Board Characteristics and Environmental Information Disclosure of Listed Manufacturing Firms in Nigeria

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Abstract: The paper analysed the relationship amid board characteristics and environmental information disclosure of listed Nigerian manufacturing firms. The data used were sourced from twenty (20) Nigerian listed companies from the manufacturing sectors, which were randomly chosen from manufacturing firms listed on the Nigerian stock market between 2013 and 2017. The study made use of ordinary least squares regression. According to the research findings, there exists a positive and significant relationship linking board independence and environmental disclosure in Nigeria's oil and gas and manufacturing sectors. In line with the results, a large board of directors comprised of foreign directors would improve firms' environmental disclosure. Furthermore, this study's findings would help organisations satisfy stakeholders' needs in their corporate governance practices. This study throws light on voluntary disclosures and how firms can adjust their corporate governance practices to boost their environmental disclosures, which is a contemporary issue because stakeholders demand more information that affects their investing decisions.
Keywords: corporate governance; board characteristics; environmental investments; disclosures, corporate social responsibility

Abstrak: Penelitian ini menganalisis hubungan antara karakteristik dewan dan pengungkapan informasi lingkungan dari perusahaan manufaktur Nigeria yang terdaftar di bursa efek. Data yang digunakan bersumber dari dua puluh (20) perusahaan manufaktur yang dipilih secara acak yang terdaftar di pasar saham Nigeria antara tahun 2013 dan 2017. Penelitian ini menggunakan regresi *ordinary least squares*. Menurut temuan penelitian, terdapat hubungan positif dan signifikan yang menghubungkan independensi dewan dan pengungkapan lingkungan di sektor minyak dan gas dan manufaktur Nigeria. Sejalan dengan hasil penelitian, dewan direksi yang terdiri dari direktur asing akan meningkatkan pengungkapan lingkungan perusahaan. Selanjutnya, temuan penelitian ini akan membantu organisasi memenuhi kebutuhan pemangku kepentingan dalam praktik tata kelola perusahaan mereka. Studi ini menyoroti pengungkapan sukarela dan bagaimana perusahaan dapat menyesuaikan praktik tata kelola perusahaan mereka untuk meningkatkan pengungkapan lingkungan mereka, yang merupakan masalah kontemporer karena pemangku kepentingan menuntut lebih banyak informasi yang memengaruhi keputusan investasi mereka.
Kata Kunci: tata kelola perusahaan; karakteristik dewan; investasi lingkungan; pengungkapan; tanggung jawab sosial perusahaan

INTRODUCTION

Over the years, board members were considered a valuable tool for corporate governance (CG) and, therefore, would play an essential part (Price, 2018). Also, over the years, there has been a growing concern for the environment as a result of certain threats that have resulted in negative effects and environmental hazards, making the environment a topic of concern, especially with companies that emit a lot of carbon monoxide (Adekoya & Ekpenyong, 2009). Therefore, it is estimated that organization efforts concerning their host community should be disclosed in their corporate reports to promote transparency for the public to see moves put in by the organizations in maintaining its environment.

In Nigeria, the goal is to disclose environmental information while ensuring uniformity in reporting corporate environmental issues. There is no definite accounting standard but rather policies provided by some entities, for instance, the Regulation Enforcement Agency Act of 2007. These guidelines provided are not compulsory but instead recommended. Since it is not compulsory, most businesses lean towards disclosing information to follow industry practices and demands from environmental promoters (Okafor, 2018).

This brings up the discussion that organizations with efficient boards, such as board size, environmental disclosure, independence of boards, foreign management, the ecosystem, and the participation of women in the boards stand a chance to be better business corporate citizens than companies that have an ineffective board. This indicates a strong positive association between management and corporate social responsibility (Ali & Attan, 2013).

Several factors can influence the disclosure of environmental practices, including decisions, intentions, and policies in an organization. Htay et al. (2012) argued that the decision to divulge relevant environmental data rests on factors such as the management board's composition and other organizational characteristics. For shareholders' interests to be secured and their goals to be met, board composition must effectively monitor and manage risk following regulatory framework provisions (Price, 2018).

The topic of board characteristics and environmental disclosure has been well empirically considered in developed nations (Delmas & Toffel, 2008; Zhang, 2021). However, we cannot confidently say that about Nigeria because such has not been empirically demonstrated. Much consideration has not been placed on how the environment has affected the employees' benefit, safety, training, pollution of the environment such as noise and vibration, policies regarding the environment, waste recycling. These have not been given much attention in developing countries such as Nigeria on the connection amid board characteristics and environmental disclosure (Uwuigbe & Ben-Caleb, 2012; Uwuigbe & Jimoh, 2012; Uwuigbe et al., 2011; Rabi, 2021).

Despite the intensified interest and rising demand from corporate stakeholders, corporate environmental disclosure is still at its lowermost acceptance in Nigeria. Poor corporate environmental disclosure practices in the manufacturing sector are extremely common, and their disclosures cannot cover the diverse demands of organizational stakeholders. Also, the empirical findings on the determinants of environmental disclosure decisions are inconclusive (Beyer et al., 2010; Ott et al., 2017; Ofoegbu et al., 2018). Against this framework, this study aimed at investigating the association between board characteristics and environmental disclosure in listed manufacturing firms in Nigeria. This study also contributes to the recent literature on information transparency and accountability.

LITERATURE REVIEW

Environmental Disclosure

There was no agreement on what corporate environmental disclosure is. Prior studies described environmental disclosure information to include the management of emissions, environmental damage prevention or compensation, the protection of natural resources, and other details on the environment (Ernst & Ernst, 1978; Ofoegbu et al., 2018; Gerged, 2021). This study identifies environmental information as a major type of corporate social reporting. Roberts (1991) defines environmental reporting to consist of a range of subjects which can be widely classified as statements on environmental protection and the use of energy, political arrangement, recruitment data, data concerning health as well as safety and product information, investments related to the environment, research and development related to the environment (Qian & Chen, 2021).

Board Characteristics

Board characteristics are mainly examined in terms of size, independence, foreign directors, and composition of the genders (Walls et al., 2011; Ofoegbu et al., 2018; Rabi 2021; Khan, Al-Jabri & Saif, 2021).

Board Size

Board size is the total number of director's that makes up an organization's management board. Board size is essential in the environmental disclosure of corporate companies in Nigeria because they will make better decisions than firms with smaller board sizes (Sharif & Rashid 2014). Companies with a large board would have more experts and, hence, a better result; companies with a small board size tend to have fewer experts than companies with a large board size (Walls et al., 2011). Larger boards are usually mixed by greater diversity, capturing different experience levels, financial expertise, and capabilities to solve problems, which can boost corporate reputation and image (Ntim & Soobaroyen, 2013). Hence, consequently increasing board efficiency in the auditing and detecting opportunistic traits of corporate directors (Elmagrhi et al., 2016; Mallin et al., 2013). Compared to organizations with smaller board sizes, entities with a larger corporate board are more likely to increase disclosure of corporate information regarding their CG practices (Cunha & Rodrigues, 2018; Elmagrhi et al., 2016; Al-Bassam et al., 2018; Samaha et al., 2012).

Board Independence

Board independence refers to outside directors who are independent of management and can closely track management’s actions to protect shareholders’ interests (Amran et al., 2014). A board of independent management comprises mostly foreign directors who are not affiliated with the company’s top executives and have little to no business relationship to avoid potential conflicts of interest (Walls et al., 2011). A non-executive director is a constituent of a corporation’s management board, which, according to Liao et al. (2015), is not a member of the administrative committee.

Similarly, Khan et al. (2013) described a non-executive director as a director who does not usually participate in the organization’s day-to-day management but is involved in policy formulation and planning exercises. The role of independent directors on an organization’s board has been recognized even at the policy level, with corporate governance codes emphasizing the need for a fair proportion of them on the board of an organization (Khan et al., 2013). Therefore, independent managers will most definitely support the disclosure of environmental data. This will lead to increased engagement, including environmental matters, by a higher percentage of independent board members (Elmagrhi et al., 2016; Haniffa & Cooke, 2005). Thus, research findings reveal a positive relationship between board independence and disclosure about CG practices (Elmagrhi et al., 2016; Cunha & Rodrigues, 2018; Shahab & Ye, 2018; Khaireddine et al., 2020; Braz & Lopes, 2018). Consequently, Baalouch et al. (2019) disclosed that the presence of independent directors on the corporate board is significant but negatively linked with the quality of corporate environmental disclosure, thus corroborating that independent directors do not improve non-financial disclosure.

Foreign Directorship

Cai et al. (2014) claim that an establishment holding a wide variety of international directors will most definitely do better in environmental reporting because environmental disclosure in developed worlds is more entrenched than in developing states such as Nigeria. In developing economies such as Nigeria, which benefit from capital inflows from other countries, corporate organizations with greater foreign shareholdings may have a diverse board of directors (Mohamad & Sulong, 2010).

Gender Diversity

The Unified Code of Corporate Governance (CUBG, 2006) promotes the involvement of women on the Board of Directors as a boost not only to the ethics, policies, and CSR but also to make it more efficient (Castilla-Polo et al., 2018). Gender composition will often increase a firm’s value because it will allow it to better appeal to clients, understand their needs, and how those needs can be met (Liao et al., 2015). It has been proven that women on corporate boards can make good and better contributions by forming coalitions, preparing for, and participating in essential decisions, captivating management positions, and being perceptible (Amran et al., 2014). According to Haji (2012), having women on the board would influence the board to make better decisions regarding environmental disclosure. In addition, the participation of female board members strengthens board oversight, which leads to better corporate governance and a strategic advantage for businesses (Haji, 2012; Marzuki et al., 2019).

Pechersky (2016) points out that diversity on corporate boards adds to a greater mix of backgrounds and knowledge, creating different points of view that ensure better strategic decision-making. Hence, gender diversity became an acknowledged characteristic of board diversity (Aslam et al., 2018; Amorelli & García-Sánchez, 2021).

Theoretical Framework

The study explored stakeholders' theory as its theoretical basis to explore the connections between board characteristics and environmental information disclosure for listed Nigerian oil and gas firms. A stakeholder is historically called “any community or person who may have an impact or influence on the attainment of the organization’s objectives” (Freeman, 1984).

According to Freeman (2004), stakeholder theory encompasses “all groups that are vital to the organization’s existence and success.” Rissy (2021) believe that the shareholders are also considered stakeholders, including clients, employees, local communities, distributors, suppliers, shareholders, other groups, and individuals. According to Harrison et al. (2015), a stakeholder is any person whose activities can be influenced by a company’s decisions, policies, practices, or goals. This helps stakeholders exert leverage over management’s activities while also attempting to strike an ideal balance between various fiscal, entity, and communal priorities and increasing accountability (Sharif & Rashid, 2014).

Stakeholder management is central to an organization’s corporate existence; regardless of the firm’s intent, a successful firm can handle the relationships that are essential to the firm’s corporate existence (Harrison et al., 2019). The stakeholder theory is concerned with stakeholders that can control or are affected by a company’s environmental disclosure practices. As potential users can include inside and outside stakeholders, there should also include guarantees that the information released will be transparent and reliable. As a result, the stakeholder dilemma will be alleviated, as a company has multiple stakeholders, some of which are not even the firm’s owners. It is interested in a specific interest group.

These interest groups include creditors, vendors, staff, clients, the government, and the public, all of whom need the firm’s financial details for various purposes (Rissy, 2021). Therefore, sustainability, in particular environmental concerns, and corporate governance, must converge to produce efficient reporting. This condition also has to do with knowing that good corporate governance requires a company’s impact on the general society and the environment (Andrew, 2003). According to Ashafoke and Ilaboya (2017), corporate environmental reporting provides a good avenue for businesses to implement policies. In addition, such reporting provides a good and efficient climate for corporations that implement schemes that maintain good relationships with influential stakeholders who may influence or be influenced by the organization’s environmental disclosure practices and how they react to them.

According to Harrison et al. (2019), stakeholders may be defined by the validity of their statements, which is supported by the exchange relationship between them and the company. According to stakeholder theory, enterprises are designed by providing knowledge that provides rich expertise that encourages administrative progress in environmental and social reporting to satisfy the needs of strong stakeholders. Previous research into environmental and social communication, which used this theory, shows company responses to various stakeholders’ needs (Rissy, 2021).

Empirical Review

Welbeck et al. (2017) investigated the environmental information determinants for listed companies in Ghana. The study shows that Ghana’s environmental disclosures are positively correlated with the business type, size of the company, and type of auditors. At the same time, there exists an adverse linkage between company performance and ecological exposé. A negative relationship exists even with possession and disclosure of ecological data between companies with foreign affiliation. In a similar vein, Ashafoke and Ilaboya (2017) discovered a significant adverse link between foreign directors and environmental disclosures but a favorable but non-significant relationship among board size, board independence, and foreign executive directors. The study proposed that management work promotes the composition of the board's foreign management.

Akbas (2016) examined the correlation in Turkish publicly traded companies between management characteristics and environmental disclosure. The study used informative statistics such as average, medium, standard, and maximum deviation values and skewness and kurtosis measurements to explain the connection linking features of boards and environmental disclosure. The research results show that environmental disclosure has a statistically relevant and positive correlation only with the board size. In contrast, other board features such as independence, gender of the board, and autonomy of the Audit committee have no substantive connection.

Haladu and Salim (2016) investigated board characteristics but focused on their impact on sustainability reporting and the moderating effects of environmental agencies. According to the findings, environmental experts and board size have a positive/direct relationship with environmental knowledge disclosure. It also found that the composition and duality of environmental disclosure and board composition are negatively and statistically significant. Environmental disclosure, environmental experts, and board size all have an inverse yet important relationship.

Ghabayen et al. (2016) analyzed the effect of board features on organizational societal divulgation in Jordan's banking region. The study discovered a greater board size correlates with a higher degree of transparency. The study also found that the effect on corporate social responsibility was negative for female managers. According to Siddiqui (2011), the government should be a good steward and play a more significant role among banks and financial institutions. Separation of owners and management is required.

Similarly, Osazuwa et al. (2016) provided a comprehensive explanation of the length to which Nigerian companies report environmental details. The data was analyzed using a descriptive and stratified random sampling technique in the analysis. The study found no statistically significant variations concerning the lengths of environmental exposé across industries. The research reported that businesses' optimum number of sentences on environmental disclosure is short, with a strong distinction from studies conducted in developed and even emerging markets. The study recommends that the Nigerian government, regulatory bodies, and other organizations ensure that these companies are good corporate citizens launch awareness campaigns and include incentives to promote environmental disclosure by companies.

RESEARCH METHODOLOGY

The study examined the connection between board characteristics and environmental disclosure of listed manufacturing firms in Nigeria. The study adopted the ex-post facto research design, which uses already existing data, reducing the chances of manipulation by researchers as it can be easily verified. The used data came from 20 listed companies in Nigeria, from manufacturing sectors, selected randomly quoted on the Nigerian stock market between 2013 and 2017. The manufacturing sector was selected based on its interaction with the environment.

The sample size was purposely selected based on Okere et al.'s (2018) study with 5% benchmark recommendation. The data is dependent on the availability of the selected companies' complete annual reports. The study made use of panel regression analysis to analyze the extracted data. Both cross-sectional and time-series approaches apply to panel results (Ofoegbu et al., 2018). Also, correlation analysis was used to check for multicollinearity between the independent variables. Multicollinearity exists when the relationship amid independent variables exceeds 80% (Okere et al., 2018).

Variables and Research Model

This analysis used a modified version of Khan, Muttakin, and Siddiqui's econometric model to test the hypotheses' relevance (2012). As a result, the econometric model of Khan et al. (2012) is shown below as:

$$CSRDI \propto + \beta_1 MOWN + \beta_2\ PUB + \beta_3\ FOROWN + \beta_4 BIND + \beta_5 CEODU + \beta_6 AUDCOM + \beta_7 FSIZE + \beta_8 FAGE + \beta_9 LEV + \beta_{10} ROA + \beta_{11} INDUSTRY\ DUMMIES + \beta_{12} YEAR\ DUMMIES + \varepsilon$$

Where α is the vertical intercept, β is the coefficients of regression and e is the error term. The following model will be modified to analyze the connection between Nigerian listed manufacturing firms' board characteristics and environmental information disclosure.

ED= f (BS, BIND, FDIR, GEND) -(i)

Equation I is rewritten in econometric form as:
$ED = \propto + \beta_1 BS + \beta_2 BI + \beta_3 MOWN + \beta_4 WB + \beta_5 FSIZE + _E$ - - - - - - - - - - - - - - - (ii)

Given the panel nature of the data, equation ii is updated as follows:
$ED_{it} = \beta_0 + \beta_1 BSIZE_{it} + \beta_2 BIND_{it} + \beta_3 FDIR_{it} + \beta_4 GEND_{it} + U_{it}$

Where:
ED= Environmental Disclosure
$BSIZE_{it}$ = Board Size
$BIND_{it}$ = Board Independence
$FDIR_{it}$= Foreign Director
$GEND_{it}$= Gender Composition
I = the Firms (1, 2, 3 . . . . . 20)
t = Period covered (1, 2, 3, 4, 5)
U_{it}= Error term

The a priori shows: β1, β2, β3, β4 > 0, that means that the explanatory variables (β1SIZE, β2BIND, β3FDIR, β4GEND) are related positively to the dependent variable. The correlation coefficient magnitude will aid us in explaining the different degrees of relationship between the explanatory variables.

Measurement of Variables
Dependent Variable: Environmental Disclosure is measured by using an environmental disclosure index of (20) items as modified (Uwuigbe et al., 2011).
Independence Variables: Board Characteristics
Board Size: This is measured number of directors sitting on the board (Braz & Lopes, 2018; Isa & Muhammad, 2015).
Board Independence: This is measured by the proportion of non-executive directors on the board (Shahab & Ye, 2018; Uwuigbe et al., 2011).
Foreign Director: To be measured by the proportion of foreign directors to total number of directors on the board (Ashafoke & Ilaboya, 2017).
Female Gender: It will be measured by the percentage of female directors of the total number of directors on the board of a company (Braz & Lopes, 2018; Akbas, 2016).

RESULTS AND DISCUSSION

Data Analysis and Discussion of Findings

Table 1. Correlation Coefficients Matrix

	ENV	BSIZE	BIND	FDIR	GEND
ENV	1.000000	0.327154	0.120195	0.233339	0.279270
BSIZE	0.327154	1.000000	0.332495	0.243280	-0.002664
BIND	0.120195	0.332495	1.000000	0.333880	0.381975
FDIR	0.233339	0.243280	0.333880	1.000000	0.312734
GEND	0.279270	-0.002664	0.381975	0.312734	1.000000

Table 1 shows the matrix correlation of the independent variables of the examined firms. It stressed that the relationship between the variables was strong. Multicollinearity is only a concern according to Okere et al. (2018), if the correlation coefficient is higher than 0.8.We can see from the table that there was no such coefficient, implying that all variables were not strongly correlated, and that multicollinearity did not exist.

Regression Analysis

The research reviewed the connection linking the Board features to environmental information of listed Nigeria manufacturing firms using panel regression analysis in this section.

Table 2. Regression Analysis

Variable	Coefficient	Std. Error	t-Statistic	Prob.
BSIZE	0.013540	0.006251	2.166170	0.0334
BIND	0.186386	0.044563	4.182560	0.0001
FDIR	0.030870	0.145153	0.212669	0.8322
GEND	-0.168966	0.181549	-0.930695	0.3550
C	0.106242	0.112816	0.941728	0.3493
R-squared	0.963655	Mean dependent var.		0.414734
Adjusted R-squared	0.952655	S.D. dependent var.		0.244762
S.E. of regression	0.051677	Sum squared resid.		0.202959
F-statistic	87.61070	Durbin-Watson stat.		1.133999
Prob. (F-statistic)	0.000000			

Table 2 shows the relation between board characteristics and environmental disclosure in Nigerian publicly listed manufacturing firms. The result in the above table shows the R^2 determination factor of 0.96 (96 percent) and an adjusted R^2 of 0.95 (95 percent), which indicate that 95 percent of the whole difference in the dependent variable (ENV) is explained by independent variables (Board Size, Board Independence, Foreign Managers in the Establishment, and Female Directorship Composition in the Establishment). The p-value of the F-statistics is 0.000000, which is substantial at 5%. The results of the F-test show clearly that the model is consistent and non-biased. It reveals that the connection linking both the independent and the dependent variables is relevant. The F-statistics (87.61070) has a considerable and statistically important value that confirms the overall adequacy of the model and its predictive ability. In the range concerned and low serial autocorrelation, which is typically present in time series results, the Durbin-Watson coefficient is 1.133999. This confirms the statistical trustworthiness of the model. The model shows that listed manufacturing companies have significant links between board characteristics and environmental information. This clearly means that putting a well-structured board would make a huge contribution to firms' environmental disclosure. This finding supports the findings of Ofoegbu et al. (2018).

From the individual co-efficient, it can be seen that board size has a positive but significant relationship with environmental disclosure of listed manufacturing firms in Nigeria. The findings corroborate past studies' results (Akbas, 2016; Haniffa & Cooke, 2005; Jizi et al., 2016; Osazuwa et al., 2016), revealing that board size influences the level of corporate environmental disclosure. Furthermore, possessing a large board comprising foreign directors encourages more disclosure, although this does not have a significant impact (Li et al., 2010). These results support the stakeholder's theoretical stand, which assumes the presence of independent directors on the board aids in reducing information-related problems (Aburaya, 2012; Ho & Shun Wong, 2001; Rahim et al., 2015), and larger board size aids to extensively disclose environmental information.

Also, board independence has a positive and significant relationship with environmental disclosure of listed manufacturing firms in Nigeria. With specific noting, our findings reveal the following probable implications. First, entities with more independent directors promote greater conformity with, as well as disclosure of, environmental practices, hence revealing empirical backings to the findings of preceding studies (Cunha & Rodrigues, 2018; Samaha et al., 2012; Mallin & Ow-Yong, 2012; Stefanescu, 2013; Elmagrhi et al., 2016). Secondly, independent directors are remarkably motivated to reveal more corporate environmental information to show off a good reputation with their stakeholders. This result is in tandem with the findings revealed by Liao et al. (2015), Eberhardt-Toth (2017), and Giannarakis et al. (2019). Meanwhile, it contradicts the findings of Baalouch et al. (2019) that board independence is significantly and negatively associated with environmental disclosure.

On the other hand, gender diversity does have a positive and insignificant relationship with environmental disclosures in listed manufacturing firms in Nigeria. Thus, supporting the view that boards of diverse gender may place more pressure on corporate executives to involve in good governance practices to attract resources from powerful stakeholders and improve the capability of corporate board to monitor management activities more effectively and thereby increase voluntary CG disclosure practices (Al-Bassam et. al., 2018; Elmagrhi et al., 2016; Ntim & Soobaroyen, 2013). Furthermore, our results suggest that women show a more responsible behavior concerning environmental disclosure to attract resources from powerful stakeholders (Ben-Amar et al., 2017; Liao et al., 2015; Rupley et al., 2012; Liao et al., 2015; Baalouch et al., 2019; Giannarakis et al., 2019). Similarly, our results are consistent with the results of Isidro and Sobral (2015) and Sankara et al. (2017), suggesting a positive relationship between women on board and the firm's compliance with their stated ethical and social standards.

CONCLUSION

According to the results, in Nigeria's manufacturing sectors, there exist a positive and substantial relationship between the size of the board, board independence, and environmental disclosure. Our results are in tandem with the proposition that corporate board characteristics relate to environmental disclosure quantity. Furthermore, the study finds a non-significant but positive relationship between foreign director's and Environmental information disclosure in the manufacturing industry in Nigeria. In Nigeria, gender composition has a major negative relationship with environmental disclosure in the manufacturing industry. According to the findings, it was recommended that a large board of directors comprising foreign directors improve firms' environmental disclosure. To ensure dedication to environmental needs, the independence of the company board should be expanded to the number of non-executive managers. In addition, the board's division of environmental experts should be increased. This can be accomplished by including it in their corporate governance code.

The study focuses on the relationship amid board characteristics and environmental information disclosure in quoted manufacturing companies in Nigeria. The period of the study spans from 2013-2017 for 20 listed manufacturing firms in Nigeria. The data for the study is secondary sourced from the Nigerian Stock Exchange. Nonetheless, the study will engage some limitations. This particularly borders on the availability of data. However, this will be circumvented by contacting the Nigerian Stock Exchange for the required data for this study. Also, most studies have focused on workforce diversity; however, little is known about how managerial diversity affects organizational outcomes. This can be looked into in further studies because women traditionally are under-represented in leading positions despite steady progress in recent years (Holst & Kirsch, 2014).

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