Determinants of Environmental Disclosure of Listed Oil and Gas Firms in Nigeria

Muyiwa Ezekiel ALADE[1] & Olubunmi Modupe ODUGBEMI[1]*

[1,2] Department of Accounting, Faculty of Administration and Management Sciences, Adekunle Ajasin University, Akungba-Akoko, Ondo State, Nigeria.

* Corresponding author: olubunmi.odugbemi@aaua.edu.ng

Abstract

The global current trends of full disclosure in integrated reporting which include environmental disclosure as stipulated by International Financial Reporting Standards, call for listed oil and gas firms in Nigeria to disclose the positive with the negative matters of environmental activities. This study therefore examined the effect of environmental disclosure determinants on the quality of environmental disclosure of oil and gas firms listed on the Nigerian Stock Exchange between 2009 and 2018. Census sampling technique was adopted using the total population of fifteen (15) oil and gas firms listed on the Nigerian Stock Exchange as at 31st December 2018 as sample since the firms are few. Data were drawn from annual reports which are inclusive of environmental report, sustainability report, and corporate social responsibility report. The study was analyzed using descriptive statistics, goodness-of-fit evaluation test and binary logistic regression technique. The findings of the study revealed that the three out of four determinants (return on assets, financial leverage and firm size) have positive effect on quality of environmental disclosure and were statistically significant while share ownership distribution had negative effect. It is therefore concluded that environmental disclosure is influenced by return on assets, financial leverage and firm size; but not by share ownership distribution. It was recommended that the Accounting regulatory bodies in Nigeria are encouraged to put in place environmental disclosure framework in line with Global Reporting Initiative and take necessary steps in motivating listed oil and gas firms in disclosing environment activities in their annual reports.

Keywords: Environmental disclosure, return on assets, share ownership, leverage, firm size

JEL Classification : Q56, G12, G32, H63, L25

1. Introduction

The development of the economy of the world has adversely affected the environment which has led to unguided waste disposal, pollution, global warming and natural disaster (Angela & Handoyo, 2021). The impairment caused by these environmental impacts of companies has reduce the environment in meeting its societal requirements of generating clean water, air, energy and land suitable for agricultural development. The negative consequence of this degradation on the ecological atmosphere and human life has necessitated the users of annual reports and various stakeholders to show concern and demand for the disclosure of quantitative and qualitative data on environmental impacts of a firm annually (Atang & Eyisi, 2020).

Research studies on ecological reporting, majority of which emanated and focused on companies in the technologically advanced nations such as the United States of America, the United Kingdom, Japan, European Union, Australia, France and Canada where ecological reporting have been established such as Baalouch, Ayadi and Huss (2019), Suttipun and Stanton (2012) and Inun Jariya (2015) have emerged with a small number of empirical research studies in developing African countries like Nigeria.

Nigeria as a nation which heavily depends on export of crude oil as a major source of income is well known for its haphazard oil spillage, gas flaring and freehand waste disposal (Kadafa, 2012). Igbekoyi (2015) also highlighted that this has triggered the rate of host communities and companies' clashes, general agitation, kidnapping and expression of anger in the community where the oil and gas firms are situated because their source of livelihood has been impaired. In spite of these occurrences which have adverse effects on the performance of quoted oil and gas firms, environmental reporting still remains a voluntary initiative in Nigeria.

Angela and Handoyo (2021), Atang and Eyisi (2020) and Musa, Peter and Bukar (2015) affirmed that it is in line with global best business practices for a firm to disclose to all concerned stakeholders; the degree of negative consequences of firm's activities on its environment, the measure put in place to ensure that the adverse impact is prevented and restoration is made in the event of accidental occurrence. The contemporary move of international companies in the direction of environmental reporting makes it vital for the Nigeria listed firms to join the cue, even though the disclosure of environmental issues is not yet mandatory in Nigeria (Atang & Eyisi, 2020).

With the advent of integrated reporting, companies are evaluated using the financial as well as the non-financial performance as criteria for measuring performance at the end of a financial year (Musa, Peter, & Bukar, 2015). The integrated reporting covers the financial, social and environmental performance. The study makes use of checklists adapted from Global Reporting Initiative (2009) to suit the Nigerian financial reporting environment. The checklists which is known as environmental disclosure quality rating index was used as a measure proxy on the dependent variable (quality of environmental disclosure) and to extract data from the annual report which is inclusive of sustainability report and the corporate governance report of the companies.

Previous research studies such as Angela and Handoyo (2021), Atang and Eyisi (2020), Ismail, Rahman and Hezabr (2018), Welbeck, Yaw Owusu, Bekoe and Kusi (2017), Dibia and Onwuchekwa (2015) and Inun Jariya (2015) have examined environmental performance determinants variables such as firm age, profitability, industry, country of firm ownership, area of reporting, leverage and capital intensity. The result of previous studies ranges from statistical significance, negative effect, to no statistical effect of the aforementioned variables on environmental disclosure. Extant empirical studies of the impact of these variables on environmental disclosure are few and inconclusive.

Angela and Handoyo (2021) suggested for further studies, the inclusion of share ownership distribution as a determinant variable on environmental disclosure quality. As a result, this study adopted and introduced share ownership distribution and also used return on asset to proxy profitability which indicates to investors how the company is performing in terms of converting assets into net capital. The perspective of previous empirical study concentrated on the quantity which makes use of counting of words that was used to describe environmental activities from the annual reports which is an identified gap in literature. In order to fill the lacuna in the literature, the study investigates the quality of environmental disclosure by using environmental disclosure quality rating index adapted from Global Reporting Initiatives (2009) to extract data and information from the sustainability report, corporate governance report and other annual reports from the companies and Nigerian Stock Exchange websites.

Therefore, the objective of this empirical study is to examine the effect of environmental disclosure determinants (return on asset, share ownership distribution, financial leverage and firm size) on the quality of environmental disclosure of oil and gas firms listed on the Nigerian Stock Exchange. The paper is structured into five (5) sections and they are; introduction, literature review and hypothesis development, data and methods, data analysis and discussion of findings, lastly is the conclusion and recommendations.

2. Literature review and hypotheses development

2.1 Quality of Environmental disclosure

Environmental disclosure is the method through which a company presents the environmental issues and the effects of its activities on the surroundings, to various stakeholders and users of environmental information in order for them to make adequate assessment (Angela & Handoyo, 2021). It was also defined by Iredele (2020) as all material facts and figures communicated to various stakeholders about environmental responsibility on a regular time basis. The aim is to escalate the awareness of stakeholders of the impact companies' undertakings on the environment.

The quality of environmental disclosure can be determined by the comprehensiveness and completeness of its information provided in its sustainability reports using the standard provided in the scorecard rating index provided by Global Reporting Initiative, 2009). The notion of Sustainability reporting increased publicity during the United National conference on environmental development in June 1992 held at Rio de Janeiro. There has been an increase in the number of firms in developed and developing nations that is making environmental reporting a substance of requisite in their financial and other related reports communicated annually (Ohidoa, Omokhudu, & Oserogho, 2016). Environmental disclosure includes intergenerational equality, environmental protection, the earth and its resources which form part of the concern of sustainability reporting.

Evaluating the quality of environmental disclosure using the environmental disclosure quality rating index adapted from previous studies like; pollution, waste disposal, compliance with regulators, health and safety security, environmental research and development. It involves the complex stages; firstly, classify the environmental issues in the sustainability report; secondly the environmental issues classified in the sustainability report are then compared with the standard in the Global Reporting Initiative (GRI) scorecard rating index; thirdly, dummy value (1 for disclosure, 0 for non-disclosure) is then put for each of the environmental issue classified (Angela & Handoyo, 2021). Items with the highest value represent the environmental issues with the most comprehensive environmental information that meet the needs of various stakeholders and vice versa. It is of utmost importance for companies to present complete and comprehensive environmental information to meet the needs of various stakeholders and communities.

The determinants of environmental disclosure are the contributing factors that regulate the features of ecological reporting. In the context of the study determinants of environmental disclosure are return on assets, share ownership distribution, firm size and financial leverage.

2.1.1 Return on asset and environmental disclosure

This is the ratio of operating income to total assets. Atang and Eyisi (2020), Ismail, Rahman and Hezabr (2018), Esa, Anis and Remali, (2015) asserted in their studies that the higher the returns of firms the management are enthused to report data and figures that relate to their environmental matters so as to be in good repute with investors, stockholders and various stakeholders. While companies with low levels of returns have the tendency of reporting insignificant environmental issues as a result of the cost implications (Das, Dixon, & Michael 2015). Companies that involve in voluntary reporting of environmental issues after they must have enough profit that is beyond fulfilling the stockholder's requirement, the reason for this is that reporting on environmental issues involve cost implications (Esa, Anis, & Remali, 2015). Return on asset was used as a proxy since it measures how a firm is performing by converting its assets to capital.

2.1.2 Share ownership distribution and environmental disclosure

The share ownership distribution is the dissemination of the firm stocks as controlled by different stockholders. Angela and Handoyo (2021) stated that share control mechanism has considerable effect on the quality of environmental reporting of firms, it is believed that the wider the distribution of a firm's stock which led to higher demand of information (asymmetry of information) from various stakeholders thereby, boosting higher quality of environmental reporting. Firms that have numerous stockholders are likely to have higher quality of environmental report than the firms with concentrated stockholders in order to eliminate information asymmetric (Braga, Silva, & Santos, 2015). Companies with few owners which are likely to have access to facts and figures of the firm from internal sources and may lead to poor quality of environmental disclosure (Sulaiman, Abdullah, & Fatima, 2014). It is worthy of note that developed countries are known with wide distribution of the firm's share with numerous stockholders while high levels of concentrated stock ownership distribution are common in developing nations in which Nigeria is among.

2.1.3 Firm size and environmental disclosure

Firm size is the measurement of the company in general, most especially in terms of total assets, total revenue, stock market conditions, market capitalization and other company resources (Gantyowati & Agustine, 2017). Large quoted companies with numerous shareholders are more susceptible to communal responsiveness and get naturally publicity as a result of their noticeable impact on various stakeholders compared to the unquoted small firms (Angela & Handoyo, 2021). This is as a result of employment policy, taxation and the impact of the company activities on the general public and environment which are usually found in large companies (Ismail, Rahman, & Hezabr, 2018). Hence, big scale firms are usually involved in environmental disclosure and responsibility than the smaller firms (Gantyowati & Agustine, 2017). Hence, a further examination in the context intra industry of listed oil and gas firms in Nigeria which may substantiate whether there exist an effect of firm size on environmental reporting.

2.1.4 Financial leverage and environmental disclosure

Financial leverage is the technique of using borrowed funds (debt capital) instead of equity share capital in the funding of business operations such as purchase of non-current assets. Financial leverage indicates the rate at which firms rest on the creditors (debt capital) for funding of its activities (Angela & Handoyo, 2021). A company that is highly geared (leverage) rely greatly on external financing while the ones with low debt (lowly geared) make more use of more equity stock capital to fund its business activities than debt, the degree of companies leverage define its exposure to financial risk (Gantyowati & Agustine, 2017). Reporting of environmental activities has its own cost implication for its implementation; the precedence of a highly geared firm is to service and repay its external loan, environmental activities and its disclosure for such company are less as a result of its limitation of its funding (Hallgren & Johansson, 2016).Companies that has low leverage which is believed to have strong funding that will be able to meet requirements of the various stakeholders and have enough funds set aside for environmental related activities and reporting. Hence, it is likely that companies with low financial leverage report better environmental data and figures than companies with high financial leverage. From the review of literature, research results of the effect of financial leverage on environmental disclosure is inconclusive, there is to reexamine the effect of financial leverage on environmental disclosure especially in the oil and gas sector in Nigeria.

2.3 Theoretical review

2.3.1 Voluntary disclosure theory

The theory of voluntary disclosure was developed by Verrecchia Robert (1983) which elucidates the quality and quantity of corporate social and environmental disclosure and it is based on the perspective of agency theory. The stakeholder and legitimacy theories are valuable in clarifying what firms disclose in relation to environmental information but voluntary disclosure theory went a step further by illuminating on 'how much' of reporting of environmental activities is expected (Clarkson, Li, & Richardson, 2007). Voluntary disclosure theory is a supplementary theory which elucidates the level of reporting of corporate environmental information and endeavours to remove information irregularities between the companies, external and primary agents in the host community (Brammer & Pavelin, 2006). Voluntary disclosure theory expects that firms with reputable environmental performance do not conceal environmental impact of their production processes and will disclose comprehensively the facts and figures on their environmental activities to various stakeholders.

Brammer and Pavelin (2006) affirmed that voluntary disclosure theory envisages that the information risk for current and potential investors will reduce as a result of the quality of reporting of environmental activities. One of the benefits of voluntary disclosure theory is that it gives competitive advantage to companies as it climaxes the ecological programs and impact of activities on the natural environment. Also, investments in ecological programs and management are expensive and involve huge capital which may lead to high cost and low returns for investors in the short run. Moreover, it is better to disclose quality environment activities with low returns than when the disclosure is absent or low in which the stakeholders will accept that the firm management strategy on environmental activities is poor (Clarkson, Li, & Richardson, 2007).

This study hinged on voluntary disclosure theory for the reason that firms that perform well as regards their environmental activities will truly report issues in respect of the environmental undertakings, the quality of their reporting is greater to the society than firms which have poor environmental performance. Company that performs well in their environmental undertaking is not afraid of the feedback of various stakeholders since they believe that strength outweighs the weakness.

2.4 Empirical review

Angela and Handoyo (2021) investigated the effect of firm characteristics on environmental disclosure quality. The variables used to proxy firm characteristics are firm size, ownership concentration, firm age and leverage. The study applied content analysis of the sustainability report which involved thirty-three (33) quoted firms with consistent reports of sustainability in the Indonesia Stock Exchange from 2014-2016. The result of the simultaneous test indicated that only leverage has a statistically significant effect on environmental reporting quality. Atang and Eyisi (2020) examined the determinants of ecological reporting of manufacturing firms quoted on the Nigerian stock exchange. The research design adopted is *ex post facto*, for generalizing the result, inferential and descriptive statistics were used. The result of the multiple regression revealed that firm size, auditor type, board composition and profitability jointly influence ecological reporting in manufacturing firms in Nigeria.

Baalouch, Ayadi and Huss (2019) investigated the impact of various factors that influence the quality of environmental disclosure. The variables used are presence of an environmental committee, environmental audit, gender diversity, independence of the board, environmental performance and the degree of pollution. The sample adopted for the study is one hundred and twenty (120) French listed companies from 2009 to 2014. The study developed a self-constructed index to measure the quality of environmental disclosure and the econometric technique is panel data specification. The result showed that gender diversity, environmental performance and environmental audit are the factors that influence the quality of environmental disclosure.

Ismail, Rahman and Hezabr (2018) examined the influencing factors of corporate environmental disclosure quality. The hypothesized variables are company size, closeness to market, type of company, foreign ownership, ownership concentration, institutional ownership, state ownership, leverage, profitability, multi-nationality, membership of industry's associations, and environmental certification. The study adopted a content analysis and scoring index scheme that was applied to the annual financial reports of the sample of one hundred and sixteen (116) oil and gas firms in nineteen (19) developing countries. The results indicated that membership of industry's associations, company size, leverage, foreign ownership, and profitability (5 out 12 variables) are statistically significantly related to corporate environmental disclosure.

Welbeck, Yaw Owusu, Bekoe and Kusi (2017) studied the environmental information reported, its trends and the determinants. The GRI rating index and content analysis of the annual report of 17 companies quoted on the Ghana Stock Exchange from 2003 to 2012. The results of the regression analysis showed that level of reporting was low and also, industry type, firm size, age of the firm and auditor type are statistically significant to environmental reporting.

Dibia and Onwuchekwa (2015) worked on determinants of environmental disclosure of Nigerian oil and gas firms. The aim of the empirical study is to examine the influence of audit type, firm size, leverage and profitability on environmental disclosure. The study adopted a cross-sectional research design with a sample of 15 oil and gas firms quoted on the Nigerian Stock Exchange from 2008-2013. Binary regression technique was used to analyze the secondary data extracted from the annual report of firms. The results showed that there is statistical significance influence of firm size on corporate environmental disclosure whereas there is no significant influence of profitability, audit type and leverage on corporate environmental disclosure.

Inun Jariya (2015) investigated the level of environmental information disclosure practices of quoted manufacturing firms in Sri Lanka. Variables used are; listing age, firm size and profitability to determine the level of corporate environmental information disclosure. Content analysis was adopted by word count and statistical analysis techniques adopted are descriptive statistics, correlation and multiple regression analysis. The results indicated that firm size had a positive effect on corporate environmental disclosure while listing age and profitability had no effect on corporate environmental disclosure, also, 50.63% of the companies provided environmental information in their 2012/2013 annual report.

Sulaiman, Abdullah and Fatima (2014) studied the relationship that exists between leverage, share ownership distribution, firm size, profitability and the quality of environmental disclosure in the 2009 annual report. This was done after two years of making social and environmental reporting compulsory for quoted firms in Malaysia. Self-developed index was used in measuring the quality of environmental reporting while content analysis on the annual report of one hundred and sixty-four (164) firms in the environmentally sensitive industries (ESI) in Malaysia was undertaken. The result of the empirical study showed significant affirmative influence of leverage and company size on environmental reporting quality, which provide a backing for legitimacy theory. Also, profitability and share ownership distribution showed no significant influence on environmental reporting quality.

Burgwal and Vieira (2014) investigated the variables that have significant effect on the practices of environmental disclosure of Dutch quoted companies. The variables used are profitability, firm size and industry membership. Content analysis score card created by the Global Reporting Initiative on sustainability reporting guiding principles was used on environmental information obtained from the sample of twenty-eight (28) quoted Dutch firms in 2008. The empirical result indicated that industry membership and firm size had considerable positive influence on environmental disclosure while profitability has no statistical influence on environmental disclosure which may be as result of the effect of the financial crisis in the years 2007 and 2008.

From review of literature, it was revealed that most of the studies hinged the research work on legitimacy and contingency theories which may not really be applicable in Nigeria since environmental reporting is still voluntary. Also, it was discovered that the majority of the studies concentrated on variables for environmental disclosure determinants such as firm age, capital intensity, profitability and existence of CSR committee. Moreover, it was revealed that in previous studies researchers focus on environmental disclosure quantity in which counting of words used to describe environmental activities was adopted which to the best of the ability of the researcher was not optimal. It was also discovered that the topographical location of previous studies was developed countries. The study intends to fill this gap in literature with the aim to investigate the effect of environmental disclosure determinants on the quality of environment disclosure in the listed oil and gas firms in Nigeria and the work is hinged on voluntary disclosure theory.

Existing literatures and theories that are related to the study were reviewed which led to the development of the hypothesis in a null form that:

Ho: Environmental disclosure determinants do not have effect on the quality of environmental disclosure of listed oil and gas firms in Nigeria

3. Data and Methods

The research design that was employed for this study is *ex-post facto* since the data are already in existence and cannot be altered by the researcher. Environmental disclosure quality rating index which was adapted from Global Reporting Initiative (2009) was used to measure the quality of environmental disclosure. The population includes the fifteen (15) firms in the oil and gas sector quoted on the Nigerian Stock exchange as at the 31st December 2018. Census sampling technique was adopted using the total population of fifteen (15) oil and gas firms listed on the Nigerian Stock Exchange as at 31st December 2018 as sample since the firms are few. In measuring the determinants; return on asset, share ownership distribution, financial leverage and firm size which are the independent variables adopted for this study. Secondary data were collected from annual reports, environmental reports, sustainability reports and corporate social responsibility reports of oil and gas firms published on their website and the Nigerian Stock Exchange website for period from 2009 to 2018. The justification for base year 2009 is that 2010 is the year of implementation of International Financial Reporting Standard (IFRS) across the globe which is the basis of integrated reporting and place emphasizes on full disclosure. Data gathered were analyzed using descriptive statistics like mean, median, skewness and kurtosis of the variables, goodness-of-fit evaluation test, and binary regression technique using E-view 10.0 statistical packages.

The model specification is hinged on the notion of voluntary disclosure theory adopted from Burgwal and Vieira (2014) which clarifies the level of reporting of corporate environmental information and endeavours to remove information irregularities between the companies, external and primary agents in the host community. Also, the binary regression equation to analyze the effect of environmental disclosure determinants on the quality of environmental disclosure was adopted from Dibia and Onwuchekwa (2015) and formulated as follows:

$$ENQL_{it} = \alpha_0 + \beta_1 ROA_{it} + \beta_2 SOD_{it} + \beta_3 SIZ_{it} + \beta_4 LEV_{it} + U_{it} \ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots \text{Eqn. 1}$$

where;
ENQL=Quality of environmental disclosure
ROA=Return on asset
SOD=Share ownership distribution
SIZ = Firm size
LEV=Financial leverage
U = error term
α = beta coefficient
β_1 to β_4 = coefficient of slope parameter
$_{it}$ =The different independent variables of firm i at time t (2009-2018)
The *a-priori* expectation based on literature reviewed is that determinants will have a positive effect on the quality of environmental disclosure.
It is statistically shown as $\beta_1>0$, $\beta_2>0$, $\beta_3>0$, $\beta_4>0$. The variables used were described in Table 1.

Table 1: Measurement of Variables

Variables	Description	Measurement	Source of Data
Return on Asset	This is the return on the assets used during the year.	The ratio of operating income to summation of non -current and current assets.	(Atang & Eyisi , 2020)
Share Ownership Distribution	This is the distribution of equity relating to votes, capital and identity of the equity owner.	The ratio of equity share held by the public to total equity share capital.	(Angela & Handoyo , 2021)
Financial Leverage	This is the percentage of debt capital to the total capital.	The ratio of total debt /total asset.	(Angela & Handoyo , 2021)
Firm size	This is the company's total assets compared to the industry total assets	Ratio of company's total assets and industry total assets	(Ismail, Rahman, & Hezabr, 2018)
Quality of Environmental Disclosure	An overview of the completeness appraisal of the environmental matters reported by the firm.	Environmental Disclosure quality rating index using dummy value of 1 for disclosure & 0 if otherwise.	(Ismail, Rahman, & Hezabr, 2018)

Source: Authors' compilation (2021)

4. Data Analysis and Discussion of findings

4.1 Descriptive Statistics

The study surveyed fifteen non-financial firms within a ten years' time frame. Descriptive statistics is essential prior to estimation of the model. The table 2 reports the outcome of the descriptive analysis. The variable of environmental disclosure report with a mean of 0.7800, maximum value of 1 and minimum value of 0.00 indicates that more than 50% of the sampled firms disclose their environmental quality report. More so, the average ROA of the sampled firms stood at -0.004 with median of 0.0207 and maximum of 0.48, minimum of -0.7068. The industrial leverage stood at 20.55 and positive skewness of 11.0908. Firm size reports an average of 14.348 and median value of 0.0198. The maximum size stood at 2013.00 and 0.0000. The average SOD across the sample firms was -10.73 and maximum value stood at 26.000.

Table 2: Descriptive Statistics

	ENQL1	ROA	LEVERAGE	SIZE	SOD
Mean	0.780000	-0.004382	20.52271	14.34879	-10.73615
Median	1.000000	0.020717	0.085426	0.019837	0.965000
Maximum	1.000000	0.480000	2561.000	2013.000	26.00000
Minimum	0.000000	-0.706872	0.002671	0.000000	-1380.000
Std. Dev.	0.415634	0.163223	228.1344	169.5191	129.0440
Skewness	-1.351853	-1.793748	11.09088	11.74763	-9.854144
Kurtosis	2.827506	9.267058	124.0077	139.0069	103.0560
Jarque-Bera	45.87361	293.3221	79458.22	111918.3	54597.96
Probability	0.000000	0.000000	0.000000	0.000000	0.000000
Observations	150	150	150	150	150

Source: Authors' computation (2021)

4.2 Goodness-of-Fit Evaluation for Binary Specification

Table 3 reports the Goodness-of-Fit Evaluation for Binary Specification. The condition for Andrews and Hosmer-Lemeshow Tests is that the p-value of the chi-square must be less than 0.05. The outcome of the test indicates that the model is of good-fit with p-value of 0.5923.

Table 3: Goodness-of-Fit Evaluation for Binary Specification

Goodness -of-Fit Evaluation for Binary Specification								
Andrews and Hosmer-Lemeshow Tests								
	Quantile of Risk			Dep=0		Dep=1	Total	H-L
	Low	High	Actual	Expect	Actual	Expect	Obs	Value
1	0.0021	0.7587	7	6.94028	5	5.05972	12	0.00122
2	0.7963	0.9158	2	1.77450	11	11.2255	13	0.03319
3	0.9191	0.9992	0	0.28302	12	11.7170	12	0.28985
4	0.9995	1.0000	0	0.00218	13	12.9978	13	0.00218
5	1.0000	1.0000	0	1.6E-05	13	13.0000	13	1.6E-05
6	1.0000	1.0000	0	7.1E-07	12	12.0000	12	7.1E-07
7	1.0000	1.0000	0	7.8E-10	13	13.0000	13	7.8E-10
8	1.0000	1.0000	0	2.2E-12	12	12.0000	12	2.2E-12
9	1.0000	1.0000	0	0.00000	13	13.0000	13	NA
10	1.0000	1.0000	0	0.00000	13	13.0000	13	NA
		Total	9	9.00000	117	117.000	126	NA
Andrews Statistic			3.7652		Prob. Chi-Sq(10)		0.5923	

Source: Authors' computation (2021)

4.3 Environmental disclosure determinants and the quality of environmental disclosure

The estimates were obtained through the use of binary logistic regression technique. Logit modeling technique was adopted owing to the binary response of the dependent variable Quality of Environmental Disclosure. McFadden R-squared shows that about 60.0% of the variation in the quality of environmental disclosure was accounted for by the explanatory variable. The likelihood ratio of 38.924 and p-value less than 0.05 indicates that the model is statistically significant and different from zero.

The study reports both coefficient and the marginal effect of each of the variables on the quality of environmental disclosure. Leverage exhibited a positive relationship with quality of environmental disclosure with marginal effect of 0.0006 and z-statistics of 2.3991. This implies that firms with high leverage will likely report better quality of environmental disclosure than firms with low leverage. Similarly, the return on assets of the firm reports a positive relationship with the quality of environmental disclosure. The marginal effect of the variable (0.9551) indicates that firms with sound return on assets will likely have an improved quality of environmental disclosure. It is more likely for the quality of environmental disclosure of the sampled firms to rise when their return on asset improves or enhances. Size of the firm strongly enhanced the quality of environmental disclosure. The marginal effect of the size (136.0386) shows that firm size exhibited a stout effect on the firm behavior. It is expected that big firms have image and goodwill to protect therefore they tend to comply with every rule and regulation covering their operation. Share Ownership Distribution (SOD) is less likely to have influence on the quality of environmental disclosure with marginal effect of -0.0616.

The result obtained is consistent with the study of Atang and Eyisi (2020), Ismail, Rahman and Hezabr (2018) which revealed that profitability, firm size, foreign ownership and membership of industry's associations have positive and statistical effect on corporate environmental disclosure in Nigeria and other developing countries respectively. Also, the result of this analysis is in conformity to Tze, Huey, Han, Siew, and Boon (2016) who stated that the quality of environmental disclosure has a positive relationship with the company's performance of public listed companies in Malaysia. It further conforms to the study Gatimbu and Wabwire (2016) that asserted that environmental disclosure has a significant positive effect on financial performance of firm quoted on the Nairobi Securities Exchange, this may be attributed to the fact that companies are able to find out environmental costs that were often hidden and presented as overheads to the management in the traditional accounting system. This invariably allows management to identify opportunities for cost savings, hence increase in efficiency and effectiveness and reduction of waste. Also, in Nigeria the research study of Bassey , Sunday and Okon (2013) which supported this findings, when they affirmed that firm size is a comprehensive variable, which can proxy a number of corporate attributes, such as competitive advantage, information production cost and political cost, it has been revealed that environmental accounting and reporting enhances firm performance of the selected oil company, that environmentally friendly companies who voluntary discloses their environmental activities enjoy high level of competitiveness.

The result of the study negates the findings of Angela and Handoyo (2021), Raymond, John-Akamelu and Chigbo (2016) which stated that environmental disclosure does not impact positively on revenue and profit generation of corporate firms in Nigeria. The result of the findings also negative findings of Ohidoa, Omokhudu, and Oserogho (2016) that environmental responsibilities involve huge costs and therefore reduce firm's profitability and therefore negative relationship between environmental ratings and market value of equity. Furthermore, in a study by Roy & Ghosh (2011) examined bilateral association between economic performance and quality of voluntary disclosure of sustainable environmental practices in an Asian perspective, the primary research results suggested that they were not simultaneously related, and a negative or very low positive and insignificant relation between them.

Table 4: Binary logistic regression technique result

Dependent Variable: Quality of environmental disclosure				
	Coefficient	Z-statistics	P-value	Marginal Effect
LEV	0.003064	2.399189	0.0164	0.0006
ROA	4.731678	2.045329	0.0408	0.9551
SIZE	668.9952	2.228263	0.0259	135.0386
SOD	-0.305529	-2.553621	0.0107	-0.0616
C	1.413290	2.011563	0.0443	0.2852
McFadden R-squared	0.600275	LR statistic	38.92439	Prob (LR statistic)0.00000

Source: Authors' computation (2021)

5. Conclusion and Recommendations

The study examined the effect of environmental disclosure determinants on the quality of environmental disclosure of oil and gas firms listed on Nigerian Stock Exchange. Variables such as return on assets, share ownership distribution, size of the firm and financial leverage were used as proxies on the determinants which is the independent variable, while environmental disclosure quality rating index was used to extract information for the dependent variable which is the quality of environmental disclosure. It was concluded that in order to clarify the effect of determinants on the quality of environmental disclosure of oil and gas firms listed on Nigeria, financial leverage return on assets and firm size have a significant effect on the quality of environmental disclosure of listed oil and gas firms in Nigeria while share ownership distribution have a negative effect. The findings further uphold the submission of previous studies that these variables denote factors that influence the perception which enhance the quality of environmental disclosure among listed oil and gas firms in Nigeria. The implication of the finding is that increase in return on assets of firms will bring better-quality environmental reporting, also increase in firm size and financial leverage will lead to proportionally increase in the environmental disclosure of the firms in order for them to protect their goodwill and image.

It was recommended that the Accounting regulatory bodies in Nigeria; Financial Reporting Council of Nigeria, Nigerian Stock Exchange and Accounting Professional bodies are encouraged to put in place environmental disclosure framework in line Global Reporting Initiative and take necessary steps in motivating listed oil and gas firms in disclosing environment activities in their annual reports in order to provide greater transparency and help build superior trust.

REFERENCES

Angela, P., & Handoyo, S. (2021). The Determinants of Environmental Disclosure Quality: Empirical Evidence from Indonesia. *Journal of Accounting Auditing and Business, 4*(1), 41-53
.

Atang, G. T., & Eyisi, S. A. (2020). Determinants of Environmental Disclosures of Listed Manufacturing Firms in Nigeria. *International Journal of Management Studies and Social Science Research, 2*(1), 143-150.

Baalouch , F., Ayadi, S. D., & Huss, K. (2019). A study of the determinants of environmental disclosure quality: evidence from French listed companies. *Journal of Management and Governance, 23*, 939-971 https://doi.org/10.1007/s10997-019-09474-0.

Bassey , E. B., Sunday , O. E., & Okon, E. E. (2013). The Impact of Environmental Accounting and Reporting on Organizational Performance of Selected Oil and Gas Companies in Niger Delta Region of Nigeria. *Research Journal of Finance and Accounting, 4*(3), 57-73.

Braga, C., Silva, P. P., & Santos, A. (2015). Level of Disclosure of Environmental Information in the Electricity Sector: An Empirical Study of Brazil and the Iberian Peninsula. *Global Journal of Management and Business Research, 15*(9).

Brammer, S., & Pavelin, S. (2006). Voluntary environmental disclosure by large UK companies. *Journal of Business Finance& Accounting, 33*(7), 1168-1188.

Brammer, S., Brooks, C., & Pavelin, S. (2006). Corporate Social Performance and Stock Returns: UK Evidence from Disaggregate Measures. *Journal of Financial Management, 35*(3), 97-116.

Burgwal, D., & Vieira, R. O. (2014). Environmental Disclosure Determinants in Dutch Listed Companies. *R. Cont. Fin. – USP, São Paulo, 25*(64), 60-78.

Chang, K. (2013). The effects of ownership and capital structure on environmental information disclosure: empirical evidence from Chinese listed electric firms. *WSEAS Transactions on Systems, 12*(12), 637-649.

Clarkson, P. M., Li, Y., & Richardson, G. (2007). Revisiting the Relationship between Environmental Performance and Environmental disclosure: An Empirical Analysis. *Accounting, Organizations and Society*.

Darus, F., Mad, S., & Yusoff, H. (2014). The importance of ownership monitoring and firm resources on corporate social responsibility (CSR) of financial institutions. *Procedia – Social and Behavioral Sciences, 145*, 173-180.

Das, S., Dixon, R., & Michael, A. (2015). Corporate social responsibility reporting: a longitudinal study of listed banking companies in Bangladesh. *World Review of Business Research, 5*(1), 130-154.

Dibia, N. O., & Onwuchekwa, J. C. (2015). Determinants of Environmental Disclosures in Nigeria: A Case Study of Oil and Gas Companies. *International Journal of Finance and Accounting, 4*(3), 145-152 DOI: 10.5923/j.ijfa.20150403.01.

Dong, Y., Fu, R., Gao, F., & Ni, C. (2015). Determinants and economic consequences of nonfinancial disclosure quality. *available at: http://papers.ssrn.1com/sol3/papers.cfm?abstract_id=2555416*.

Esa, E., Anis, J., & Remali, A. (2015). Ownership and board structures and CSR disclosure: an empirical investigation of malaysian top 100 largest companies. *available at: www.researchgate.net/publication/273634887_NSEBA_paper_Cg__CSR*.

Freeman, R. E. (2004). A Stakeholder Theory of Modern Corporations: Ethical and Business. In R. E. Freeman, *A Stakeholder Theory of Modern Corporations: Ethical and Business* (7th ed.)

Gantyowati, E., & Agustine, K. F. (2017). Firm's Characteristics and CSR Disclosure, Indonesia and Malaysia Cases. *Review of Integrative Business and Economics ResearchOnlineCDROM, 6*(3), 131–145.

Gatimbu, K. K., & Wabwire, J. M. (2016). Effect of corporate environmental disclosure on financial performance of firms listed at Nairobi securities exchange, Kenya. *International Journal of Sustainability Management and Information Technologies, 2*(1), 1-6.

Global Reporting Initiative (GRI) . (2013a & b) . G4 sector disclosure for financial and sustainability reporting guidelines services. *Retrieve online from: www. globalreporting.org/resourcelibrary/GRI-G4-Financial-Services-Sector-Disclosures.pdf*

Igbekoyi, O. E. (2015). *Performance Measurement System and the Nigerian Manufacturing Sector.* PhD Thesis, Department of Management and Accounting, Obafemi Awolowo University, Ile-Ife, Nigeria.

Inun Jariya, A. M. (2015). Determinants of Environmental Disclosure in Annual Rerports of Sri Lankan Listed Manufacturing Companies. *Journal of Management, 12*(1), 99-112 DOI: 10.4038/jm.v12i1.7591.

Iredele, O. O. (2020). Measuring performance in corporate environmental reporting in Nigeria. *Measuring Business Excellence, 24*(2), 183-195, doi: 10.1108/MBE-05-2019-0040.

Ismail, A. H., Rahman, A. A., & Hezabr, A. A. (2018). Determinants of corporate environmental disclosure quality of oil and gas industry in developing countries. *International Journal of Ethics and Systems, 34*(4), 527-563.

Leary, C. A. (2003). *An examination of environmental disclosures in 10K reports and GAAP compliance.* Unpublished PhD Thesis, Virginia Commonwealth University.

Ohidoa, T., Omokhudu, O. O., & Oserogho, I. A. (2016). Determinants of Environmental Disclosure. *International Journal of Advanced Academic Research, Social & Management Sciences, 2*(8), 49-58.

Raymond, A. E., John-Akamelu, R., & Chigbo, B. E. (2016). Effect of Sustainability Environmental Cost Accounting on Financial Performance of Nigerian Corporate Organizations. *International Journal of scientific research and management (IJSRM), 4*(8), 4536-4549.

Roy, A., & Ghosh, S. (2011). The Bilateral Association between Discretionary Environmental Disclosure Quality and Economic Performance: An Asian Perspective. *The IUP Journal of Accounting Research & Audit Practices, 10*(2), 7-27.

Sulaiman, M., Abdullah, N., & Fatima, A. H. (2014). Determinants of Environmental Reporting Quality in Malaysia. *International Journal of Economics, Management and Accounting, 22*(1), 63-90.

Suttipun, M., & Stanton, P. (2012). Determinants of Environmental Disclosure in Thai Corporate Annual Reports. *International Journal of Accounting and Financial Reporting, 2*(1), 99-115 DOI: 10.5296/ijafr.v2i1.1458.

Tze, S. O., Huey, S. T., Han, H. G., & Siew, B. T. (2016). Relationship between environmental disclosure and firm performance of public listed companies in Malaysia. *International Business Management (Medwell Journal), 10*(4), 461-467.

Verrecchia R.E. (1985). Voluntary disclosure theory: Discretionary disclosure. *Journal of Accounting and Economics*, *5*, 179-194.

Welbeck, E. E., Yaw Owusu, G. M., Bekoe, R. A., & Kusi, J. A. (2017). Determinants of environmental disclosures of listed firms in Ghana. *International Journal of Corporate Social Responsibility*, *2*(11), 1-12, https://jcsr.springeropen.com/articles/10.1186/s40991-017-0023-y.