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EFFECT OF BOARD FEATURES ON SUSTAINABILITY DISCLOSURE OF QUOTED MANUFACTURING COMPANIES IN NIGERIA

ABSTRACT
This study examines the effect of board features on the sustainability disclosure of listed manufacturing companies in Nigeria. The period covered by the study was 2014 to 2023, with the population of Seventy-Six manufacturing companies. The nature data used by the study was panel data. The techniques used for data analysis include descriptive statistics, correlation statistics, and multiple regression. The results of this study show that board independence and board expertise have a negative and insignificant effect on sustainability disclosure. In contrast, board diversity has a negative but significant effect on the sustainability disclosure of manufacturing companies in Nigeria. This study concludes that boards with a reasonable proportion of female directors are more inclined to prioritize sustainability disclosure in listed manufacturing companies in Nigeria. Therefore, the study recommends that the nomination committee of these companies work to ensure gender sensitivity in board composition. This can be effectively achieved by incorporating and adhering to the principle of gender equality in corporate decisions, such as sustainability disclosure.

Keywords: *Board Features, Sustainability Disclosure, Nigerian Manufacturing Companies*

Introduction

Globally, sustainability reporting is becoming increasingly required, especially in places like the USA, China, and the EU, where groups like the Carbon Disclosure Project (CDP) push for worldwide disclosure of greenhouse gas emissions.

Organizations that report their environmental, social, and governance (ESG) activities to stakeholders such as investors, employees, and the general public are said to be engaging in sustainability disclosure. This type of reporting typically contains information on how businesses manage their impact on social welfare, the environment, and corporate governance. As stakeholders increasingly call for more transparency regarding the long-term effects of corporate actions on society and the environment, sustainability disclosures are becoming more important (Eccles & Krzus, 2018). Several studies show a relationship between corporate attributes and sustainability performance. Therefore, board features influence sustainability disclosure.

Board independence refers to the presence of independent directors on a company's board who are not influenced by management. The independent board members control the opportunistic behaviour of other board members and mitigate the information asymmetry issue (Benameur et al., 2023).

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The independence of the board is considered vital in ensuring ethical decision-making, accountability, and oversight mechanisms related to sustainability reporting quality (Cho, et al., 2019; Chiu & Wang, 2015).

On the other hand, Board members with diverse expertise can contribute to better decision-making, strategic planning, and oversight regarding sustainability practices, which can positively influence sustainability reporting quality (Chen et al., 2020; Constançon, 2020). Board expertise refers to the specialized knowledge and skills possessed by board members that are relevant to sustainability issues.

In the same way, board diversity has been associated with enhanced governance practices, broader perspectives, and a greater focus on stakeholder considerations, including sustainability issues (Tilt et al., 2021; Cho et al., 2019; Adams et al., 2016). Board diversity refers to the presence of both male and female directors on a company's board. Furlotti et al. (2019) find that a female in the top chairperson positively affects all types of sustainability reporting. Based on the aforementioned arguments, the research hypotheses were formulated in a null form.

Therefore, the main aim of this paper is to examine the effect of board features (independence, expertise, and diversity) on sustainability disclosure of listed manufacturing companies in Nigeria. Based on the study's specific objectives, research questions were also raised.

This study is categorized into the introduction, literature review, research methodology, result and discussion, and conclusion and recommendations.

Empirical Review

This study reviewed numerous relevant empirical studies to provide a better perspective on the effect of board features on the sustainability disclosure of quoted manufacturing companies.

Board Independence and Sustainability Disclosure

This study defines board independence as the number of non-executive directors, which refers to outside directors. The number of independent non-executive directors on a company's board of directors is thought to substantially impact business disclosure in general and corporate social and environmental disclosure in particular (Ho & Wong, 2001). Although there is a plethora of studies on sustainability disclosure, empirically, studies on board independence and sustainability reporting are still lacking. Besides, the results reportedly showed inconsistency, such as positive significance or insignificant, while others reported negative significance or significance. Below are the series of previous studies:

Githaiga and Kosgei (2023) examined how board characteristics affect East African listed companies' sustainability reporting. The analysis uses data from 2011 to 2020 and a sample of 79 listed companies selected from East African stock markets. However, the study focused only on sustainability disclosure rather than the quality of information disclosed. Moreover, Khan and Tasnim (2022) evaluated the impact of corporate governance structure on corporate sustainability reporting using twenty-seven sampled listed businesses on the Dhaka Stock Exchange (DSE) from 2018 to 2019. The research has been conducted using cross-sectional regression analysis. According to the study, independent directors have an insignificant influence on sustainability reporting.

Additionally, Elafify (2021) investigated the impact of the corporate board, and the public released a separate sustainability report that looked at how firms included on the Egyptian Sustainability Index disclosed their sustainability practices between 2016 and 2018. However, the study only looks at one variable related to how sustainability issues are disclosed, but adding more variables would have produced a more reliable outcome. In addition, Mashudi et al. (2021) conducted an empirical investigation on the

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association between corporate governance traits and the extent of ESG disclosure in ASEAN nations. The findings indicate that independent directors probably increase the disclosure of sustainability. Nevertheless, the report does not mention the statistical method utilized to calculate the output.

Furthermore, in a rising country like Malaysia, Azman and Rashid (2020) investigate the impact of board membership and characteristics on the quality of sustainability reporting. The study uses secondary source data from 2016–2018 and employs a causal research methodology. Additionally, Nguyen and Nguyen (2020) use a sample of 120 manufacturing companies that were listed on the Vietnam stock market in 2019 to examine the effects of the determinants on the disclosure of sustainable development information by enterprises. However, the analysis only takes into account the years 2019 and which is adequate for recommendation.

Also. Abdelrahman (2019) studied the features that affects the quality of sustainability reporting of the Global Fortune 100 companies covering the period 2011-2015. The collected data for the study were statistically analysed using an Ordinal, Logistic Regression (OLS) which has concluded that board independence has two identified phenomena which shows there is an insignificant relationship between member of board independence and the quality of sustainability reporting but, there is a positive significant relationship between the chair of the board independence and the quality of sustainability reporting. This study uses the environmental and social index in measuring sustainability ignoring economic aspect of which economic performance index is the undrawable factor in sustainability issues.

However, Alotaibi (2020) looks at the features of Saudi listed firms' boards of directors (independence). The study used a content analysis methodology to gather information from annual reports covering the years 2015 to 2017. The annual reports 357 were examined using the Global Initiative Reports (GRI) (G4) that the United Nations published in 2013. The study finds that board independence is not a significant determinant, which may be because the publication of sustainability information is voluntary. However, the study only uses data from two years, which is insufficient for drawing conclusions.

Indeed, board independence is founded on both agency theory and stakeholder theory. And finally, this study concluded that the relationship between board independence and Sustainability disclosure is ambiguous, which sparked moderation by audit quality, based on the empirical evidence above. Hence, board independence is proxy by the ratio of non-executive directors to total board of directors.

Board Expertise and Sustainability Disclosure

Despite the fact that there is a surfeit studies on board expertise and sustainability reporting even though are still lacking behind. Besides, the results were reportedly showing inconsistency such as positive significant or insignificant while others reporting negatively significant or significant. Below are the series of previous studies:

Githaiga and Kosgei (2023) look into how board characteristics affect East African listed companies' sustainability reporting. The analysis makes use of data from 2011 to 2020 and a sample of 79 listed companies selected from East African stock markets. The focus of this study is sustainability disclosure not the quality of disclosure. Moreover, Al-Shaer and Zaman (2020), explores the relationship between audit committees and sustainability reporting assurance using resource dependency theory. Overall, the findings suggest audit committees add credibility and help improve sustainability reporting through their environmental expertise, and oversight.

Furthermore, Yunusa (2017) examines the relationship between corporate governance mechanisms and corporate social and environmental disclosure quality among listed firms in Nigeria. The findings suggest the use of the Global Reporting Initiative to calculate the quality of corporate social and environmental

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disclosure, and the use of FGLS as techniques of analysis. But the use of FGLS as techniques of analysis is one of the unfitted tools of analysis for kind of the study. In addition, Tong (2017) investigated the effects of company-specific variables on the amount of corporate social responsibility (CSR) information disclosed in publicly traded companies in the United Kingdom (UK) and Malaysia.

Board Diversity and Sustainability Disclosure

Despite the fact that there some studies on board gender diversity, in relation to sustainability disclosure there is still lag. Besides, the results were reportedly showing inconsistency such as positive significant or insignificant while others reporting negatively significant or significant. Below are the series of previous studies:

Buallay et al. (2022) analyze the association between board gender diversity and sustainability reporting using extracted data from 2,116 banks that are listed on the stock exchange for the period of ten-year period (2007–2016). The study shows a positive significant effect on the degree of ESG disclosure when there is rise in female board members that account for 22–50% of the board, the result supports the gender board diversity as a causal element of corporate governance disclosure. However, the study uses only data from banks even though they are among the sensitive sector in regards to sustainability disclosure but it is insufficient to generalize.

Moreover, Githaiga and Kosgei (2023) look into how board characteristics affect East African listed companies' sustainability reporting. The analysis makes use of data from 2011 to 2020 and a sample of 79 listed companies selected from East African stock markets. The focus of this study is sustainability disclosure not the quality of disclosure.

Furthermore, a logistic regression model was employed by Hassan et al. (2021) to analyse information from a sample of 138 companies listed on the Pakistan Stock Exchange between the years of 2009 and 2018. Mashudi et al. (2021) conducted an empirical investigation on the association between corporate governance traits and the extent of ESG disclosure in ASEAN nations. The STATA 14 software program was used to assess the study's econometric models, which used data from 2011 to 2014. Also, Noureldin and Basuony (2021) use cross-sectional data from the Egyptian Stock Exchange (EGX) of non-financial companies over the period of 2012-2019 to study the impact of female representation on management boards on sustainability performance in a developing country. The study would have produced better results had it used panel data, which encompasses time periods that are covered over a longer length of time.

Azman and Rashid (2020) look into how board membership and characteristics affect the standard of sustainability reporting in a developing nation like Malaysia. The study applies a causal research methodology and draws on secondary source data from the years 2016 to 2018. Data analysis was done to look over the information. Velte (2019) also conducted a meta-analysis of 51 empirical-quantitative research on the characteristics of boards, including board independence, the absence of CEO duality, gender diversity, and board size. The study found that, among other things, in countries with higher levels of shareholder protection and more zealous regulatory enforcement, board gender diversity was strongly associated with CSR reporting.

While, Ifeyinwa (2021) looked on how board demographics affected non-financial enterprises in Nigeria's sustainability reporting from 2011 to 2020. Ex-post facto and cross-sectional research designs were utilized in the study to collect data from annual reports for a sample size of 75 people. Many statistical approaches, including panel probit regression analysis and descriptive statistics, were used to analyse the data gathered for the study. According to the study's findings, gender diversity significantly and negatively affects the

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sustainability reporting of listed non-financial enterprises in Nigeria. Yet, focusing on just the aspect of sustainability reporting rather than more might have produced a more favourable outcome.

Looking at the significance of female on the board of directors it is well explained by agency theory and legitimacy theory. Based on the empirical evidence above, the study finally concludes that the relationship between board diversity and Sustainability disclosure is vague, and there is need to moderate using audit quality

Methodology

This study adopts a correlational research design and the population of the study covers all the seventy-six (76) manufacturing companies listed on the Nigerian Exchange Group (NGX), formerly known as Nigerian Stock Exchange (NSE) as at December 31st, 2023. Therefore, it was categorized into six sectors:

Table 1: Population of the Study

S/N	List of Companies	List of Population
1.	Consumer Goods Firms	26
2.	Industrials Goods Firms	22
3.	Healthcare Firms	6
4.	Natural Resources	9
5.	Oil and Gas Firms	12
6.	Utility	1
Total		**76**

Source: *NSE fact book, 2024.* *Nigerian Exchange (NGX) (african-markets.com)*

Moreover, the study adopts census filtering criteria to arrive at the adjusted population forty-six (46) sampled manufacturing companies. Thus, a company must meet up with the requirements for it to be part of the sample of the study. Therefore, the criteria are as follows: company must be listed on the NGX on or before 2014 to 2023 as the period of the study covers from 2013 to 2022; company must have been consistently listed in the NGX throughout the period of the study; and company must have its full annual report published and accessible throughout the period of the study.

Table 2: Adjusted Population of the Study

S/N	List of Companies	List of Population	List of Sampled
1.	Consumer Goods Firms	26	18
2.	Industrials Goods Firms	22	10
3.	Healthcare Firms	6	5
4.	Natural Resources	9	3
5.	Oil and Gas Firms	12	10
1.	Utility	1	-
Total		**76**	**46**

Source: *Generated from table 1 population of the study*

Given is the operational definition of the variables.

Table 3: Variables Definition and Measurement

Variables	Operational Definition	Measurement	Sources
Dependent			
Sustainability disclosure	Economic, Environmental Social indices	GRI Standards (Environment, Social and Economics indices)	Permatasari et al. (2020); Romero et al. (2019)

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Independent			
Board Independence	Board independence is known as non-executive directors which refers to outside directors.	Is measured as the non-executive board of directors divided by total board size (%).	Benameur et al. 2022).
Board Expertise	Board expertise refers to the board member with professional knowledge, skills, and experience of reporting know-how, legal matters or industry knowledge.	The ratio of board member with the profession in accounting/finance and other related field.	Dobija and Puławska (2022); Maroun and Prinsloo (2020)
Board Diversity	Board diversity, the number of women on the corporate board.	Is measured as the number of female directors divided by total board size (%)	Ong and Djajadikerta (2020); Furlotti et al. (2019); Cucari et al. (2018)
Control			
Financial Leverage	The financial leverage ratio is an indicator of how much debt a company is using to finance its assets.	Is measured as total liabilities divided by total asset	Bhatia and Tuli (2017)

Source: Compiled by the Researcher, 2024

Given is the model to estimate the relationship between board attributes and Sustainability disclosure.

$SD_{it} = \beta_0 + \beta_1 BI_{it} + \beta_2 BE_{it} + \beta_3 BD_{it} + \beta_7 FL_{it} + \varepsilon_{it}$

Where: SD = Sustainability disclosure; BI = Board Independence; BE = Board Expertise; BD = Board Diversity; FL = Firm Leverage; β_0 = Intercept; β_1 - β_3 = Coefficient of the independent variables; β_{11} = Coefficient of the control variable; i, t = Panel data attribute combination of cross sessional and time series data; and ε = Error term.

Result and Discussions

This section of the study covers the result analysis and interpretation.

Table 4: Descriptive Statistics

Variables	Mean	Std. Dev.	Min.	Max.	Obs.
SD	0.4562	0.1829	0.20	0.9000	460
BI	0.3094	0.1314	0.08	0.7084	460
BE	0.4300	0.1672	0.08	0.8500	460
BD	0.2622	0.1409	0	0.8332	460
FL	0.3416	0.0940	0.1043	0.7124	460

Source: *STATA Output Result, (2024).*

Based on the descriptive statistics in table 4, it shows the mean and standard deviation results of SD as 0.4562 and 0.1829 approximately and respectively. The table also shows the minimum and maximum results of Sustainability disclosure as 0.20 and 0.90 respectively. The average value of the Sustainability disclosure signifies that majority of the listed manufacturing companies in Nigeria falls under the "Average Reporting Quality" category during the period of the study.

From the perspective of board independence, the table 4 shows a mean value of 0.3094 with a corresponding standard deviation value of 0.1314. This is followed with a minimum and maximum values of 0.08 and 0.7084 respectively. This implies that the proportion of external directors of majority of the listed manufacturing companies is good and adequate to support their corporate strategies on Sustainability disclosure. Moreover, with reference to the descriptive result of board expertise, the table 4 shows a mean value of 0.4300 with a corresponding standard deviation value of 0.1672. This is followed with a minimum and maximum values of 0.08 and 0.85 respectively. This implies that the proportion of directors with financial expertise in majority of the listed manufacturing companies is good and adequate to aid their corporate/business strategies especially with regards to Sustainability disclosure.

Furthermore, board diversity as in the table 4 shows a mean value of 0.2622 with a corresponding standard deviation value of 0.1409. This implies that some listed manufacturing companies are less sensitive to gender diversity while others are giving more consideration to female representation or membership in their board of directors. In addition, the descriptive information for firm leverage in the table 4 shows a mean value of 0.3416 with a corresponding standard deviation value of 0.0940. This is followed with a lowest and highest values of 0.1043 and 0.7124 respectively.

Table 5: *Correlation Matrix*

Varr.	SD	BI	BE	BD	FL	VIF	1/VIF
SD	1.0000						
I	-0.0894	1.0000				1.33	0.750757
	0.0554						
BE	-0.0835	0.3885*	1.0000			1.22	0.822401
	0.0737	***0.0000***					
BD	0.0291	-0.1619*	0.0334	1.0000		1.30	0.770687
	0.5336	***0.0005***	***0.4754***				
FL	-0.1906*	1690*	0.1147*	-0.2356*	1.0000	1.16	0.861955
	0.0000	***0.0003***	***0.0138***	***0.0000***			

Source: *STATA Output Result, (2024).*

Based on the correlation matrix table, it shows the association between the explanatory variables and the outcome variable as well as the association among the explanatory variables individually and cumulatively. Based on the results, it shows the beta coefficients values of the variables as -0.0894, -0.0835, 0.0291, and -0.1906 representing board independence, board expertise, board gender diversity, and firm leverage respectively. Accordingly, there are basically three (3) benchmarks that are used in the correlation matrix analysis in order to examine the presence of strong correlation or otherwise. These are the Beneish (1997), Gujarati (2009) and Hair (2014).

Consistent with the Beneish criteria, three (3) basic rules were applied. These are the low correlation which ranges between 0.00 to 0.29, the intermediate correlation which ranges between 0.30 to 0.49 and strong correlation which ranges between 0.50 to 0.99. By implication, there is absence of strong correlation among the variables of the study. It further implies the absence of redundancy among the variables of the study.

A robustness test was carried out on the variables of the study. It is thus, employed to find out whether or not there is multicollinearity problems in the study. In reference to the information contained in the table 4.2, it reveals the multicollinearity statistics with regards to all the explanatory variables of the study which are examined using VIF and tolerance values as the two major parameters of measuring the collinearity of a given data. Based on the result, the VIF values for all the variables are greater than 1 but less than 10.

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This is validated by the value of the average or mean VIF of 1.20. The tolerance values on the other perspective, showed values that are higher than 0 but less than 1 across all the variables. This signifies the absence of multicollinearity among all the explanatory variables of the study. By implication, multicollinearity may not pose strong threat or problem to the explanatory variables of the study.

Table 6: *Panel Corrected Standard Error Results (PCSE)*

Parameters	Coefficients	T-Values	P-Values
Constant	0.3078	4.30	0.000
BI	-0.0034	-0.06	0.949
BE	-0.0455	-0.94	0.349
BD	-0.1292	-1.71	0.087
FL	-0.1175	-2.44	0.015
Adjusted R^2			0.1977
Wald Chi^2 (8)			123.78
Prob>Chi^2			0.0000

Source: *STATA Output Result, (2024)*

The summary of the regression result obtained from the model of the study ($SD_{it} = \beta_0 + \beta_1 BI_{it} + \beta_2 BE_{it} + \beta_3 BD_{it} + \beta_7 FL_{it} + \varepsilon_{it}$ *) is presented in table 6.*

Based on the regression results in table 6, it indicates the adjusted R^2 value of 0.1977 This signifies that the coefficient of determination has an explanatory power of 19.77 percent (20) approximately. By implication, the total changes in the Sustainability disclosure of listed manufacturing companies in Nigeria is caused by the board attributes proxied by board independence, board expertise, board diversity, and firm leverage during the period of the study. The result also implies that 80 percent (80%) of the total changes in the Sustainability disclosure of the listed manufacturing companies in Nigeria is determined by other factors that have not been captured in the model of the study. The regression results also show a Wald Chi^2 value of 80 signifying that the explanatory variables are properly selected, combined, and used. The result also implies that the model is good, adequate, and well-fitted for the study. This is confirmed by the prob>Chi^2 value of 0.0000 which signifies that it is statistically significant at 1 percent (1%) level of significance.

Reference to the table 6, it shows the coefficient result of board independence as -0.0034 with a corresponding t and p values of -0.06 and 0.949 respectively. This signifies that board independence is negatively and insignificantly influencing the Sustainability disclosure of listed manufacturing companies in Nigeria. By implication, board independence is not a strong determinant of Sustainability disclosure of listed manufacturing companies in Nigeria. This is not strange at all, since a less-autonomous board of directors has little power, less-ability and to discharge their duties devoid of any interference. Thus, the higher the proportion of non-executive directors in the board, the stronger the level of checks and balance which ultimately, ensures or strengthens the corporate strategic decision like Sustainability disclosure of the listed manufacturing companies in Nigeria and vice versa.

From the regression result in table 6, it shows the coefficient result of board expertise as -0.0455 with a corresponding t and p values of -0.94 and 0.349 respectively. This signifies that board expertise has negative and insignificant effect on Sustainability disclosure of listed manufacturing companies in Nigeria. This suggests that board expertise is not a significant factor influencing the sustainability disclosure of listed manufacturing companies in Nigeria It is clear that the technical, professional, and financial expertise of board members plays a crucial role in advancing the affairs of listed manufacturing companies. However, such progress cannot be achieved by a board with minimal or no financial expertise, particularly when it comes to enhancing the sustainability disclosure of these companies.

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The regression results in table 6 shows the coefficient result of board diversity as -0.1292 with a corresponding t and p values of -1.71 and 0.087 respectively. This indicates that board diversity has a significant negative impact on the sustainability disclosure of listed manufacturing companies in Nigeria. The implication is that reducing the proportion of female directors on the board could negatively affect the sustainability disclosure of these companies. This is often due to the fact that women tend to be more conservative in decision-making, particularly on strategic issues like corporate matters. Their level of objectivity in making corporate decisions is crucial and, as a result, may influence the sustainability disclosure practices of listed manufacturing companies in Nigeria

Conclusion

This study investigates the effect board features on sustainability disclosure of listed manufacturing companies in Nigeria. The study covered the period of Ten years, panel data was used for analysis. The results of this study shows that board independence and board expertise have negative and significant effect on the sustainability disclosure. While, board diversity has negative significant effect on the sustainability disclosure of manufacturing companies in Nigeria.

This study concludes that boards with a reasonable proportion of female directors are more inclined to prioritize sustainability disclosure in listed manufacturing companies in Nigeria. Therefore, the study recommends that the nomination committee of these companies work to ensure gender sensitivity in board composition. This can be effectively achieved by incorporating and adhering to the principle of gender equality in corporate decisions, such as sustainability disclosure.

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