

Corporate Characteristics and Environmental Disclosure Quality In Listed Oil And Gas Companies In Nigeria

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Abstract

Nigeria has remained recognized as one of those nations with great level of environmental pollution that contributes significantly to global environmental worries. The broad objective of this study is to investigate corporate characteristics and quality of environmental disclosures in pre and post IFRS adoption among Nigeria Oil and gas companies from 2004 to 2019. Ordinary Least Square Regression analysis was used to determine the influence of corporate characteristics on the quality of the environmental disclosure. The results show that during pre IFRS period, leverage ratio has significant positive relationship with environmental disclosure quality; firm size, return on asset, and firm age have no significant relationship with environmental disclosure quality. On the other hand, in post IFRS adoption, Firm size and firm age have positive and significant relationship with environmental disclosure quality; while leverage ratio and return on asset have no significant relationship among the oil and gas industry in Nigeria. The overall result shows that contribution of profitability, leverage, firm age and firm size to environmental disclosure quality reduced after the adoption of IFRS among the oil and gas industry in Nigeria. It is therefore recommended that companies should be given incentives that would make them grow; as firm size has positive and significant relationship with environmental disclosure quality after IFRS adoption in Nigeria. The bigger the firm, the better the environmental disclosure quality. The continued existence on of firms should also be encouraged as after IFRS adoption, firm age has positive and significant relationship with environmental disclosure quality.

Keywords: *corporate characteristics, environmental disclosure, content analysis and pre and post IFRS.*

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I. Introduction

The solution to global environmental problems had dominated series of conferences and summits on climate change and global warming, wherever leaders of a number of countries have convened to discourse the issue of environmental improvement and remediation. There is a growing importance on corporations to be ecologically accountable in reaction to the adverse effects of their actions on the atmosphere and community. In the midst of others, Nigeria has been acknowledged as one of those nations with high level of environmental contamination that contributes significantly to global environmental complications (Issa et al., 2021). Health Effects Institute (2019) reported that Nigeria ranks world's seventh highest gas flaring nation and that Nigeria has the largest percentage of pollutants caused by air pollution in Africa in 2019.

In the bid to satisfy their shareholders financially, the actions and activities of companies in Nigeria had brought the country to the tenth most polluted nation in the world (AirVisual, 2018). The motivation for this study stems from the fact that the activities of the oil and gas companies had brought deficiencies and shortcomings in the Niger/Delta region where the oil is being sourced. Nigeria desires for sustainable development remains a mirage as environmental degradation had not been solved in the oil prospecting zone. The weakening of ozone layer, the emission of carbon dioxide and other toxic gas substances on public's health is the most perplexing problem of the biosphere nowadays (Gul'nar et al., 2019; Anyalechi et al., 2019; Bekturganova et al., 2019).

Previous researchers that had investigated environmental disclosure reporting and corporate performance included Uwalomwa (2011); Bassey et al. (2013) and Benjami et al. (2017). The outcome of the studies showed that there was a significant positive relationship between environmental disclosure and companies' performance. On the contrary, studies conducted by Sulaimana et al. (2014); Vogt et al. 2017; Onyinye and Amakor (2019) and Nkwoji (2021) found that environmental disclosures have significant negative relationship with firm's profitability. Also, Omaliko et al. (2018) found that there was strong indication that

Nigerian oil and gas firms did comply with the disclosure requirements of Global Reporting Initiative (GRI) in the period under review.

On the other hand, Odoemelam and Okafor (2018) found that the level of environmental disclosure of nonfinancial companies in Nigeria was quite poor. Nigeria adopted the use of IFRS in her financial reporting in 2012 in order to have globally acceptable financial reporting (Jayeoba et al., 2016). Research had shown that post-adoption of IFRS in Nigeria, showed disclosures and transparency that have better-quality than the pre IFRS, but still leave ample opportunity for compliance and regulation (Abe et al., 2020). Alabede (2016) studied accounting information value relevance in pre and post IFRS period, while Nwoye and Okoye (2018) investigated integrity scores of selected manufacturing companies' financial disclosures in their pre and post IFRS financial reporting regimes of Nigeria.

Others also found that the quality of environmental disclosures of environmental sensitive industries was better than those companies in non-environmental sensitive industries (Ofoegbu et al., 2018). Hence, this study shall focus on Nigeria oil and Gas industries as they are environmentally sensitive industries. This study covered the period from 2004 to 2019. The choice for the period is to secure a maximum balanced period of eight years pre IFRS (2004 - 2011) and eight years post IFRS (2012 – 2019) adoption in Nigeria. It was evident from literature that the results on environmental disclosure practices remained inconclusive, which still made the concept a subject of discourse. It was also revealed that the investigation of the influence that company characteristics have on the environmental disclosure practices of companies was not adequately addressed; specifically focusing on the pre and post IFRS adoption era.

Thus, the broad objective of this study is to investigate corporate characteristics and environmental disclosures quality of oil and gas companies listed on Nigeria Exchange Group Plc. in both pre and post IFRS adoption in Nigeria (2004 - 2019). The study chose three frequently used corporate characteristics as determinants of environmental disclosures - profitability, firm size and firm age based on previous studies. Firm leverage served as control variable (Sulaiman et al. 2018; Onyinye et al.2019; and Nkwoji, 2021). Corporate characteristics serve as the independent variables while environmental disclosures quality is the dependent variable. The variables would be tested by the study in order to achieve the broad objective of the study.

This paper is sectioned into five parts. This above section takes care of the introduction. The second part deals with the literature review. The third part deals with the data and methodology. The fourth elucidates the data analysis and discussion of findings while the fifth segment deals with the conclusion and recommendations.

II. Literature Review and Hypotheses Development

2.1 Conceptual Review

Researchers had studied very well on **Corporate Characteristics**. In spite of the fact that studies had recommended making environmental disclosure obligatory, corporate characteristics features had been found influencing environmental disclosure by some studies with mixed results (Mohammed, 2018; Sulaiman et al., 2018; Onyinye & Amakor, 2019). This study contributed to the debate by investigating the effect of some corporate internal characteristics like: profitability, firm size, and firm age of a developing country like Nigeria on quality of environmental disclosures by the sampled companies.

2.1.1 Profitability

Cooperate profit is the operational results attained by a singular or a set of individuals in a business effort at a particular period of time. Profitability is used as total degree of a company's commercial power over a given period. It could be used to match similar businesses across related occupational or to match industries or sectors with each other for ranking in order to aid decision making. It is the excess of revenue over cost. Some form of profits are: gross profit, net profit before tax, and profit after tax (Makadok, 2011; and Nkwoji, 2021). Thus, profitability measure the firms' strength. It is usually as result of surplus of revenue over operational cost. This study made used of return on asset as proxy for profitability, as it measures the efficient use of the company working capital of the firm

2.1.2 Firm Size

Big firms are more physically spread than small entities. Likewise, large firms are more unprotected to enquiry and inspection from the public and social and environmental pressure groups than small firms. As a result, large firms are likely to make more environmental disclosure. The size of a firm is usually synonymous with the capacity and display of fabrication competence and potential a firm has. Size of a firm can also be defined as the quantity and variety of service area an entity can provide to its clients. Such services are usually produced on economies of scale. Large firms have comparative advantage over smaller firms as large firms enjoy low cost of production; hence, high profit. The firm size have therefore form part of the core variable in most studies on firm's characteristics and environmental disclosures (Alkababji, 2014).

Therefore, large firms, have greater market share for products. Usually big firms have more diversified stakeholder groups thereby making such companies to reveal additional information than minor firms. Firm size is a variable that has been repeatedly used in studies on firms' characteristics and environmental disclosure. Volume of sales, value of asset, and number of employees have been used as proxies for firm size. (Punnose, 2008; and Abeyrathna & Priyadarshana 2019). Thus, firm size is the capacity a firm has in producing quantity and variety of services. This study made use of value of total assets as it represent the net worth of the firm as proxy for firm size.

2.1.3 Firm Age

Mature companies are usually up-to-date with current developments in their industries. They are more appropriate at performing on new policies to sustain their business. Mature companies are more expected to involve in environmental performance to impact sensitively on their business and to legalize their survival. Grown-up firms are more likely to be larger firms and are prepared to provide information to influence their uninterrupted survival (Shuaibu, 2020). Grown-up firms may well have additional knowledge and precaution when it comes to their corporate environment. Learning-by-doing models also advocated that older companies may benefit from their superior corporate experience. On the other hand, young firms could also strive to achieve minimum proficient balance as they would want to make effort to overcome their problem of newness. Nonetheless, once young companies have survived the initial few years, they become stabilized and follow their new organizational practices (Coad, 2014). Thus, age signifies how long the firm has being in business. Older firms seems to have more experienced to disclosure environmental policies but young firms could disclosure environmental policies after overcoming their early periods of existence.

2.1.4 Firm Leverage

Though firm leverage is not one of the company characteristics, researchers posited that profitability and firm size could be affected significantly by leverage; hence its inclusion in this study (Kalantonis et al., 2021). Firm with much leverage use more debts in financing its business than its own capital. Low leveraged companies mean such entity employ less of loaned out capitals in its processes. Oftentimes, leveraged companies are likely to increase disclosure to reduce agency costs between insiders and creditors. Therefore, leveraged companies are likely to make additional environmental disclosure to satisfy stakeholders (Glancy, 2015). The greater the leverage, the more risky the company will be. The interest payment and principal payments due on debt capital are fixed obligations which must be paid willy-nilly.

There are obligations that must be paid regardless of the level of operating profits. Failure to settle such obligations may lead to bankruptcy and eventually leading to the transfer of the ownership of the control of a company to bondholders. The process of securing a debts in form of long term often leads firms to enter into restrictive covenant from the creditor (Ahmad et al., 2009). Thus leverage is debts on long term negotiation; debt covenant may compel disclosure of environmental policies.

2.1.5 Environmental Disclosure

Environmental Disclosure is an official declaration that explains the eco-friendly efforts of an entity which usually includes the purposes of the company on environmental strategic remediation. How the operation of the firm had impacted the environment are regularly reported and released to the public in the firm's annual report (Ong et al., 2016). The Association of Chartered and Certified Accountants, defined environmental disclosures as a combination of descriptions, which consists of the clarifications, purposes, and statistical data, such as the amount of resources expended, and pollution done for a particular accounting period on the environmental effect of the company (Olowookere et al., 2021). Presently, there are no formal guidelines that require oil and gas companies in Nigeria to disclosure environmental issues. However, there is a Global Reporting Initiative which could serve as a guide to companies in the oil and gas sector.

Global Sustainability Standards Board (GSSB) issued environmental disclosure Indexes. The indexes are standards in measuring the effects an entity has on the environment. Global Reporting Initiative 307 deals with environmental compliance. Impact in the GRI Standards are usually referred to the effect a firm has on the economy, the surroundings, and/or society, which in turn can indicate its influence which may be encouraging or damaging to sustainable development (GRI, 2018). Thus, this study chose six aspects in GRI Standards Glossary of 2018. These are Energy, Materials, Water, Waste, Biodiversity and Emissions. The six areas were chosen as they form the core operational expenses in Nigeria oil and gas firms. Environmental disclosures are usually measured by quantitative or qualitative means. Researchers such as Ohidoa et al. (2016); Osazuwa et al. (2016), and Abubakar (2017) employed quantitative method by measuring the level of disclosure by counting the number of words, sentences or pages in the annual report. The variances among companies on quantitative approach due to differences in writing style; paging and front typing size had rendered the style inadequate (Brammer and Pavelin, 2006).

The current study applied both quantitative and qualitative as measured by Sulaimana, Abdullah, and Fatima (2014), as the two approaches have their respective advantages. Thus, environmental disclosure quality shows how the task of a firm had affected the atmosphere and environment. These effects are commonly conveyed to both the shareholders and other stakeholders in the firm's yearly statements.

2.2 Theoretical Review

2.2.1 Stakeholders' Theory

Stakeholders' Theory was originally introduced at Stanford research institute (SRI) by Freeman, 1984). The elementary proposal of the stakeholders' theory is that corporate success is reliant upon the effective administration of all the interactions that an entity has with all its stakeholders (current and potential shareholders, and other stakeholders). The concept affirms that, administrators must please suppliers, employees, customers, local community, etc. who can influence the firm's results. Stakeholders' theory maintains that it is not appropriate for managers to focus completely on the needs of shareholders alone. The implication of this theory on this study is that, it would be beneficial for the entity to engage in certain environmental activities that non-shareholders recognized as important, since without this, these groups might withdraw their backing from the firm (Solomon, 2020).

Applying the stakeholders' theory, Solomon 2020 posited that management should make effort in building a framework that will be reactive to the distresses of all stakeholders who are being affected by extraordinary levels of environmental issues and degradations. Relying on stakeholders theory, Olowookere et al., (2021), and Nor et al. (2016) had examined the effects of environmental disclosure on financial performance, while employing Stakeholder theory, Olaleye, and Igbekoyi (2020) emphasized that management should use environmental objectives to reveal to all stakeholders the firm's policies on occupational health and safety, compliance obligation, and company environmental culture and policies.

2.2.2 Information Cost Theory

The assumption of Information Cost Theory posits that, due to large coverage of big or mega firms, they tend to provide adequate information to their stakeholders. One a corporate body has much potentials to raise the needed capital from the stock exchange, such an entity is very careful not to make available information that would reduce information asymmetry. Hence, information gap between managers and investors are reduced. This will consequently decrease the information cost incurred by shareholders to gather and analyze additional data. Also, the cost/benefit adjustment that occurs when private information is publicly disclosed is likely to be resolved since benefit is spread out among many shareholders (Cormier and Magnan, 1999).

On the other hand, small companies require less cost to make information available to their stakeholders. This is because of the closeness of the stakeholders to the management. These companies hardly invest enormous amounts in socially or environmentally related activities. Information about the environmental spending are accessible with ease from the management with little or no cost (Sulaimana et al., 2014). Hence, management is not reactive to extra broad publicly environmental disclosures.

2.2.3 Legitimacy Theory

Legitimacy theory was coined from the perception of social contract. It described in what manner organizations act in relation to generally determined anticipations based on the view of the companies by all the stakeholders (Mahmud, 2019). Social contract describes that an organization should safeguard its activities and its performance in satisfying social expectations of the stakeholders in order to have privileges of justifiable operation. Iredele and Ogunleye (2018) evaluated the environmental accounting practices in Nigeria and South Africa. They found that the major limitation to environmental accounting practices among sampled firms in Nigeria in African Journal of Science Policy and Innovation Management, Vol. 1., Issues 1 & 2 197 is institutional barriers. This barrier exists because of the weakness of institutional forces such as government, shareholders and all other stakeholders in promoting environmentally conscious society.

It is therefore legitimate for oil and gas companies in Nigeria to disclose their impact on their environment to stakeholders. Thus, legitimate theory is considered appropriate for the study as it explains the theoretical perspective for managers to satisfy stakeholders on environmental disclosure quality. Hence, the firm would have satisfied justice, legislation and environmental care.

2.3.1 Empirical Review

Uwalomwa (2011), conducted a study on the extent and nature of corporate environmental reporting presentation amongst listed firms in South Africa and Nigeria. The study employed a multiple regression method of data analysis to evaluate the relationships that existed between corporate performances and the level of corporate environmental disclosure among the sampled listed firms in Nigeria and South Africa. It was found that there was a significant positive relationship between the operating performances and environmental

disclosure. Nor, et al. (2016) researched into the effects of environmental disclosure on financial performance in Malaysia. The study employed content analysis method on companies' annual report to gather the required data in order to investigate the relationships. The study concluded that there was a significant relationship between total environmental disclosure and profit margin. Bani-Khalid et al. (2017) investigated how corporate characteristics influenced the amount of environmental disclosure in the manufacturing firms segment in Jordan. The researcher established a disclosure index to measure the amount of Environmental Disclosure for 2010, 2011 and 2012. The study employed panel data regression analysis. It was found that firm profitability was not related to environmental disclosure.

Shuaibu, (2020) examined the effect of firm characteristics on environmental disclosure quality of cement companies listed in Nigerian Exchange Group Plc. The study covered the period of 2013-2017. By means of GRI an index for environmental disclosure was measured. The study evaluated the data using multiple regression technique. It was found that firm size has significant impact on quality of environmental disclosure. Omoye, and Wilson-Oshilim, (2018) researched into antecedents of environmental disclosure in Nigeria. The study considered the historical background which are the ideas or influences that stimulate environmental disclosure in Nigeria from 2012 to 2016. Using a population of 167 firms, the researcher employed content analysis and historical data were acquired from financial statements and accounts of the one hundred and eighteen sampled firms. It employed panel least square regression. It was found that firm size have significant and positive relationship with environmental disclosure.

Ala (2019) researched into Board characteristics and environmental disclosure: Evidence from Jordan from 2014 to 2017 coverage period. Sixty three firms were studied. Data were sourced from the firms' financial statements to measure the level of environmental disclosure. It was found that there was general increase in the trend of the level of environmental disclosure during the studied period. The study also found a positive relationship between the firm size and the level of environmental disclosure. Yousra (2018) investigated the impact of corporate characteristics on environmental information disclosure in an empirical study on the listed firms in Egypt. The study selected the fifty liveliest companies in the Egyptian stock exchange. The analysis was done using the financial statements from the disclosure book for the period 2007-2011. Using the multiple regression model, findings revealed that there is an insignificant relationship between Firm Size and environmental information disclosure.

Bani-Khalid et al. (2017) examined how corporate firm age inclined on the amount of Environmental Disclosure in the Jordanian manufacturing firms. The study employed panel data regression analysis. It was found that firm age is not related to Environmental Disclosure quality. Shuaibu (2020) and Uwalomwa (2011) found that there was a significant positive relationship between firm age and the level of corporate environmental disclosures among selected firms in Nigeria. Shuaibu (2020) investigated the effects of company features on environmental disclosure quality in a research conducted on listed Cement Companies in Nigeria. STATA 12.0 was employed for the descriptive statistics, correlation and multiple regression analysis. The study found among other things that firm age, has significant impact on quality of environmental disclosure and the study recommended among others that Nigerian Government should make all listed cement companies in Nigeria to disclose their environmental disclosures mandatory rather than voluntary.

Ahmad (2017) conducted a study on influence of firms attributes on environmental disclosure in listed brewery companies in Nigeria Exchange Group Plc. With the aid of multiple regression technique, the study found that leverage has negative and insignificant influence on environmental disclosure. Amaechi and Nwankwe (2018) researched into Firm's specific attributes and voluntary environmental disclosure in Nigeria: Evidence from listed manufacturing companies. The study employed Descriptive and inferential statistics. The results study showed that there is a positive relationship between leverage and environmental disclosure quality of the sampled manufacturing companies in Nigeria. Helmi (2020) investigated corporate social and environmental voluntary disclosure in Saudi listed firms. The study made use of content analysis of the firm's financial reports from year 2016 to 2018. The guidelines from the Global Report Initiative guide lines G4 was used as the yards stick for measuring the extent of environmental reporting. The result shows that the firm financial leverage was positively related to corporate social and environmental voluntary disclosure in Saudi listed firms.

Mohammed (2018) evaluated the volume of environmental disclosure of listed Nigerian oil and gas companies for six (6) years pre- and six (6) years post IFRS adoption using quantity modified word count content analysis on yearly reports of the sampled companies. Employing *ex-post facto* research design, two sample t-tests statistical method was used to detect the statistical mean of the pre and post IFRS period of quantity environmental disclosure. Panel Corrected Standard Error Regression analysis is used to determine the influence of corporate characteristics on the volume of the disclosure. Panel regression analysis results show that corporate size, have positive and significant relationship with disclosure. Obtained results is perhaps consistent with legitimacy theory.

On the pre and post IFRS quantity of environmental disclosure, empirical review showed that Mohammed (2018) evaluated the volume of environmental disclosure of listed Nigerian oil and gas companies

for six (6) years pre- and six (6) years post IFRS (2006 - 2016) adoption using quantity modified word count content analysis on yearly reports of the sampled companies. Employing *ex-post facto* research design, two sample t-tests statistical method was used to detect the statistical mean of the pre and post IFRS period of quantity environmental disclosure. Panel Corrected Standard Error Regression analysis is used to determine the influence of corporate characteristics on the volume of the disclosure. Results from words counts content analysis showed 235% increase in quantity of environmental disclosure in six years post IFRS over disclosure of the six years pre IFRS. Also the two sample t-tests confirmed that the mean of environmental disclosure in six years post IFRS is greater than the mean of disclosure six years pre IFRS.

Abdulsamad, and Wan (2013) researched on global reporting initiative's environmental reporting in a study of oil and gas companies. The study evaluated the environmental quality of eight oil and gas companies in Malaysia. The Global Reporting Initiative (GRI) 2006 guidelines for Sustainability Reporting Guidelines were used as the parameters. Using content examination of their environmental reports in 2009 shows that they made sound efforts to reveal their environmental performance in harmony with the GRI Guidelines. Olaleye, and Igbekoyi (2018) studied stakeholders' expectations and environmental accounting practices of firms listed on Nigerian Exchange Group Plc. A sample of twenty four firms were picked from sixty seven manufacturing firms. Using regression the study shows that policies, environmental objectives and policies, compliance obligation, occupational health, and safety and company environmental culture are significantly associated with environmental accounting practices

Fatma et al. (2019) investigated the effects of various factors on the quality of environmental disclosure. The study was on of French listed companies in French stock market index for the period 2009 to 2014. The population was based on the 120 most actively traded stocks listed in Paris. The study developed a self-constructed index for the content analysis on environmental disclosure quality. Also characteristics as recommended by International Accounting Standards Board and GRI frameworks were employed to measure the extent of environmental disclosure quality. Using panel data specifications the study found that quality of disclosure remains relatively low in France in 2009 to 2014. Helmi (2020) evaluated the effect of firm size, leverage, manufacturing type, family ownership and government ownership on corporate social and environmental voluntary disclosure in Saudi Arabia listed firms. The study employed regression model to run the analysis. The result shows that Saudi companies' corporate social and environmental voluntary disclosure has improved over time when compared to previous studies to about 68% disclosure due to new corporate governance principles and IFRS application.

2.3.2 Gap in Literature

The empirical studies showed that that no consensus of opinion had been reached on how corporate characteristics affects environmental disclosure quality. There is still dearth of studies concerning pre and post IFRS adoption comparison among Nigeria oil and gas companies using GRI parameters; thus, the focus of this study.

Thus, it is hereby hypothesized in null form that:

H₀₁: There is no significant relationship between profitability and environmental disclosures in both pre and post IFRS adoption among Nigeria oil and gas companies.

H₀₂: There is no significant relationship between firm size and environmental disclosures in both pre and post IFRS adoption among Nigeria oil and gas companies.

H₀₃: There is no significant relationship between firm age and environmental disclosures in both pre and post IFRS adoption among Nigeria oil and gas companies.

H₀₄: There is no significant relationship between firm leverage and environmental disclosures in both pre and post IFRS adoption among Nigeria oil and gas companies

III. Data And Methods

The research design for this study is *Ex post-facto* research design. This is the best design to study facts that have already occurred. Data were sourced secondarily from the annual financial statement of the sampled companies from 2004 to 2019. The period was used in order to have a balanced period of eight years pre and eight years post Nigeria IFRS adoption. To ensure a balanced panel data set, only quoted oil companies were used. The population of the study comprises of all the eleven quoted Oil and Gas companies listed on the Nigeria Stock Exchange (NSE) as at 31st December, 2020. The sample size is the eleven firms of Nigeria oil companies listed on NSE as at 31st December, 2020. Census sampling method was used, therefore, all the population were used as sample for the study.

3.1 Model Specification

To test relationship between corporate characteristics and quality of environmental disclosure; the study adapted Omoye and Wilson-Oshilim (2018) model as specified below:

$$ED = \beta_0 + \beta_1 FSIZE_{it} + \beta_2 PAT_{it} + \beta_3 LEV_{it} + \beta_4 MS + \beta_5 IT_{it} + U$$

Where:

ED = Environmental Disclosure,
 β_0 = Constant, $\beta_1, \beta_2, \beta_3, \beta_4$ and β_5 = Coefficients,
 FSIZE=Firm size, PAT=Profits after tax, LEV=Leverage,
 MS=Managerial shareholding, IT = Industry type.

For the purpose of this study, Omoye and Wilson-Oshilim 2018 model is modified as specified in explicit form as:

$$Y = \beta_0 + \beta_1 X_{it} + \beta_2 X_{it} + \beta_3 X_{it} + \beta_4 X_{it} + \epsilon_{it} \tag{1}$$

Thus, the model is econometrically given as

$$QEDSC = \beta_0 + \beta_1 PROF_{it} + \beta_2 FSIZE_{it} + \beta_3 FAGE_{it} + \beta_4 FLEV_{it} + \epsilon_{it} \tag{2}$$

Where:

GRI = Quality of environmental disclosures
 β_0 = Slope of the intercept
 PROF = Corporate profitability measured by Return on Asset (ROA)
 F_SIZE = Corporate size measured by log of Total Asset
 F_AGE = Company Age measured years of incorporation.
 F_LEV = Corporate leverage measured by total Debt/Total Asset
 ϵ = The error term

The study's *a priori* expectation is $\beta_1 > 0, \beta_2 < 0, \beta_3 > 0$ and $\beta_4 > 0$

3.3 Measurement of Variables: The dependent variable of this study is Environmental Disclosure Quality. The study follows previous empirical study of Environmental Disclosure Quality (EDSCQ) of Sulaimana et al. (2014); Shuaibu, (2020), by measuring the EDSCQ through Content analysis. In conducting the content analysis, the study developed EDSCQ index to help in identifying what is (not) EDSCQ. This study adopts the Global Reporting Initiative (GRI) guideline being the most widely used corporate disclosure guideline to develop its disclosure index (Mohammed, 2018). Content analysis was the technique used in which qualitative data were changed to quantitative data methodically, to help the analysis for the study.

One (1) is given if evidences are disclosed in general terms; two (2) is awarded if evidences are disclosed in specific terms but non-quantitative; three (3) is scored if evidences disclosed are quantitative but non-monetary and four (4) given if evidences disclosed are quantitative and monetary. The framework consists of six (6) items. They are Energy, Materials, Water, Waste, Biodiversity and Emissions (GRI 307, 2018). It could be noted that data for this study is for sixteen (16) years, divided into two equal parts: eight years pre-IFRS (2004 – 2011) and eight post-IFRS (2012 - 2019). The number of sampled companies is eleven (11). Therefore, the data sets for the study are time series and cross sectional.

Table 3.1: Measurement of Variables

Variables	Variable Type	Measurement	Sources
Environmental Disclosure Quality. (Global Reporting Initiative (GRI))	Dependent Variable	Zero (0) if evidences are not disclosed. One (1) if evidences are disclosed in general languages. Two (2) if details are disclosed in specific languages but non-quantitative. Three (3) if details disclosed are quantifiable but non-financial. Four (4) if evidences disclosed are quantitative and financial.	GRI 307 2016; Sulaimana et al. 2014.
Profitability {Return on Asset} (ROA)	Independent Variable	Profit Before Tax Divided by Net Asset expressed as a percentage	Muhibudeen, & Abdulrahman 2020.
Firm Size (F_SIZE)	Independent Variable	Log of total assets	Ahmadi et al. 2018
Firm Age (F_AGE)	Independent Variable	The year listed on the NSE or incorporation	Muhibudeen, & Abdulrahman 2020;

Leverage Ratio
(F_LEV)

Control Variable

Total long term liability divided by the total asset

Uwalomwa 2011

Source: Author's compilation 2021

The summary description of variables used in this study as well as their source is presented in the table 3.1. The independent variables are profitability measured by profit before tax divided by net asset expressed as a percentage; firm size surrogated by log of total assets; firm age measured by the year listed on the NSE and leverage ratio proxy by total long term liability divided by the total asset.

IV. Data Analysis And Discussion Of Findings

Table 4.1: Descriptive Statistics Results

Variables	Mean	Std. Dev.	Minimum	Maximum	Skewness	Kurtosis
GRI	0.314157	0.176937	0.000000	0.833333	1.147470	4.505283
F_AGE	1978.636	14.51555	1956.000	2009.000	0.475486	2.589563
F_SIZE	16.86307	2.590170	8.460000	23.85000	0.111549	2.855989
LEV_RATIO	32.08545	185.8162	-561.2500	1177.090	4.629499	27.94357
ROA	27.80835	127.0967	-257.5900	1316.410	6.654353	64.75142

Source: Researcher's computation (2021)

Descriptive analysis was used to encapsulate the summary of the co efficient in the data sets. Table 4.1 shows the result of descriptive statistics test utilizing the data mean, median, standard deviation, skewness and kurtosis. The average mean of environmental impact assessment as measured by GRI for the listed oil companies during the study period is 0.3142 with standard deviation of 0.1769. This implies that there exists no significant variation among the values of environmental disclosure across the listed oil companies in Nigeria during the periods. The mean value of firm size is 16.86 with a standard deviation of 2.590. This shows that there is large variation across the sample of listed oil companies in Nigeria. Hence, the highly deviated firm size may have significant impact on the environmental impact of these firms in Nigeria. The mean value of leverage is 32.086.

In table 4.1, the analysis of ROA shows a mean value of 27.808 with the value of standard deviation of 127.097. This implies that ROA through the analysis of its standard deviation revealed that ROA of the oil companies deviates significantly from its mean value up to 127.09. GRI, leverage, ROA have a leptokurtic distribution (i.e. a distribution that displays a positive value of excess kurtosis). This is because their kurtosis values (4.505, 27.944, 64.751) respectively are greater than 3 and they have a very high peakedness while firm size has a platykurtic distribution given that their respective kurtosis values of 2.855989 is less than 3. As regards skewness, all the variables are positively skewed. Their positive values of skewness show that, the coefficients of the variables are positive and their means are greater than median values

4.2 Correlation Matrix

The correlation test was carried out to determine the relationship among the variables of the study at 5% level of significance.

Table 4.3: Correlation Results

	GRI	F_AGE	F_SIEZE	LEV_RATIO	ROA
GRI	1.000000				
F_AGE	-0.221975	1.000000			
F_SIZE	0.140000	-0.281928	1.000000		
LEV_RATIO	0.354810	-0.046992	-0.128673	1.000000	
ROA	-0.038472	-0.063455	-0.138810	0.024087	1.000000

Source: Researcher's computation (2021)

The table 4.3 briefly shows the relationship of variables with each other. GRI is positively related to firm size (0.1400) and leverage (0.3548). This means that an increase in these independents variables will result in the increase in environmental disclosure quality in the proportion of 14 per cent and 35.48 per cent, respectively. However, firm age and ROA showed a negative correlation values of (-0.2219 and -0.0384) pairs with GRI, implying that one percent increase in return on assets (profitability) will decrease environmental impact assessment by 22.19 percent and 3.84 per cent respectively. Table 3 therefore shows that, in general, correlations between independent variables are not high; an indication of absence of multi-collinearity which

usually associates with time series data. The fact that the highest relationship among the variables was 35% which was lower than the threshold of 80% as pointed out by (Gujarati & Dawan, 2009).

Table 4.4 Summary of Unit Root Test Result

VARIABLE	PP-Fisher Chi Square		VARIABLE	PP-Fisher Chi Square	
	At Level	I(d)		At Level	VARIABLE
GRI	0.0187**	I(0)	LEV_RATIO	0.0000**	I(0)
F_SIZE	0.0015**	I(0)	ROA	0.0000**	I(0)

Source: Researcher’s Computation (2021)

Table 4.4 shows the results for unit root test of PP-Fisher Chi Square. It reveals that all the variables are stationary at their level form indicated as I (0). This implies that there is no form of co-integration relationship among the variables.

• **Hausman Specification Test**

The result of statistical analysis showed a probability value of 0.8640 which is higher than the benchmark 0.05 level of significance. Thus, the result meant that, random effect model was appropriate and it was adopted for the analysis of the study data. (the null hypothesis was accepted)

• **Robustness Test**

Table 4.5: Heteroskedasticity Test - Breusch-Pagan-Godfrey

F-statistic	1.078395	Prob. F(4,171)	0.3688
Obs*R-squared	4.330471	Prob. Chi-Square(4)	0.3631
Scaled explained SS	8.167266	Prob. Chi-Square(4)	0.0856

Sources: Author’s compilation, 2021

The results above showed a p-value of 0.3688 which is greater than the threshold of 0.05, therefore, the null hypothesis which states that “the data is not heteroscedastic” is accepted. This implies that the regression analysis can be used for conclusion purpose.

Multicollinearity Test: Firm age, Firm size, Leverage ratio, and ROA have VIF of 1.07610, 1.140769, 1.0246494 and 1.031674 respectively. A VIF above 10 indicates high correlation. The above result of multicollinearity test using variance inflation factor, all the values of VIF showed values that are above 1.000 but less than 10. Thus, there is no problem of multicollinearity amongst the independent variables

4.3. Regression Results

Table 4.6 Result on Panel Regression Result on Pre and Post IFRS

Periods	Observation	Variables				F-statistic	R-Squared
		F_SIZE <i>Coefficient</i>	LEV_RATIO <i>Coefficient</i>	ROA <i>Coefficient</i>	F.Age		
Pre-IFRS (2004 – 2011)	8 88	0.007316 (Prob: 0.2595)	0.000487 (Prob: 0.0000)	-9.57E-05 (Prob.: 0.3593)	-0.001272 (Prob: 0.2852)	0.0000	0.3869
Post-IFRS (2004 – 2011)	8 88	0.022906 (Prob: 0.0030)	-3.48E-05 (Prob: 0.8013)	0.000224 (Prob.: 0.4200)	0.003035 (Prob.: 0.0218)	0.0128	0.1402

Sources: Author’s compilation, 2021

Table 4.6 shows the result of the panel regression analysis test of relationship between corporate characteristics and quality of environmental disclosure. To test whether there is significant relationship between firm size and environmental disclosure quality in pre and post IFRS; the coefficient of firm size stands is at 0.007316 and 0.022906 with probability values of 0.2595 and 0.0030 in pre and post IFRS adoption

respectively. It means that firm size has positive but insignificant relationship with environmental disclosure quality in pre IFRS adoption while after the IFRS adoption firm size has positive but significant relationship with environmental disclosure quality as the p value of 0.0030 is less than 0.05.

To test whether there is significant relationship between leverage ratio and environmental disclosure quality in pre and post IFRS; the coefficient of leverage ratio stands at 0.000487 and -3.48E.05 with probability values of 0.0000 and 0.08013 in pre and post IFRS adoption respectively. It means that leverage ratio has positive and significant relationship with environmental disclosure quality in pre IFRS adoption as the p value of 0.000 is less than 0.05; while after the IFRS adoption, leverage ratio has negative but insignificant relationship with environmental disclosure quality as the p value of 0.08013 is more than 0.05.

To test whether there is significant relationship between profitability and environmental disclosure quality in pre and post IFRS; the coefficient of profitability stands at -9.577E-05 and 0.00024 with probability values of 0.3593 and 0.4200 in pre and post IFRS adoption respectively. It means that profitability has negative and insignificant relationship with environmental disclosure quality in pre IFRS adoption as the p value of 0.3593 is more than 0.05; while after the IFRS adoption profitability has positive but insignificant relationship with environmental disclosure quality as the p value of 0.4200 is less than 0.05.

To test whether there is significant relationship between firm age and environmental disclosure quality in pre and post IFRS; the coefficient of firm age stands at -0.001272 and 0.003035 with probability values of 0.2852 and 0.0218 in pre and post IFRS adoption respectively. It means that firm age has negative and insignificant relationship with environmental disclosure quality in pre IFRS adoption as the p value of 0.2852 is more than 0.05; while after the IFRS adoption firm age has positive and significant relationship with environmental disclosure quality as the p value of 0.0218 is less than 0.05.

On the overall the R-squared stands at 0.3869 in pre IFRS adoption while the R-squared stands at 0.1402 in post IFRS adoption. This shows the overall significance of the results. This implies environmental disclosure quality became less after the adoption of IFRS among Nigeria oil and gas companies. The F-statistics stand at 0.0000 and 0.0128 for both pre and post IFRS respectively. This invariably suggested clearly that simultaneously, corporate characteristics measured by firm size, firm age, leverage, and return on assets were jointly and significantly associated with the dependent variable (environmental disclosure quality measured by global report initiative (GRI)).

Thus, there is significant relationship between corporate characteristics and the extent of corporate environmental disclosure quality among Nigerian oil and gas companies as the F-statistics was less than 0.05.

V. Discussion on Findings

Firm size has positive but insignificant relationship with environmental disclosure quality in pre IFRS adoption. In post IFRS adoption firm size has positive and significant relationship with environmental disclosure quality. The implication of this is that big firms used their spread tentacles of wide coverage to implement environmental disclosure quality after the adoption of IFRS among Nigerian oil and gas companies. The firm size significance positive association with Environmental disclosure supported the work of Shuaibu, K. (2020).

On leverage ratio, it has positive and significant relationship with environmental disclosure quality in pre IFRS adoption. After the IFRS adoption leverage ratio has negative but insignificant relationship with environmental disclosure quality. The negative relationship supported Onyinye and Amakor (2019), but against Benjamin et al. (2017). The implication is that after IRRS adoption debt capital played no significant role on environmental disclosure in Nigeria oil and gas companies. The firms with debts capital circumvented efforts on environmental disclosure quality.

Profitability has negative but insignificant relationship with environmental disclosure quality in pre IFRS adoption; while after the IFRS adoption profitability has positive but insignificant relationship with environmental disclosure quality. This indicates that although before IFRS firm profitability contributes negatively to Nigeria oil and Gas companies but post IFRS adoption, profitability encourages the sampled companies to do environmental disclosure, although their efforts was immaterial on environmental disclosure quality.

After the IFRS adoption, firm age has positive and significant relationship with environmental disclosure quality. This implies that older firms have gained experience. Hence in support of Stakeholders' theory they practiced upright environmental disclosure quality. This positive relationship is against the study of Bani-Khalid et al. (2017).

On the overall the R-squared stands at 0.3869 in pre IFRS adoption while the R-squared stands at 0.1402 in post IFRS adoption. This indicates that the contribution of the four firm characteristics towards environmental disclosure fell after IFRS adoption. The F-statistics stand at 0.0000 and 0.0128 for both pre and post IFRS. This shows the overall significance of the results. The indication is that although the management follow Stakeholders' theory by disclosing environmental quality in both pre and post IFRS, but management's

commitment to environmental quality fell after IFRS adoption among Nigeria oil and gas companies. This may likely due to weak institutions like Federal Reporting Council of Nigeria (FRCN) who is saddled to harmonize Nigeria gap of Statement of Accounting Standards with International Financial Reporting Standards.

VI. Conclusion And Recommendation

This study concludes that firm size has positive but not significant relationship with environmental disclosure quality before Nigeria adopted IFRS; the relationship between firm size and environmental disclosure quality became positive and significant in post IFRS adoption among the oil and gas companies in Nigeria from 2012 to 2019 in Nigeria. The relationship between leverage percentage and environmental disclosure quality in pre IFRS adoption was positive; this relationship became negative but insignificant in post IFRS adoption among the oil and gas companies in Nigeria during the study period. Corporate profitability and environmental disclosure quality has negative but insignificant relationship before IFRS adoption but the relationship became positive but insignificant.

The relationship between firm age and environmental disclosure quality was negative before IFRS adoption but positive in post IFRS. The relationship was significant in both periods. From the reduction of R-squared from 0.3869 in pre IFRS adoption to 0.1402 in post IFRS, this study concludes that the contributions of profitability, firm size, firm age and leverage towards environmental disclosure quality went down after the adoption of IFRS among Nigeria oil and gas companies.

It is hereby recommended that:

- i. Nigeria oil and gas companies should be given incentives (tax holidays, free import duties etc.) that would make the firm grow. This is because firm size has positive and significant effect on their environmental disclosure quality. The bigger the firm after IFR adoption, the better the environmental disclosure quality.
- ii. Nigeria government should encourage Nigeria oil and gas companies' survival. The study revealed positive and significant relationship between firm age and environmental disclosure quality in post IFRS. This indicated that the more the age of the firm in oil and gas companies in Nigeria the greater the environmental disclosure quality.

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