

Board Characteristics: An Empirical Study on Environmental Disclosure in Nigerian Oil and Gas Firms

Adahosa, Augustine ¹; Udeh, Francis ¹

¹ Department of Accountancy, Nnamdi Azikiwe University Awka, Anambra State, Nigeria

Abstract

This study examined the effect of board characteristics on environmental disclosure of listed Oil and Gas firms in Nigeria for fourteen (14) years period ranging from 2008-2021. Board Size, Board Independence, board gender diversity and board diligence were the proxies used to measure Board Characteristics while Environmental Disclosure served as the dependent variable. The study employed secondary data extracted from the Nigerian Exchange (NGX) Group fact books, annual reports and accounts, stand-alone sustainability reports of sample firms. The study adopted *Ex-post facto* research design while the panel data sets were analyzed using Descriptive Statistics, Pearson correlation matrix and Panel Least Square (PLS) Regression analysis via E-Views 10.0. The result found that board size has a significant and positive effect on environmental disclosure ($\beta_1 = 0.042641$; p-value = 0.0374); Board independence has a significant and positive effect on environmental disclosure ($\beta_2 = 0.181430$; p-value = 0.0000); Board gender diversity has a significant and positive effect on environmental disclosure ($\beta_3 = 0.026707$; p-value = 0.0000); Board diligence has a significant and positive effect on environmental disclosure ($\beta_1 = 0.071875$; p-value = 0.0000). Conclusively, this study holds that board characteristics have a positive effect on environmental disclosure of listed oil and gas firms in Nigeria at 5% level of significance.

Keywords: Environmental Disclosure, Board Size, Board Diligence, Board Independence

Introduction

The contemporary business terrain is characterized by query and threat, making it decreasingly delicate to read and control the palpable and impalpable factors which impact firm performance. In a dynamic terrain, boards come veritably important for smooth functioning of organizations. Boards are anticipated to perform different functions, for illustration, monitoring of operation to alleviate agency costs, hiring and firing of operation, give and give access to coffers, fixing Chief Executive Officer (CEO) and furnishing strategic direction for the

Received: 02 May 2023

Revised: 21 May 2023

Final Accepted: 03 June 2023

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DOI: <https://doi.org/10.5281/zenodo.8000952>

establishment. Boards also have a responsibility to initiate organizational change and grease processes that support the organizational charge (Amahalu & Osonwa, 2023). Further, the boards seek to cover the shareholder's interest in an decreasingly competitive terrain while maintaining directorial professionalism and responsibility in pursuit of good establishment performance.

Environmental reporting is a comprehensive aspect of account. The need for companies' environmental impact assessment and exposure has taken enormous confines over the times. This clarion call aimed at furnishing a sustainable terrain that will be conducive to the mortal and commercial associations to operate efficiently. Environmental account generates reports for both internal and external druggies. To the internal druggies, it provides environmental information which helps operation in decision timber and for the control of outflow, capital budgeting and pricing. While to the external druggies, it discloses environmental information of interest to the government, public and to the fiscal community. Okudo and Amahalu(2023) noted that the impact of business exertion on the terrain is set up in several forms air, water, underground pollution, drinking water, land and niche for risked and hovered species, abysses, atmosphere, land, mass and so on.

In Nigeria, in an attempt to tap these coffers to enhance its profitable development and well-being of the populace, the country always finds herself passing a diversity of adulterants including carbon dioxide, warming and other hothouse emigrations. The use of natural coffers including energy is necessary to profitable development and not free from environmental consequences as traceable to the environmental declination and atmospheric pollution endured in Nigeria (Amahalu & Moedu, 2023). oil painting disquisition and government conditioning may have reduced the quality and utility of life through gas glaring, artificial pollution, oil painting spillage, deforestation and other affiliated problems. Still, large sum of plutocrat is deduced daily by the country from deals of crude oil painting and its by- products. Thus, one would generally assume that this plutocrat should have significant impact at least on the development of oil painting and mineral producing communities (host communities). Still, serious pitfalls from exploitation of timber, oil painting tumbles, gas glaring and the impacts of adding costal urbanization appear to be posing serious challenges to Nigeria. It's against this background that this study sought to ascertain the effect of board characteristics and environmental exposure of listed oil painting and gas enterprises in Nigeria. Numerous experimenters have delved the relationship between board characteristics and fiscal performance with different beaches of findings. For illustration, Amahalu and Okudo (2023); Ezeagba, John- Akamelu and Umeoduagu (2017) set up a negative relationship between board characteristics and fiscal performance. On the other hand, Amahalu, Okoye and Nnadi (2023); Jeroh (2020); Okafor (2018) set up a positive relationship between board characteristics and fiscal performance. On the other hand, no significant relationship was reported by Asuquo, Dada and Onyeogaziri (2018). The inconsistencies in the findings of the reviewed literature led to a gap in literature which this study sought to close. It's against the background, that this study sought to examine the effect of board characteristics on environmental exposure of listed oil painting and gas enterprises in Nigeria.

Objectives of the Study

The main objective of this study is to examine the effect of board characteristics on environmental disclosure of listed oil and gas firms in Nigeria. The specific objectives of the study are to:

1. Ascertain the effect of board size on environmental disclosure of listed oil and gas firms in Nigeria.
2. Examine how board independence affects environmental disclosure of listed oil and gas firms in Nigeria.
3. Determine the effect of board gender diversity on environmental disclosure of listed oil and gas firms in Nigeria.
4. Evaluate the effect of board diligence on environmental disclosure of listed oil and gas firms in Nigeria.

Research Hypotheses

The hypotheses formulated for this study have been stated in their null forms as follows:

- H₀₁:** Board size has no significant effect on environmental disclosure of listed oil and gas firms in Nigeria.
- H₀₂:** Board independence has no significant effect on environmental disclosure of listed oil and gas firms in Nigeria.
- H₀₃:** Board gender diversity has no significant effect on environmental disclosure of listed oil and gas firms in Nigeria.
- H₀₄:** Board diligence has no significant effect on environmental disclosure of listed oil and gas firms in Nigeria.

Conceptual Review

Environmental Disclosure

Environmental exposure is a set of information particulars related to the performance and conditioning of the environmental operation of the company and its history, present, and unborn fiscal counteraccusations (Mbonu & Amahalu, 2022). Environmental exposure is a form of commercial responsibility to the society as a result of conditioning which arising a negative impact on the terrain. Environmental exposure is the responsibility of fulfilling the information requirements of the company for investors, shareholders, guests, and other parties. Environmental reporting and exposure practices are a means of communicating to the stakeholders about the impact of the association's conduct on the terrain. Companies make environmental exposure in order to cover and ameliorate the company's character by erecting trust through translucency and respond to rising environmental concern among the public (Modozie & Amahalu, 2022).

Board Characteristics

The board's liabilities are to establish a governance frame, including a compliance frame to insure the organization meets its scores. Set the strategic direction to help the organization achieve its purpose. Oversee fiscal performance of the organization (Okudo, Amahalu & Oshiole, 2023). A truly effective board calls for a blend of directors with the right skillsets,

Received: 02 May 2023

Revised: 21 May 2023

Final Accepted: 03 June 2023

Copyright © authors 2023

DOI: <https://doi.org/10.5281/zenodo.8000952>

interests, assiduity knowledge/ experience, behavioural rates and strong value systems. The board's part in strategic planning entails relating precedence's, establishing pretensions and objects, chancing coffers, and allocating finances to support the opinions that need to be made around strategic planning.

Board Independence

An independent director refers to a member of a board of directors who doesn't have a material relationship with a company and is neither part of its administrative platoon nor involved in the day- to- day operations of the company. The independent director is meant to uphold the stylish interests of the shareholders, workers, guests, and the entire association. This director's independence means they aren't impacted by internal or external forces, and the board leverages that centered approach to reach informed opinions (Amahalu & Okudo, 2023).

Board Independence is measured as the rate of non-executive directors on the Board divided by total directors on the Board

Board Size

Board size is taken to relate to the total number of members serving on a establishment's board. An optimal board size should include both the superintendent and non-executive directors (Okudo, Mbonu & Amahalu, 2022).). Board size refers to the total number of directors on the board of each sample establishment which is inclusive of the CEO and president for each account time. This will include outside directors, administrative directors and non-executive directors. The minimal number for each commission is three. This means that a minimum of six board members is demanded so that no bone is on further than one commission. Having members doing double duty may compromise the important wall between inspection and compensation, which helps avoid any conflicts of interest (Amahalu, Ezechukwu & Okudo, 2022).

Board Gender Diversity

A different board means that your board members aren't homogenous when it comes to their race, race, gender, background, capacities, sexual identity, sexual exposures or indeed their ideals. Factors like age, race, gender, educational background and professional qualifications of the directors make the board less homogenous(Okudo, Amahalu, Obi & Okafor, 2022). A different boardroom provides a diversity of study. Each individual mind is able of offering unique ideas, results, and strategies. For boards with a further different class, the breadth of particular experience is wider and further comprehensive(Udo, Oraka & Amahalu, 2022). Gender diversity is calculated as the rate of number of womanish directors to board size.

Board industriousness

Due industriousness is the anticipation that the board will exercise and commit to reasonable judgement and analysis during decision timber. Exercising due industriousness within the board director's part encompasses all aspects of the company, including covering internal controls, solidifying threat operation protocols, measuring hand performances, and making realistic and strong strategic plans (Okudo, Ezechukwu & Amahalu, 2022). The board's liabilities are to establish a governance frame, including a compliance frame to insure the organization meets its

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Revised: 21 May 2023

Final Accepted: 03 June 2023

Copyright © authors 2023

DOI: <https://doi.org/10.5281/zenodo.8000952>

scores, set the strategic direction to help the organization achieve its purpose, oversee fiscal performance of the organization.

Board Characteristics and Environmental Disclosure

The board of directors has an important part in easing the agency costs that arise from the separation of power and decision control in pots. Balasri, Gomes and Pijourlet(2020) argued that the board of directors is the central commercial governance control medium responsible for covering the conditioning of directors. Accordingly, boards should have maturity outside directors because a advanced proportion of outlanders can strengthen a board's independence, give lesser breadth of knowledge and gests and enhance the effective functioning of the board(Onyeka & Amahalu, 2022; Okudo & Ndubuisi, 2021). De-Micco, Rinaldi, Vitale, Cupertino and Maraghini (2021) set up weak substantiation for the idea that enterprises with a advanced chance of outlanders on the board in 1970 had a advanced assiduity- acclimated return on equity in 1980. Chukwuka,, Okegbe, Amahalu and Obi (2022), also showed that outside director representation is appreciatively related to return on means and on threat- acclimated stock returns. A negative association is reported by Ezeagba, John- Akamelu and Umeoduagu (2017), that further outlanders on the board negatively affect Tobin's q- rate.

Theoretical Framework

Stakeholders Theory

The main intention of the stakeholders proposition is that the establishment's success is dependent upon the successful operation of all the connections that a establishment has with its stakeholders- a term firstly introduced by Stanford Research Institute(SRI) to relate to those groups without whose support the association would cease to live(Freeman 1983). Freeman's stakeholders' proposition asserts that, directors must satisfy a variety of ingredients(illustration, workers, guests, suppliers, original community and so on) who can impact the establishment's issues. According to this view, it isn't sufficient for directors to concentrate simply on the requirements of stockholders, or the possessors of the business. This implies that it can be salutary for the establishment to engage in certain environmental conditioning that non-financial stakeholders perceive important, because without this, these groups might withdraw their support from the business.

Empirical Review

Nguyen and Tran (2019) assessed the relationship between exposure situations of environmental account information and fiscal performance. Data were collected from the enterprises listed in Vietnam from 2013 to 2017, including the enterprises bared and the bones didn't expose the environmental account information. The study used two retrogression models to probe the relationship between environmental account information and return on means. The results indicated that there was a close relationship between exposure position of environmental account information and fiscal performance. In addition, there was a difference in terms of fiscal performance between the enterprises hadn't bared environmental counting information and the bones bared the environmental account information.

Jeroh (2020) examined the determinants of environmental exposure practices among enterprises by carrying data from 60 listed companies across three countries in Sub-Saharan Africa – Nigeria, South Africa and Kenya from 2008- 2017. The primary concern of the study was to ascertain the relationship between environmental exposure among enterprises and measures of board and inspection commission characteristics. Applicable statistical tools including the OLS regression method was used in the logical process and the results were presented in tables with accompanying conversations. Overall, findings indicated that measures of board and inspection characteristics had significant influence on the exposure practices of enterprises regarding environmental enterprises especially in Kenya and Nigeria.

Ali and Ali (2023) empirically examined the association between power structure, firm attributes, and online environmental reporting (OER) in Malaysia from 2010- 2021. Two groups of variables are examined in this study; the first group presents an power structure conforming of two types of power- operation, and government. The alternate group presents firm attributes which include five variables- company size, company influence, company fiscal performance, assiduity type, and technology position. Data is collected from 100 listed companies' periodic reports (2018) as well as from their websites. Both Ordinary Least Squares regression (OLS) and Two- stage Least Squares (2SLS) were used to examine the collected data and to break any logical problems similar as endogeneity. The results generally showed that the position of OER remains low and doesn't exceed 39 of the environmental exposure indicator. Government power, company size, and company influence show positive and significant connections with OER, while other variables similar as operation power and company fiscal performance showed negative and significant connections with OER, still, the position of technology didn't show any significant relationship.

Methodology

This study adopted the *ex-post facto* research design. The twelve (12) quoted Oil and Gas firms in Nigeria listed on the floor of the Nigerian Exchange (NGX) Group as at 31st December, 2021 made up the population of this study.. They include; 11 Plc (formerly Mobil Plc), Anino International Plc; Capital Oil Plc; Conoil Plc; Eterna Plc; Forte Oil Plc; Japaul Oil & Maritime Services Plc; MRS Oil Nigeria Plc; Oando Plc; Rak Unity Plc; Seplat Petroleum Development Company Plc; Total Nigeria Plc. Purposive sampling technique was adopted to select the companies. The sample size of this study consisted of ten (10) Oil and Gas firms that were continuously listed and actively trading in the Nigerian Exchange (NGX) Group during the period 1st January 2008 to 31st December 2021 and whose financial statements are available and have been consistently submitted to NGX for the period under study. They include Anino International Plc; Capital Oil Plc; Conoil Plc; Eterna Plc; Japaul Oil & Maritime Services; MRS Oil Nigeria Plc; Oando Plc; Rak Unity Plc; Seplat Petroleum Development Company Plc; Total Nigeria Plc. This study relied solely on secondary data that were extracted from the annual reports and statements of account of the sampled Oil and Gas firms companies for a period of fourteen (14) years period covering from 2008 – 2021.

Measurement of Variables

Received: 02 May 2023

Revised: 21 May 2023

Final Accepted: 03 June 2023

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DOI: <https://doi.org/10.5281/zenodo.8000952>

Table 1 Variables Definition

Variable Type	Indicators	Variable Symbols	Variables Explanation
Independent Variable (Board Characteristics)			
	Board Size	BDSIZE	total number of members serving on a firm's board
	Board Independence	BDINDEP	non-executive directors total directors for each firm
	Board Gender Diversity	BDGD	number of female board members board size
	Board Diligence	BDDL	total number of times the board meets
Dependent Variable			
	Environmental Disclosure	ENVD	Measured by dummy variable of 1 representing the presence of Environmental Disclosure in annual reports of each firm, otherwise 0

DATA PRESENTATION AND ANALYSIS

Table 2 Pearson Correlation Matrix

	ENVD	BDSIZE	BDINDEP	BDGD	BDDL
ENVD	1.0000				
BDSIZE	-0.0166	1.0000			
BDINDEP	0.3247	0.5471	1.0000		
BDGD	0.1298	0.6590	0.6634	1.0000	
BDDL	0.0799	-0.4295	-0.5706	-0.2702	1.0000

Source: E-Views Correlation Output, 2023

The resultant output of the correlation in table 2 showed that ENVD negatively relates with BDSIZE (-0.0166) but has a positive relationship with BDINDEP (0.3247), BDGD (0.1298) and BDDL (0.0799).

Test of Hypotheses

Table 3: Binary Probit Regression Analysis testing the effect of Board Characteristics on Environmental Disclosure

Dependent Variable: ENVD
 Method: ML - Binary Probit (Newton-Raphson / Marquardt steps)
 Date: 05/19/23 Time: 16:55
 Sample: 2008 2021
 Included observations: 14
 Convergence achieved after 3 iterations
 Coefficient covariance computed using observed Hessian

Variable	Coefficient	Std. Error	z-Statistic	Prob.
C	0.809003	0.042538	19.01816	0.0000
BDSIZE	0.042641	0.020284	2.102176	0.0374
BDINDEP	0.181430	0.040564	4.472723	0.0000
BDGD	0.026707	0.004382	6.094270	0.0000
BDDL	0.071875	0.011439	6.283185	0.0000

McFadden R-squared	0.725088	Mean dependent var	0.785714
S.D. dependent var	0.425815	S.E. of regression	0.435609
Akaike info criterion	1.298804	Sum squared resid	2.277058
Schwarz criterion	1.390098	Log likelihood	-7.091625
Hannan-Quinn criter.	1.290353	Deviance	14.18325
Restr. deviance	14.54824	Restr. log likelihood	-7.274118
LR statistic	87.79634	Avg. log likelihood	-0.506545
Prob(LR statistic)	0.000000		

Obs with Dep=0	3	Total obs	14
Obs with Dep=1	11		

Source: E-Views 10.0 Binary Regression Output, 2023

Interpretation of Regression Result

The resultant regression output in table 3 proves that the functional relationship between the dependent and independent variables is:

$$ENVD = 0.053980 + 0.042641BDSIZE + 0.181430BDINDEP + 0.026707BDGD + 0.071875BDDL$$

Received: 02 May 2023

Revised: 21 May 2023

Final Accepted: 03 June 2023

Copyright © authors 2023

DOI: <https://doi.org/10.5281/zenodo.8000952>

The implication of the regression model is that a unit increase in BDSIZE, BDINDEP, BDGD, and BDDL will cause ENVD to increase by 4.26%, 18.14%, 2.67% and 7.197%. Table 3 also showed that BDSIZE, BDINDEP, BDGD and BDDL are positively and significantly related with the ENVD of listed oil and gas firms in Nigeria. The slope coefficients indicate that $X_1 = 0.0000 < 0.05$; $X_2 = 0.0374 < 0.05$; $X_3 = 0.0000 < 0.05$; $X_4 = 0.0000 < 0.05$. As evident in table 4.3, the McFadden R-squared is 0.725088. This means that approximately 72.51% of the variations in the sampled firms ENVD can be explained by BDSIZE, BDINDEP, BDGD and BDDL

Decision

The LR statistic = 87.79634 with an associated P-value = 0.000000 provides a basis for accepting the alternative hypothesis, which states that Board characteristics has significant and positive effect on environmental disclosure of listed oil and gas firms in Nigeria at 5% level of significance.

Findings and Conclusion

Based on the analysis of data and test of hypotheses, the following findings emerged:

1. Board size has a significant and positive effect on environmental disclosure of listed oil and gas firms in Nigeria at 5% level of significance ($\beta_1 = 0.042641$; p-value = 0.0374)
2. Board independence has a significant and positive effect on environmental disclosure of listed oil and gas firms in Nigeria at 5% level of significance ($\beta_2 = 0.181430$; p-value = 0.0000)
3. Board gender diversity has a significant and positive effect on environmental disclosure of listed oil and gas firms in Nigeria at 5% level of significance ($\beta_3 = 0.026707$; p-value = 0.0000).
4. Board diligence has a significant and positive effect on environmental disclosure of listed oil and gas firms in Nigeria at 5% level of significance ($\beta_4 = 0.071875$; p-value = 0.0000)

Conclusively, this study holds that board characteristics have a positive effect on environmental disclosure of listed oil and gas firms in Nigeria at 5% level of significance.

Recommendations

On the basis of the findings of the study, the following recommendations were provided:

1. Since board size has significant positive effect on environmental disclosure of listed oil and gas firms in Nigeria, hence, Board size should be increased to a significant number to permit improved quality and quick decision making in relation to environmental disclosure. Also, Nigerian firms should ensure that their board is composed of independent persons, with high level of integrity that can match words with action to improve their environmental disclosure.
2. Given that there is a significant effect of board independence on environmental disclosure among oil and gas firms in Nigeria, it is therefore recommended that the

board should be composed of good number of Independent Directors to provide a good and environmentally tolerant link between shareholders and value creation.

3. Board diversity appeared to be significant in the result emanating from the hypotheses testing. Therefore, it is highly recommended that the Board should be diversifying with gender of adequate knowledge, expertise and experience so as to improve their environmental disclosure.
4. Consequent upon the positive relationship between board diligence and environmental disclosure, this current study recommends that board activities and diligence to strategic and committee meetings should be given due consideration and preference.

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Received: 02 May 2023

Revised: 21 May 2023

Final Accepted: 03 June 2023

Copyright © authors 2023

DOI: <https://doi.org/10.5281/zenodo.8000952>

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