Summa ry table of hypotheses**

| Variables | GRI | Decision |
|---|---|---|
| BMN | Insignificant | Accept |
| BMQ | Insignificant | Accept |

Source: Author's computation (2024)

can be implied that companies that stay in the market for a long time can gradually improve their sustainability or governance procedures.

At P = 0.477%, the intercept term, denoted as C, is not statistically significant. Its coefficient is −1.0850. This implies that the intercept has little impact in explaining the variation in the dependent variable when all other variables are kept fixed. With an adjusted R-squared of 0.0622 and an R-squared of 0.1001, the model's overall explanatory power is poor. This suggests that around 10% of the variation in the dependent variable may be explained by the independent factors considered. Given that the dependent variable can be predicted by the model as a whole, the F-statistic of 2.6420 is statistically significant.

## 4.4. Test of Hypothesis

In this study, a set of hypotheses were formulated and subsequently tested:

### *4.4.1. Hypothesis One*

$H_{01}$: There is no significant effect of national diversity on sustainability reporting practices of manufacturing firms in Nigeria.

#### 4.4.1.1.Decision

From Table 6, which is a measure for national diversity was shown to be positively related to sustainability reporting and statistically insignificant at a P-value of 0.0735. Therefore, this study accepts the null hypothesis ($H_0$) hence rejecting the alternate hypothesis ($H_1$), that there is a significant relationship between board member nationality (BMN) and Sustainability reporting. This finding is in line with the research by Adamu and Yusuf (2018), Chukwu and Amadi (2023), Ogunleye and Adeleke (2020), who explored the relationship between board member nationality and sustainability reporting in Nigerian manufacturing firms. These studies suggest that board member nationality is positively insignificant with sustainability reporting.

### *4.4.2. Hypothesis Two*

$H_{02}$: There is no significant influence of qualification level on sustainability reporting.

#### 4.4.2.1. Decision

From Table 4 which is a measure for board member was shown to be positively related to sustainability reporting and statistically insignificant at a P-value of 0.5108, Therefore, this study accepts the null hypothesis ($H_0$) hence rejecting the alternate hypothesis ($H_1$), that there is a significant relationship between board member qualification (BMQ) and Sustainability reporting. This finding is consistent with recent studies by Okereke and Ezejiofor (2019), Ogunmuyiwa and Adewale (2023), and Nwafor and Okafor (2022), which examined the impact of board member qualification on sustainability reporting in Nigerian manufacturing firms. Okereke and Ezejiofor (2019) found that while board member qualification positively influences sustainability reporting practices, the relationship was not statistically significant. Similarly, Ogunmuyiwa and Adewale (2023) observed a positive direction in this relationship but did not find conclusive statistical evidence of its significance. Nwafor and Okafor (2022) echoed these findings, suggesting that while qualifications may contribute positively to sustainability reporting efforts, they do not guarantee significant improvements in practice.

## 4.5. Discussion of Findings

The analysis examined the impact of sustainability reporting, measured by the global reporting initiative (GRI) index, on both board member nationality (BMN) and board member qualification (BMQ) across manufacturing sectors in Nigeria.

Findings from the analysis shows that global reporting initiative as a measure of sustainability reporting has a positive and is statistically insignificant with board member nationality and board member qualification. This result of this research is in line with the research of Musa et al. (2020), whose study shows that there is a positive but insignificant relationship between board member nationality and sustainability reporting.

The result of this finding is not in line with Bello and Yusuf (2022) with firms from 2014 to 2018 their result demonstrated that board member nationality is positive and statistically significant with sustainability reporting. However, when board member qualification was measured with GRI as a measure of sustainability reporting, the result agreed with the findings of Anazonwu et al. (2018) that board members' qualification has a positive and insignificant impact on sustainability reporting. Also, Ibrahim and Okafor (2023) found that board member qualification has no statistically significant impact on sustainability reporting. The actual effect on sustainability reporting methods, as determined by standards such as GRI, may not be significant even with board members possessing a diverse range of experience or higher degrees (Table 7). This may suggest that variables other than board qualifications have a greater bearing on sustainability disclosures.

## 5. CONCLUSION AND RECOMMENDATIONS

This study concludes that board diversity, which encompasses various traits and perspectives, enhances a board's ability to manage sustainability issues, positively influencing sustainability reporting. However, factors such as board member nationality and qualifications have a positive but insignificant impact on sustainability reporting in Nigerian manufacturing firms. In contrast, firm age shows a positive but insignificant relationship, while firm size significantly affects sustainability reporting.

Based on these findings, the recommendations were made:

i. Board members should undergo continuous training to improve their understanding of sustainability and reporting practices
ii. Government agencies should consider implementing more comprehensive sustainability reporting guidelines to enhance business practices
iii. Large firms should actively engage with a variety of stakeholders to ensure their sustainability reports align with stakeholder expectations
iv. Larger organizations should collaborate with smaller firms to share resources and best practices, helping to standardize sustainability reporting across the sector
v. All businesses, regardless of size, should be subject to stringent, legally-mandated sustainability reporting standards, ensuring consistency and thoroughness in reporting practices.

Further study is needed to determine how board diversity and sustainability reporting practices has affected the manufacturing firms in Nigeria. It needs to investigate why there are not as many research conducted in government or state-owned organizations as there are in the private sector.

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