



Determinants of environmental disclosure of listed oil and gas marketing companies in Nigeria

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Abstract

This paper looks at the relationship between listed oil and gas marketing businesses in Nigeria's environmental disclosure, foreign relationships, and corporate size. The paper sourced data from the annual reports and accounts of ten (10) listed oil and gas marketing businesses that have been listed on the Nigeria Exchange Group for a period of ten years, from 2011 to 2020, using a longitudinal method. The paper utilizes the content analysis to obtain environmental disclosure information as required by the Global Reporting Initiative (GRI) 11, 2021 and employed the regression method for data analysis. The findings of the study indicates that there is a significant relationship between company size and environmental disclosure as shown from the p-value of 0.000, while there is no significant relationship between foreign affiliation and environmental disclosure of listed oil and gas marketing businesses in Nigeria as revealed from the p-value of 0.0092. The study recommends that management of these listed oil and gas marketing businesses to keep up their environmental disclosure practices. Even though environmental disclosure is not currently required, larger companies should still push smaller ones to adopt it as a corporate policy. This can be accomplished by imparting their environmental disclosure knowledge to Nigeria's smaller oil and gas marketing businesses. The study also suggests that the management of these publicly traded oil and gas marketing businesses be urged to follow the lead set by their overseas counterparts in terms of environmental disclosure. By owning shares in or subsidiaries in other nations, as well as having foreign directors on their board of directors, the management of listed oil and gas marketing businesses should absorb the environmental disclosure procedures of its international association.

Keywords: Company size, foreign relationship, environmental disclosure

Introduction

Globally, stakeholders are pressing corporate entities to return to the environment with the same level of concern that they have given to the exploitation of natural resources that have been essential to their operations. One of the justifications for corporate environmental disclosure may be this call. Information on the sustainable use of natural resources so that the same resources may be available for use by future generations could also be considered as corporate environmental disclosure (Utile, Tarbo&Ikya, 2018).

According to Hashim and Koon (2016) ^[15], corporate disclosure is seen as a crucial idea in both established and developing financial markets. Corporate disclosure can take many different forms, ranging from full disclosure to non-disclosure (Maimako & Ayila, 2015) ^[20]. Disclosures made by corporations might be voluntary or required. Environmental disclosures that are voluntary but not required by law are in compliance with statutory laws; these disclosures are known as mandatory disclosures (Nahiba, 2017) ^[24]. As a result, businesses occasionally provide more information than is required and voluntarily provide voluntary information. More information disclosure has the potential for advantages for an organization, including reduced capital costs, increased investor trust, and enhanced share marketability (Michael & Ombati, 2018) ^[21]. In theory, a company has satisfied its communication duties to different stakeholders when it complies with all legal disclosure requirements.

In reality, though, a lot of businesses have been seen to willingly reveal information outside of what their respective business settings' regulatory frameworks mandate (Lang &Lundholm, 1993) ^[18]. However, there are a lot of problems that need to be addressed, including what information needs

to be reported and to what extent, as well as when, how, and to whom the organization needs to disclose it. As a result, a number of theories—including capital need theory, stakeholder theory, signaling theory, legitimacy theory, and stewardship theory—have been proposed to explain the practices of environmental disclosure. According to these hypotheses, environmental disclosure is associated with several business features that have been extensively studied in the literature. Agency theory offers more support for the idea that businesses should and do provide information.

The intrinsic interaction that exists between the many stakeholders of enterprises is further explained by the Agency theory. The agency theory states that corporate disclosure tends to lessen the knowledge asymmetry that exists between management and external stakeholders (Okeke, 2015) ^[26]. As the shareholders' agents, the management is expected to act in their best interests and notify them through appropriate disclosures; otherwise, the management risked incurring higher agency costs through lawsuits and auditing fees (Robb, Single &Zarzeski, 2011) ^[31]. As a result, in order to handle the new problems in the business sector, companies must pool their resources (qualities). Lobo and Zhou (2001) ^[19] assert that a range of stakeholders have vested interests in the success of enterprises. Investors want a return on their investment, creditors want their money back on time, employees want to work for stable companies, and the government wants businesses to earn a profit so they can pay taxes and fund their activities. Given that different stakeholders have different expectations from one another, it is expected that firms have the capacity and financial and non-financial resources necessary to disclose financial information that satisfies these expectations (Naser, Al-Khatib & Karbhari, 2002) ^[15].

Over the past few decades, corporate qualities have drawn interest from the business community as well as from investment and research. Deumes and Knechel (2016) ^[6] stated that, a particular area of concern has been determining if business qualities have an impact on enterprises' environmental disclosure. According to the body of research, organizations that disclose enough information about their cost structures, efficiency levels, and market positioning to investors feel more confident about their performance. Due to their low level of environmental disclosure, poor countries have borne the brunt of the fierce and unprecedented competition that has resulted from globalization, economic liberalization, and free capital mobility (Hassan, 2016). Due to a lack of confidence on the part of investors and their inability to trust the information found in the financial reports of the majority of businesses, this has resulted in a decline in investment (Hasan, Omar, Abdul-Rahman & Hossain, 2015) ^[14]. A variety of financial and non-financial characteristics, such as size, age of the company, leverage, type of audit firm, ownership structure, characteristics of the audit committee, and board size, can be used to differentiate across firms. These characteristics are particular to certain businesses and influence how information users perceive the performance and prospects of those businesses (Omar & Simon, 2011) ^[28]. Firms' financial disclosure results can be impacted by better established organizational features, such as asset size, ownership structure, audit committee makeup, and board size (Rouf, 2016) ^[32]. Different studies have investigated the potential that corporate qualities could be a significant factor of a firm's environmental disclosure. These include Uwuigbe, Olayinka, Olubukola, Ebeguki and Jimoh (2017) ^[35]; Sabo, Rabi, Usman, Fatima and Tjjani (2015) ^[33]; moshud 2020 ^[33]; Baba 2020 ^[2]; and Ebin 2020 ^[10]. The lack of previous empirical research on firm characteristics and environmental disclosure in the Nigerian Exchange Group's listed oil and gas industry is the driving force for this paper. The paper is also driven by the fact that previous empirical research on the topic, with the exception of a study by Abdulsalam, Moshud, Oladele and Haruna (2024), which developed environmental disclosure by using content analysis to retrieve environmental data from the environmental information contained in the sustainability report of listed oil and gas marketing companies, was unable to proxy environmental disclosure using the new environmental disclosure index introduced in 2021 specifically for the oil and gas sector. It is at this junction that this paper seeks to look at the factors that influence listed oil and gas marketing businesses in Nigeria's environmental disclosure. While the specific objectives are:

1. To ascertain the connection between listed oil and gas marketing companies in Nigerian environmental disclosure and company size.
2. To investigate the relationship between foreign relationship and environmental disclosure of listed oil and gas marketing companies in Nigeria.

Literature Review

This section discusses the concepts relating to the determinants of environmental disclosure, which include the definition of environmental disclosure, factors that determine environmental disclosure.

1. Concept of environmental disclosure

Environmental disclosure entails voluntary or statutorily disclosure or reporting of information relating to environmental management and environmental development costs. Abubakar (2017) ^[11] stated that corporate environmental disclosure is about reporting the impact of organizations' activities on the natural environment. The researchers give examples of such activities are estate management, pollution, wetland, wildlife conservation, carbon management, emission, and recycling. Onmonya (2018) ^[27] is of the view that corporate environmental disclosure entails providing financial and non-financial information relating to the environment in such documents as annual reports, sustainability/environmental reports, corporate website, in-house publications, and newspapers. Ezeagba, Akamelu and Umeoduagu (2017) ^[11], viewed environmental accounting as the effort of accounting standard setters, professional organizations and governmental agencies to get corporations to participate proactively in cleaning and sustaining the environment and to describe fully, their environmental activities in either their annual reports or stand-alone environmental disclosure. It is also viewed by Pramanik, Shil and Das (2008) as an umbrella term used for the various means by which company disclosure information on their environmental expenditures, activities and performance to the public. It relates to the collection, measurement and publication of 'green' information to the financial and non-financial communities (Ramdhorry, Padachi&Giroftle, 2010). It is described by Brandy (2009) as the communication of an accurate, although much simplified, overview of a company's environmental interactions to its stakeholders, most likely in annual report or company's web site or by combination of these methods.

2. Company size

The size of a corporation is determined by its total assets, sales volume, and stock market valuation. According to the stakeholder hypothesis, expectations and pressures from stakeholders and the community will be larger for large enterprises since their actions are more visible than those of small ones. The quantity and variety of manufacturing capacity and ability a firm possesses, or the quantity and variety of services a company can offer its clients simultaneously, determines its size (Targba, Tsegba, Soomiyol& Henry, 2023) ^[34]. The goal of growing the firm is to benefit from economies of scale. When a given proportionate increase in inputs yields an output increase that is more than proportionate, economies of scale are present. Hassan (2016) opined that firm size and superior market performance are indicators of the firm's high level of financial disclosure, but smaller businesses are subject to limitations that have a negative impact on their financial performance because of insufficient financial disclosure.

3. Foreign relationship

Stakeholder attitudes and behavior are influenced by environmental disclosure (Brammer & Pavelin 2004) ^[3]. Shareholding allows Nigerian enterprises to establish worldwide connections. These companies could be extensions of their parent companies or subsidiaries of bigger ones. They are required to provide environmental information because of their interaction with a foreign counterpart who may have adopted these practices

(DiMaggio & Powell, 1983) ^[7], Cormier *et al.* (2005) ^[5] define foreign relationship as "the tendency for enterprises with comparable structures to converge and adopt similar social structures," a definition that is more relevant to firms with foreign parents and goes by the term "imitation." Managerial conduct is motivated to adopt specific practices as a result of the pressure, which validates the company's survival. There is disagreement in the literature currently available regarding how foreign ownership structure affects corporate disclosures (Brammer & Pavelin, 2004; Ducassy&Montandrou, 2015) ^[3, 8].

4. Empirical evidence on determinants of environmental disclosure

Targba, Tsegba, Soomiyol& Henry (2023) ^[34] analyze the impact of business characteristics on the environmental disclosure of listed gas and oil companies on the Nigerian Exchange Group covering a period of 2012-2021. The study specifically examined the manner in which Nigerian listed oil and gas companies released information on their environmental practices in connection to their corporate structure, market, performance, and governance characteristics. The results of the study showed that the market structure attribute, which is proxied by firm size, and the corporate structure attribute, which is proxied by firm size, have a significant negative impact on the environmental disclosure of listed oil and gas companies in Nigeria.

Ja'afar, Bala and Lawal (2021) ^[17] examine the factors that influence Nigerian oil and gas companies' disclosure of environmental accounting information. The cognitive elements that affect businesses' environmental accounting disclosures (CEAD) are examined in this study. Every one of Nigeria's fourteen (14) publicly traded oil and gas companies makes up the population. The panel data is derived from the companies' annual reports and accounts for the years 2010 through 2019. The Generalized Least Square regression (random model) is used to analyze the data in a correlation research strategy. According to the report, multinational corporations have an impact on the CEAD of Nigeria's publicly traded oil and gas companies (foreign association). Firm expansion and the CEAD of Nigeria's publicly traded oil and gas businesses show a markedly inverse relationship. The results show that multinational corporations operating in Nigeria's oil and gas industry have a higher likelihood of disclosing environmental accounting data.

Also, in the same vein, Moruff, Salisu, Muhammed, Garba and Nasiru (2021) ^[22] examine the relationship between environmental disclosure and specific traits of oil and gas companies, like having international directors on the board for a seven-year period (2012–2018). As of 2018, information was obtained from the publicly available annual reports of nine listed oil and gas companies that are traded on the Nigerian Stock Exchange (NSE). Generalized Least Square (GLS) was used to evaluate the hypotheses once they met the requirements of the post estimation tests. The results show a strong and positive correlation between ED and the presence of foreign directors on the board of directors.

Aluwoung and Fodio (2019) investigate the impact of corporate attributes on environmental disclosures made by Nigerian oil companies. The investigation employed the correlation and ex post facto designs. The study used

secondary data that was collected from 2011 to 2017 from the accounts and annual reports of nine randomly selected oil companies. The study examined the data using the logistic regression technique. The study found that environmental accounting disclosure by Nigerian oil and gas corporations is significantly influenced by business characteristics. More precisely, firm size has a major favorable influence on environmental accounting disclosure made by Nigerian oil and gas companies.

Onmonya and Lucky (2016) examine the degree to which Nigerian public interest manufacturing enterprises' environmental disclosure is influenced by their corporate features. The study's key corporate component is the presence of multinational corporations' subsidiaries. The study is a ten-year longitudinal effort that runs from 2004 to 2013. Because of the nature of the investigation, the ex-post factor, correlational, and descriptive designs are used. Thirty (30) organizations that met the selection criteria were found using a stratified random sampling technique. Stratified random sampling was employed to ensure equal participation across five manufacturing industry groups or sub-sectors. The main source of information is the firm annual reports published by the Nigerian Stock Exchange (NSE). For this study, narrative or financial environmental data as well as information on whether the company is a transnational corporation subsidiary were required. The findings indicate that multinational subsidiaries also receive a great deal of attention.

5. Theoretical framework

This study is therefore hinged on stakeholder theory and the justification for adopting the stakeholder theory is because of the relationship between the organization and all its various stakeholders which includes the government, potential investors, customers and the host of others. These sets of users are all interested in the information relating to the effect of the operations of the organization on its host environment. The adoption of the theory is supported by Ebrin (2020), and because the theory is relevant to environmental disclosure.

Methodology

The research design used in this paper is longitudinal, and its appropriateness is justified by the fact that it looks into multiple oil and gas businesses over a ten-year period, from 2011 to 2020. The research makes use of secondary data that is obtained from Nigerian listed oil and gas firms' annual financial statements by means of content analysis and the environmental disclosure index, as mandated by the Global Reporting Initiative 11, of 2021. As of December 31, 2020, 11 listed oil and gas businesses were part of the Nigeria Exchange Group (NGX), constituting the papers population. Ten out of the eleven listed oil and gas businesses on the Nigeria Exchange Group were used in the analysis. The sample is obtained using the Convenience sampling technique; E views 9 and panel regression technique were utilized for the analysis of the data utilizing descriptive and inferential statistics to evaluate hypotheses. The determinant, company size and foreign relationship are the independent variables, while the dependent variable is environmental disclosure.

1. Model specification

The regression model is use to test for the significance of company size and foreign relationship on environmental disclosure of listed oil and gas marketing companies in Nigeria which is adapted from Edirin (2020), and the changes made from the adapted model includes: firm age and is given as:

$$ENVVD = \alpha_0 + \beta_1 COMSIZE_{it} + \beta_2 FORRE_{it} + e_{it} \dots \dots \dots 1$$

Where:

ENVVD = Environmental Disclosure.

α = is constant.

$\beta_1 - \beta_2$ = are the coefficient of the independent variables.

Y= Dependent variables.

X = Independent variables.

i= number of firms under observation.

t= time.

COMSIZE = Company Size

FORRE= Foreign Relationship

U = Stochastic term.

2. Measurement of variables

The paper uses a variety of variables, both dependent and independent, which are explained in this section.

Measurement of environmental disclosure

The present study employs content analysis to measure environmental disclosure, specifically utilizing the Global Reporting Initiative Standards (Version 11 of 2021). Specifically, items identified on the environmental indexes of these oil and gas marketing companies are measured by dividing the total number of items in the disclosure by the number of disclosures made by each company.

Table 1: Index for Measurement of Environmental Disclosure

S/No	Index	Variables
1	E 11.1	Green House Emissions
2	E11.2	Climate Adoption, Resilience and Transitions
3	E11.3	Air Emission
4	E11.4	Biodiversity
5	E11.5	Waste
6	E11.6	Water and Effluents
7	E11.7	Closure and Rehabilitation
8	E11.8	Asset Integrity and Critical Incident Management

Source: GRI Version 11 Environmental Disclosure Index for Oil and Gas 2021

3. Measurement of independent variables

Company size

The size of a company can be determined in a number of ways. The number of employees, turnover rate, and asset base are the metrics that are most frequently utilized. According to Clarkson *et al.* (2011), Hackston and Milne (1996) [13], Trotman and Bradley (1981), Toluwa *et al.* (2015), Jafar *et al.* (2021), and Priscilia *et al.* (2021), logarithms of assets were employed as a proxy for company size in this study.

Foreign relationship

Prior research, like that conducted by Ducassy & Montandrau (2015) [8], measured international affiliation as the number of enterprises with overseas affiliations, subsidiaries, or ownership stakes in businesses located

outside of Nigeria. In order to measure foreign affiliations, Onmonya (2016) uses transnational company subsidiaries; Moruff, Salisu, Muhammed, Garba, and Nasiru (2021) [22] use the presence of foreign directors on the board to measure foreign affiliations; and Ja'afar, Bala, and Lawal (2021) [17] use multinational companies. This study will use the combination of these measurement variables to measure foreign relationship.

Results and Discussions

This section presents the findings from the data analysis, including the testing of hypotheses, random regression results, correlation matrix, and descriptive statistics.

1. Descriptive statistics of dependent and independent variable

The descriptive statistics of the dependent and independent variables are shown in this section. The statistics pertain to listed oil and gas marketing businesses in Nigeria and reveal the fitness and normalcy of the data.

Table 2: Descriptive Statistics of Environmental Disclosure and independent Variables

	ENVVD	COMSIZE	FORRE
Mean	0.386	10.889	0.500
Median	0.125	10.792	0.500
Maximum	1.000	14.613	1.000
Minimum	0.000	9.042	0.000
Std. Dev.	0.384	0.996	0.502
Probability	0.001	0.000	0.000
Sum	38.625	1088.943	50.000
Sum Sq. Dev.	14.597	98.285	25.000
Observations	100	100	100

Source: E views 9 Output 2024

The dependent and independent variables' descriptive statistics with respect to listed oil and gas marketing businesses in Nigeria are shown in Table 2. The attributes of the independent variables (firm size and foreign affiliation) and the dependent variable (environmental disclosure) are revealed by the descriptive statistics. According to the findings, 38.6% of listed oil and gas marketing companies operating in Nigeria are actually involved in the practice of environmental disclosure by specifically adhering to the environmental disclosure index as specified by the Global Reporting Initiative, Version 11 of the year 2021. This is indicated by the mean value of environmental disclosure of 0.386. This indicates that most publicly traded oil and gas companies have not yet implemented the GRI, 2021's requirements for environmental information disclosure regarding the effects of their organizational operations on the surrounding environment. These environmental disclosures show how much of an impact the oil and gas industry's operations have on the surrounding environment. The company size and foreign relationship mean values are 10.889 and 0.500, respectively, with corresponding standard deviations of 0.996 and 0.502. Based on the difference between the mean and standard deviation values, the standard deviation results demonstrate that the variables are uniformly distributed over a larger range of values and are not closed or clustered around the mean.

2. Correlation results

This segment discuss the correlation results of the dependent and independent variables

Table 3: Correlation Matrix

	ENVVD	COMSIZE	FORRE
ENVVD	1		
COMSIZE	0.714	1	
FORRE	0.494	0.489	1

Source: E views 9 Output 2024

The correlation matrix between the independent and dependent variables is shown in Table 3. The relationships among the independent variables as well as the relationships between the dependent and independent variables are displayed there. The figures of 0.714 and 0.494, respectively, in Table 3 demonstrate the positive correlation between environmental disclosure and listed oil and gas industry firm sizes and foreign affiliation. Additionally, based on the correlation's results and the values of 0.489, it can be concluded that business size and foreign relationship have a positive link.

3. Results from random effect test

The findings of the random effect test, which was used to evaluate the study's hypotheses because the Hausman test was deemed insignificant, are shown in this section.

Table 4: Random Effect Regression

Variable	Coefficient	Std. Error	t. Statistics	Prob.
COMSIZE	0.218450	0.033508	6.519297	0.0000
FORRE	0.162129	0.060954	2.659856	0.0092
C	-1.784563	0.426379	-4.185387	0.0001
R-squared	0.586639			
Adjusted R-squared	0.564652			
S.E. of regression	0.253354			
F-statistic	26.68085			
Prob(F-statistic)	0.000000			
Mean dependent var	0.386250			
S.D. dependent var	0.383981			
Sum squared resid	6.033711			
Durbin-Watson stat	2.197778			

Source: E-views 9 (2024)

Table 4 displays the results of the random effect regression along with the dependent and independent variables' coefficients, standard errors, and p-values. The table shows a Durbin Watson Stat of 2.197, indicating strongly that autocorrelation was observed in the data, and a prob. Chi2 of 0.000, which is significant at that level.

4. Hypotheses Testing

This section displays the testing of the hypotheses stated for the study and these are shown below:

Hypothesis One

There is no significant relationship between company age and environmental disclosure of listed oil and gas companies in Nigeria.

Table 5: Results of company size and environmental disclosure

Variable	Coefficient	Std. Deviation	P-value
COMSIZE	0.218450	0.033508	0.0000

Source: E views 9 Output 2024

The regression results between company size and environmental disclosure is shown in Table 5. The table indicates that there is a positive correlation between the company size of listed oil and gas marketing businesses in Nigeria and environmental disclosure, as indicated by the coefficient value of 0.218450. Consequently, the p-value of 0.0.0000 indicates a significant link between the dependent and independent variables (environmental disclosure and business size), as there is a positive relationship between the two variables. This suggests that the size of listed oil and gas marketing companies in Nigeria determines environmental disclosure. This leads to the rejection of the previously put forward null hypothesis, which states that there is no significant relationship between the company size of listed oil and gas companies in Nigeria and the environmental information they submit. These findings concur with those of Baba (2020) [2], who also discovers a strong relationship between firm size and environmental disclosure.

Hypothesis Two

Environmental Disclosure and international relationships do not significantly correlate.

Table 6: Results of foreign relationship and environmental disclosure

Variable	Coefficient	Std. Deviation	P-value
FORRE	0.162129	0.060954	0.0092

Source: E views 9 Output 2024

The regression results for foreign relationship and environmental disclosure is shown in Table 6. The table indicates that, as indicated by the coefficient value of 0.162129, there is a positive correlation between environmental disclosure and foreign relationship of listed oil and gas marketing corporations in Nigeria. A substantial correlation, shown by a p-value of 0.0092, was found between the disclosure of environmental information and the foreign relationship of listed oil and gas marketing businesses in Nigeria, as a result of the two variables' positive association. This implies that a significant factor influencing oil and gas marketing corporations' practices in Nigeria with regard to environmental disclosure is their foreign connection. It contends that the disclosure of environmental information is related to the relationship these listed oil and gas businesses have with their international counterparts as a result of having a subsidiary or foreign directorship in their board of directors. This leads to the rejection of the previously proposed theory, which held that there is no meaningful connection between foreign affiliation of oil and gas marketing corporations in Nigeria.

Concluding remark

1. According to the study's findings regarding the size of listed oil and gas marketing companies, larger companies are more likely than smaller ones to disclose environmental information because they must maintain their influence with different stakeholders, which may raise the level of their customer base and increase the listed oil and gas marketing companies' asset base in Nigeria.

Additionally, when listed oil and gas marketing companies in Nigeria invest in foreign subsidiaries or companies that are based in other countries and have made environmental disclosure a requirement for financial reporting or a

prerequisite for listing on their respective stock exchanges, or when these Nigerian listed companies permit foreign directors to serve on their board of directors, the result will be the disclosure of environmental information in compliance with the guidelines set forth by the Global Reporting Initiative, 2021. Even if there are international or global criteria for reporting environmental hazards, the practice of environmental disclosure is an internal and boundary issue that is determined by laws available in different nations, which may be the main cause of these results.

2. Recommendations

Since there is a correlation between a company's size and its environmental disclosure practices, it is also advised that the management of these listed oil and gas marketing businesses keep up their environmental disclosure practices. Even though environmental disclosure is not currently required, larger companies should still push smaller ones to adopt it as a corporate policy. This can be accomplished by imparting their environmental disclosure knowledge to Nigeria's smaller oil and gas marketing businesses.

Additionally, it suggests that the management of these publicly traded oil and gas marketing businesses be urged to follow the lead set by their overseas counterparts in terms of environmental disclosure. By owning shares in or subsidiaries in other nations, as well as having foreign directors on their board of directors, the management of listed oil and gas marketing businesses should absorb the environmental disclosure procedures of its international association.

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