Board Diversity and Environmental Sustainability Disclosure in Oil and Gas Companies: Evidence from Nigeria

Dr. Esosa Kenny Orumwense ¹
Department of Accounting, University of Benin, Benin City. Nigeria.

Efosa Osa-Izeko ²
Department of Marketing, University of Benin, Benin City. Nigeria.

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ABSTRACT: This study examines the influence of board diversity on environmental sustainability disclosure in oil and gas companies in Nigeria. Communities that produce oil in the Niger Delta region of Nigeria have seen ongoing oil spills over time, leading to an intolerable economic situation. The goal of this study is to ascertain whether factors such as board size, board gender, board nationality, and board independence have an impact on environmental sustainability disclosure in Nigerian oil and gas companies. Ex-post facto research approach was used in this study to explore the cause-and-effect relationship between the dependent and independent variables. The study comprised of eight oil and gas companies in the Nigerian Exchange Group. Secondary data from 2011-2020 was used and panel multiple regression analysis was used to analyze the data. Results revealed board independence (BIND) showed positive relationship with environmental sustainability disclosure, but was insignificant to environmental sustainability disclosure, board size (BSZ) showed negative relationship with environmental sustainability disclosure, but was significant to environmental sustainability disclosure, while board gender diversity (BGD) showed negative relationship with environmental sustainability disclosure, but was insignificant to environmental sustainability disclosure, board nationality (BNAT) showed negative relationship with environmental sustainability disclosure, but was also insignificant to environmental sustainability disclosure. This study concluded that reduced board size would lead to increased environmental sustainability disclosure in oil and gas companies in Nigeria. Despite the negative relationship between environmental sustainability disclosure and independent variables, it is still believed that board diversity has a great influence on information disclosure. It is recommended that both the government and management of these companies should be alive to their responsibilities in maintaining and preserving the natural environment.

KEYWORDS: environmental, sustainability, oil and gas, corporate, governance
INTRODUCTION

The Niger Delta communities in Nigeria have suffered a lot in the hands of oil and gas companies operating in their area due to ecological unfriendly exploitation resulting from oil spillage, environmental deprivation, environmental devastation environmental marginalization etc, thereby leaving the people in agonizing condition economically, socially and environmentally (Ayanlade & Proske, 2015). The decision to address these issue lies in the hands of the relevant authorities and the management of these oil and gas companies. Often the management of these companies year in year out continued to engage in productions handling the issue of environmental sustainability with minimal importance, thus leaving the people in perpetual suffering. There are lot of interest groups who are interested in the affair of these corporate organizations, the most credible way of communicating organizational performance, policies and programs to this group and to the larger society is majorly through corporate annual report.

Corporate annual report is a primary document through which companies communicate their activities, financial results and strategies to shareholders and other stakeholders. Organizations are being pressured to report on additional issues such as environmental, social and governance issues. Environmental sustainability disclosure or report is an integral part of corporate annual report, it is designed to meet the needs and aspirations of the various stakeholders (Alnabsha et al., 2018; Umoren, Isiavwe & Morenike, 2016). Environmental sustainability disclosure emphasizes on environmental commitment, transparency, risk and responsibility to enhance organizational growth and development. A board of directors is a group of people who are elected to represent the interests of the company's shareholders. They are also elected to oversee management function in an organisation. The board ensures the monitoring and realization of reporting process in an organization. Based on the visible current condition in Nigeria, the issue that appears most in corporate organizations, especially in the oil and gas companies in Nigeria, is that environmental sustainability issues is often handled with some form of levity and minimal importance (Ibrahim & Hanefah, 2016).

Statement of the Problem

The issue of corporate environmental sustainability disclosure hasn't been given much attention compared to financial reporting by Nigerian corporate boards. Environmental issues in the Niger Delta region of Nigeria have often been neglected, pollutions, hazards often ignored by most corporate board leading to risk, anarchy, insecurity, instability in the region. In recent cases, environmental issues have often been treated and handled with some form of levity and minimal importance. Having a narrow board with limited set of individuals and limited ideas can lead to lack of environmental performance, sustainability and disclosure of relevant information. Several authors have written on board diversity influence on information disclosure, but non to the
best of the researcher’s knowledge have dwell on board diversity in oil and gas companies in Nigeria.

**Objectives of the Study**
The general objective of this study is to determine the influence of board diversity on environmental sustainability disclosure in oil and gas companies in Nigeria. The specific objectives are to:
1. Ascertain if gender diversity (female proportion) have any impact on environmental sustainability disclosure in oil and gas companies in Nigeria;
2. Find out if board size affect environmental sustainability disclosure in oil and gas companies in Nigeria;
3. Examine if board nationality have any effect on environmental sustainability disclosure in oil and gas companies in Nigeria;
4. Ascertain if board independence have any effect on environmental sustainability disclosure in oil and gas companies in Nigeria.

**Research Questions**
The following research questions was raise to examine the influence of board diversity on environmental sustainability disclosure in oil and gas companies in Nigeria:
1. Does gender diversity (female proportion) have impact on environmental sustainability disclosure in oil and gas companies in Nigeria?
2. To what extent does board size affect environmental sustainability disclosure in oil and gas companies in Nigeria?
3. Does board nationality have any effect on environmental sustainability disclosure in oil and gas companies in Nigeria?
4. Does board independence have any effect on environmental sustainability disclosure in oil and gas companies in Nigeria?

**Hypotheses of the Study**
The hypotheses of this study was stated in the null form as follows: Ho:
H01: Gender diversity (female proportion) has no significant effect on environmental sustainability disclosure in oil and gas companies in Nigeria;
H02: Board size diversity has no significant relationship with environmental sustainability disclosure of oil and gas companies in Nigeria;
H03: Board nationality has no significant effect on environmental sustainability disclosures of oil and gas companies in Nigeria;
H04: Board independence has no impact on environmental sustainability of oil and gas companies in Nigeria.
Significance of the study
This study will be of great benefits to researchers, board of directors, corporate organizations, government, communities, non-governmental organizations, pressure group etc.

Scope of the Study
This study investigates the influence of board diversity on environmental sustainability disclosure in oil and gas companies in Nigeria using the following companies and their annual reports listed in the Nigerian Exchange Group, the companies are: 11 Plc, Ardova Plc (Forte Oil), Conoil, Eternaoil, Japaul Gold & Ventures Plc, Mrs (Texaco Chevron), Oando Plc and Total Nigeria. The period covered for this study ranged from 2011 to 2020.

LITERATURE REVIEW
This section reviews some extant literatures, defines the concept of board diversity and environmental sustainability disclosure as well as identify the dependent and the independent variables relevant to the study, this section in the same vein emphasizes on different works carried out by different authors and the theory underpinning the study.

Conceptual Reviews
Environmental sustainability is the ability, the responsibility to conserve and maintain the natural environment, preserve and sustain the natural resources, the ecosystem now and in the future (Sphera’s, 2020). Environmental sustainability disclosure emphasizes on environmental performance in order to enhance organizational accountability, transparency and reduce risk. The idea was first brought by Bruntland in his report in 1987. International Institute of Sustainable Development (IISD) stated the concept has evolved since the 80s. The board of directors in an organization assume responsibility for the preparation and presentation of annual report, it is anticipated that diversifying the board would have great effect on environmental sustainability disclosure in oil and gas companies in Nigeria. It is the core responsibility of every organization to continue to protect and sustain the natural environment in which they lives and operates, and also to disclose relevant information as much as possible to meet the needs of the relevant stakeholders for mutual relationship. Panigrati (2015) defines environmental sustainability disclosure as a piece of information presented to analyze company's environmental conduct as a result of economic consequences of their activities. Ejoh, Oakland and Sakey (2014) define environmental sustainability disclosure as a set of information about a company's past, current and future environmental operations. Environmental sustainability disclosure, according to Ong., Tho., Hoh., Thai and The (2016) is a declaration that demonstrates a company's environmental efforts such as the company's environmental aims and environmental policies, environmental consequences, which are documented and publicized annually to the general public. Nigeria is regarded as one of the highest oil-spilled nations, with Shell Petroleum Development Company leading other companies.
NOSDRA survey also showed that the Nigerian National Petroleum Corporation (NNPC) and Shell Nigeria led other oil companies to spill nothing less than N2.8 billion worth of crude in three years.

**Measurement of board diversity and environmental sustainability disclosure**

**Board Gender Diversity**

Gender diversity is the mix of male and female directors in an organization. Many Nigerians claim to support equal rights for women and men. But national cultural viewpoint on this issue has often lead to sexual stereotypes (Lincoln & Adedoyin, 2012). Persistent pattern of males holding all the power in the society has been barrier for more women rising to positions of authority (Sener & Karaye, 2014), since males predominate in Nigeria's culture, women faces societal and cultural barriers that make it difficult for them to get to executive positions (Lincoln & Adedoyin, 2012). Al-Shaer and Zaman (2016) found that women on boards were positively associated with social, environmental and governance sustainability.

**Board Size Diversity**

Board size is the number of boards members present in an organization in a particular period. Board size diversity is believed to be one of the most widely studied board characteristics for several reasons (Tibiletti et al., 2021). It is believed that board size will influences organizational performance and information disclosures in an organisation. Board size facilitate the desire for subgroup interactions enabling organizational performance and information disclosure (Hart & Van Vugt, 2006). The number of directors indirectly affect the functioning of a board and, consequently corporate organizational performance (Biswas et al., 2018).

**Board Nationality Diversity**

The participation of both foreign and indigenous board members in an organization is a representation of board nationality diversity. According to Oxelheim and Randy (2003) company's foreign directors are particularly committed to maintaining its openness, responsibility, good standing in the eyes of its customers and to the regulatory authorities. Zaid et al. (2020) agreed that a diverse workforce in terms of nationality is a key factor in development of contemporary corporate sustainability reporting. There has been a rise in the number of foreign directors in non-industrialized nations like Nigeria as a result of the expansion of multinational corporations. According to Masulis, Wang and Xie (2012) an organization's chances of discovering new business opportunities, expanding into new markets and gaining in-depth knowledge of the external environment would improve if it had a foreign board member with the necessary exposure, skills, knowledge and power.
Board Independence
Independent director are non executive directors in an organisation that does participate in the day-to-day operations in an organization. The notion of “board Independence" in corporate governance implies board members who are not directly affiliated with the firm daily activities (Amahalu., Abiahu., Nweze & Obi, 2017). Unlike the company's senior management, independent non-executive directors are not full-time workers and does not take part in the company's day-to-day activities. Independent directors improve the board's oversight functions, as they are more attuned to public concerns and ethical issues. Directors on board are considered to be independent if they have no ties with firms other than their role as directors. Independent board members have been found to have a considerable impact on transparency (Samaha, Khlif & Hussainey, 2015; Muttakin, Khan and Subramaniam, 2015). Independent boards ensure that businesses follow acceptable standards of corporate governance.

Theoretical Framework
This study is based on stakeholders’ theory.

Stakeholders Theory
The diverse impact of board diversity on environmental sustainability disclosure in oil and gas companies in Nigeria was examined in this study using Freeman’s (1984) stakeholders theory. The principal (the owner of a company), the agent (the management or board of directors) and the different stakeholders (suppliers, the local community, investors, the public and others) all make up the three concept of the stakeholder's theory (Aifuwa, Embele & Saidu, 2018). With the existence of more powerful stakeholders in mind, the theory discusses how stakeholders' expectations affect the sharing of information (Font & Bonilla, 2016; Ngu & Amran, 2018). Stakeholder support is crucial to the success of any organisation, thus corporations must adopt strategies to accommodate the interests of their constituents in any areas of their endeavour. According to Fontaine, Haarman and Schmid (2006) the theory of stakeholders indicates that a company's ultimate goal is to maximize the value of the organization and it various interest group rather than the value of its shareholders alone.

METHODOLOGY

This section consists of research design, population of the study, sampling technique, sample size, source of data and model specification.

Research Design
Ex-post facto research seeks to examine the cause-effect relationship between dependent and independent variables of a study. The ex-post design was used in this study being that the events, transactions and reports observed had transpired.
Population of the Study
The population of this study consisted of eight (8) listed oil and gas companies in the Nigeria Exchange Group (NGEX) as of 31 December, 2020.

Sampling Techniques and Sample Size
Eight (8) out of the eight (8) listed oil and gas companies was purposively selected as the sample size of the study. These companies was purposively selected because they were the only oil and gas companies listed in the Nigeria Exchange Group as at December 31, 2020 and their data report were readily available from their annual reports. The companies includes: 11 Plc, Ardova Plc, (Forte Oil), Conoil, Eternaoil, Japaul Gold & Ventures Plc, Mrs (Texaco Chevron), Oando Plc, and Total Nigeria.

Source of Data
This study made use of secondary data. The panel data obtained were sourced using content analyses from the annual report of these companies sampled.

Model Specification
The panel multiple regression model of this study was adapted from the work of D˘anescu, Sp˘at˘acean, Popa and Sîrbu (2021). Consequently, the model for this study is specified as thus;

\[ ENVSD_{it} = \beta_0 + \beta_1 BSZ_{it} + \beta_2 BGD_{it} + \beta_3 BNAT_{it} + \beta_4 BIND_{it} + \epsilon_{it} \]

Where:
- \( ENVSD_{it} \) = Environmental Sustainability Disclosure of companies \( i \) in period \( t \)
- \( BSZ_{it} \) = Board Size of the company \( i \) in period \( t \)
- \( BGD_{it} \) = Board Gender of the company \( i \) in period \( t \)
- \( BNAT_{it} \) = Board Nationality of the company \( i \) in period \( t \)
- \( BIND_{it} \) = Board Independence of the company \( i \) in period \( t \)
- \( \beta_0 \) = Intercept estimates
- \( \beta_1 \) – \( \beta_5 \) = Coefficient of the independent variables
- \( \epsilon \) = error term

DATA PRESENTATION, INTERPRETATION, ANALYSIS AND FINDINGS
This study investigate the influence of board diversity on environmental sustainability disclosure in oil and gas companies in Nigeria with specific interest in board diversity thus: board size, board gender diversity, board independence and board nationality, this variables forms the independent variables of this study while environmental sustainability disclosure (ESD) forms the dependent variable of the study, environmental sustainability disclosure (ESD) was proxy by environmental disclosure index (EDI).Panel regression statistical analysis was used to test the variables.
Panel Regression (Fixed and Random Effects) Results

Table 4.1: Fixed and Random Effects Results (DV : ESD proxy by EDI)

<table>
<thead>
<tr>
<th>Variables</th>
<th>Fixed Effect Result</th>
<th>Random Effect Result</th>
</tr>
</thead>
<tbody>
<tr>
<td>C</td>
<td>0.051100 (0.0929)</td>
<td>0.057645 (0.0476)</td>
</tr>
<tr>
<td>BSIZE</td>
<td>-0.005976 (0.0032)*</td>
<td>-0.005365 (0.0025)*</td>
</tr>
<tr>
<td>BGD</td>
<td>0.00008.34 (0.8171)</td>
<td>-0.00006.64 (0.9820)</td>
</tr>
<tr>
<td>BNAT</td>
<td>-0.000369 (0.2786)</td>
<td>-0.000292 (0.3368)</td>
</tr>
<tr>
<td>BIND</td>
<td>0.000250 (0.4305)</td>
<td>0.000133 (0.5533)</td>
</tr>
<tr>
<td>Prob (F-statistic)</td>
<td>0.000000</td>
<td>0.032198</td>
</tr>
<tr>
<td>D.W stat</td>
<td>1.453512</td>
<td>1.401217</td>
</tr>
<tr>
<td>Hausman Test</td>
<td>0.9552 &gt; 0.05</td>
<td></td>
</tr>
<tr>
<td>Cross-sections included</td>
<td>8</td>
<td>8</td>
</tr>
<tr>
<td>Number of observations</td>
<td>78</td>
<td>78</td>
</tr>
</tbody>
</table>

Source: Researcher’s computation 2023:
Note: P values in bracket ( ) * (significant @ 0.05)

From the result in Table 4.1, since the Hausman value (0.95526) was greater than 0.05, it means that the null hypothesis was accepted, thus, the result of the random effect was preferred to the fixed effect, hence the random effect result was more desirable. The result also means that the intercepts were time-variant (the value of the variable did change across time). Result from the study shows that the dependent variable environmental sustainability disclosure was proxy by environmental disclosure index while the independent variables was proxy by board size (BSize), board gender diversity (BGD), board nationality diversity (BNAT) and board independence (BIND). The result of Prob > F was 0.032198 and less than 0.05, it shows that all the coefficients in the model were different from zero which made the model good. The result of the DW statistic of 1.401217 approximately 2 indicated the absence of a serial auto correlation which meant that the model was desirable.

The coefficient result of board size (BSize) revealed that a unit increase in board size leads to decrease in environmental sustainability disclosure by 0.005365 units and it significantly affected environmental sustainability disclosures (ESD) because the p-value of 0.0025 was less than 0.05, this means that increase in board size would lead to decrease in environmental sustainability disclosure.
sustainability disclosures ESD by 0.005365 units, this result also means that a large board size does not companies environmental sustainability disclosures. Also, a unit increase in BGD and BNAT leads to decrease in environmental sustainability (ESD) by 0.000006.64 and 0.000292 respectively, and were all insignificant because the p-values (0.9820, 0.9350 and 0.3368) were greater than 0.05. Finally, a unit increase in board independence (BIND) would increase environmental sustainability disclosures (ESD) by 0.000133 but it was insignificant because the p-value (0.5533) was greater than 0.05.

### 4.3 Hypotheses Testing

<table>
<thead>
<tr>
<th>Variables</th>
<th>Random Effect Result (p-value)</th>
</tr>
</thead>
<tbody>
<tr>
<td>C</td>
<td>0.0476</td>
</tr>
<tr>
<td>BSIZE</td>
<td>0.0025*</td>
</tr>
<tr>
<td>BGD</td>
<td>0.9820</td>
</tr>
<tr>
<td>CEOD</td>
<td>0.9350</td>
</tr>
<tr>
<td>BNAT</td>
<td>0.3368</td>
</tr>
<tr>
<td>BIND</td>
<td>0.5533</td>
</tr>
</tbody>
</table>

*Source: researcher’s computation 2023*

The result of table 4.5 revealed that only board size has a significant influence on environmental sustainability disclosure in the Oil and Gas industry in Nigeria because its p-value (0.0025) is less than 0.05. However, BGD, CEOD, BNAT and BIND have insignificant influence on environmental sustainability disclosure in the Oil and Gas industry in Nigeria because the p-values (0.9820, 0.9350, 0.3368 and 0.5533 respectively) are greater than 0.05.

**CONCLUSION**

1. An increase in positive unit in the coefficient of board size leads decrease in environmental sustainability disclosure. This means that a large board does not affected the environmental sustainability disclosure rate in the oil and gas companies surveyed.
2. The presence of female directors on board was found to be insignificant to information disclosure in an organisation. Gender equality is still being strongly canvassed for organisational sustainability, according to a study published in the journal ‘Corporate Governance and Human Resources’.
3. Diversity of board nationality was found to be insignificant to environmental sustainability disclosure from the findings in this study. The presence of foreign nationality and indigenous nationality in oil and gas companies in Nigeria still complement sustainability concept and create greater impact on the growth and development of oil & gas companies.
4. Board independence was insignificant to environmental sustainability disclosure. The supervisory and monitoring role of outside directors still have a greater role in ensuring accountability and transparency in disclosures of relevant information in an organization.
Recommendations
Based on the findings of this study, the following were recommended:
1. Diverse board should be encouraged as it brings better resources, ideas and opportunities to organizations and also sustainable information disclosure.
2. Despite board size being significant to environmental sustainability disclosure and board independence, board nationality, board gender being insignificant to environmental sustainability disclosures. From studies reviewed shows that these variables are still indispensable to organizational growth and development.
3. The government and oil companies operating in the region should ensure they live up to their responsibility to preserve the natural environment for future generations.
4. Neglecting the host communities by oil and gas companies in Nigeria can lead to some form of agitations, meeting the needs and aspirations of relevant stakeholders is the concept that drives environmental sustainability disclosures.
5. Corporate social environmental responsibility should be encouraged to build corporate reputation, brand and maintain good relationship with host communities.

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