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DETERMINANTS OF CORPORATE ENVIRONMENTAL ACCOUNTING DISCLOSURE OF OIL AND GAS FIRMS IN NIGERIA

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ABSTRACT

This study examines the cognitive factors that determine corporate environmental accounting disclosures (CEAD). The population consists of all the fourteen (14) listed oil and gas firms in Nigeria. Panel data were obtained from the annual reports and accounts of the firms for the period of 2010 to 2019. A correlational research design was used and the data were analyzed using the Generalized Least Square regression (random model). The study found that firm size; leverage and multi-national companies have positive significant influence on the CEAD of listed oil and gas firms in Nigeria. Whilst firm growth has a negative significant relationship with the CEAD of listed oil and gas firms in Nigeria. It is concluded that larger firms and multi-national companies in the Nigerian oil and gas sector have high likelihood of disclosing environmental accounting information. Thus, it is recommended that the management of listed oil and gas firms in Nigeria should expand their size by acquiring more assets, maintain a consistent growth by exploring more opportunities while improving their gearing ratio to ensure a stable balance between the proportion of debt and assets. It therefore, highlighted the need for Securities and Exchange Commission (SEC) to come up with enabling laws geared towards ensuring that listed oil and gas firms in Nigeria embrace CEAD. Furthermore, Global Environmental Disclosure Index (GEI) should be considered as the most acceptable yardstick for measuring environmental accounting by the listed oil and gas firms in Nigeria.

Key Words: Corporate environmental accounting disclosure, Corporate attribute, listed oil and gas

INTRODUCTION

Ever since industrialization was declared from the early 1760s to sometime between 1820 and 1840, a promising land and a prerequisite stage that requires all countries around the globe to embrace in order to adapt to the dynamic and competitive business terrain is environmental problems particularly in respect of pollutions and emissions thus, companies have started providing information about their environmental performance and policies owing to increased accountability (Abdulazeez, 2011). These decisions and actions were retroactive response to growing public pressures globally, demanding for increase participation and disclosure of environmental management and performance, particularly by those firms that usually and directly emits on the environment such as; manufacturing firms, oil & gas producing firms, mining and network providing firms. The global expectation concerning the disclosure of corporate environmental management information was be to a certain extent and correspond the ratio of the implications of their operations to the mother environment.

Today, business firms are becoming more sensitively aware of their functional roles and responsibilities towards the operating environment, resulting in a development in social and environmental reporting. Corporate managers/organizations use the accounting medium to communicate to the stakeholders' corporate information not only about the issues pertaining to their economic wellbeing but also relating to their society and environment within which they operate. Meanwhile, corporate financial reporting is the window through which companies communicate to the outside parties particularly on issues about their performance in terms of growth, profitability, efficiency, and responsibilities both social and environmental (Shehu, 2011). In Nigeria, there has been an increasing pressure from the diverse stakeholders group including business customers, investors, local communities and government among others calling and demanding for improve disclosure of information relative to environmental performance (Abdulazeez & Salisu, 2016). Consequently, companies that are involved in environmental degradation were voluntarily advised as necessary and desirable to disclose environmental accounting information as and when it falls due (Abdulazeez & Ja'afar, 2017).

Again, empirical evidence have shown that, variable like Return on Assets (ROA), firm Size, firm growth, leverage, managerial shareholdings, and multi-national companies pressure of a firm have been considered as key determining factors (influential factors) that perhaps explains and or predicts the levels of CEAD disclosure and practice in many previous studies (Abusufian, 2012; Jurica, Lady & Prillia, 2012; Shehu & Farouk, 2013 Chowdhury, Dey & Abedin 2020; Khaireddine, Salhi & Jarboui, 2020).

The argument surrounding the effective *CEAD* practice has recently been increasing in almost every sector globally. However, there exists empirical evidence which indicates that oil and gas firms being one of the key sectors that control significant portion of the global economy particularly that of Nigeria and alike play significant role towards CEAD. Therefore, the sector is equally facing more and more pressure from the multiple stakeholders, demanding their increase participation in CEAD practices and its inclusion into their strategic business agenda. The basic rationale behind this is to provide empirical evidences on the factors that influence *CEAD* in the listed oil and gas companies in Nigeria in line with the effort of improving the sector. It is against this backdrop that this study examines the determinants of CEAD of listed oil and gas firms in Nigeria.

Specifically, this study will be of great impetus to managers most especially in maximizing investors' returns so as to continue to impact on the socio-economic well-being of their host communities. Indeed, the regulatory authorities particularly the Securities and Exchange Commission (SEC) will find it very

vital in providing better laws for policy implication which could be useful for decision making particularly in respect of stock market regulations and other stakeholders. Thus, the inclusion of multi-national companies' pressure and the thirty-eight (38) global environmental disclosure index as an explanatory variable and a measure for CEAD is likely to immensely add to the body of knowledge and literatures respectively.

The regulatory authorities particularly the SEC will find the result of this study vital in providing laws for policy implication which will be useful for decision making particularly in respect of stock market regulations and other stakeholders. In addition, the study will be among those that may provide additional evidences for future debates in the field of accounting and finance.

LITERATURE REVIEW

Return on Assets and CEAD

Accordingly, prior studies provide diverse results about the relationship between ROA and the level of environmental disclosure. Thus, it was argued that more profitable companies may have sufficient funds for compensating costs of environmental disclosures (Brammer & Pavelin, 2008). Further, there was the argument that high profitable firms may disclose more environmental information in order to avert adverse attention stemmed from the excess profitability and thus, enhance their credibility among investors (De Villiers & Van Staden, 2011; Cormier & Magnan, 1995). Based on this notion, profitability expresses the relationship between firm's profit after tax "PAT" and total assets.

Specifically, Jurica, Lady and Prillia (2012) established evidence which showed significant association between company characteristics and corporate social responsibility. They made use of multiple regression techniques, in a sample of 273 Indonesian firms. They found that firm profitability has a significant effect on CSR.

Similarly, Faruk and Shehu (2013) found that economic profits to be statistically, positively and significantly influencing the CSR practice by the listed DMB`s in Nigeria. This has been confirmed by Suraya, Musliha and Nur (2016) in a study on corporate environmental reporting by Malaysian local governments. They documented that economic performance is positively associated with CEAD and reporting practices by the Malaysian local governments. However, the results obtained by these studies are not without flaws in view of the environment, period and variables inclusion of the studies. Most importantly, the use of lump-sum and content analysis by the two studies respectively as the measures of CSR is another major loopholes and the results of which could have been different if same will be conducted by taking into consideration the environmental variations/changes, period and variables used coupled with proper and a more acceptable justification as measure(s) for CSR hence, the need for an in-depth study in this regards.

Furthermore, there are other notable researches that examine the link between profitability and CEAD with similar findings to the aforementioned studies. Notable among them were the studies conducted by Faris, Abedalfattah and Marwan (2012), Hussainey, Elsayed and Abdelrazak (2011), Abdulazeez (2016), Abdul razeed (2010), Uwalomwa and Jafaru (2012), Christiana and Zuaini (2012),Khalid, Kouhy, and Hassan (2017) and Umulkher and Muganda (2017) which have all documented with strong statistical evidences that firm profitability as proxied by ROA is positively associated with CEAD.

Recently, Chowdhury et al. (2020) examined companies' characteristics and environmental disclosure of listed companies in Bangladesh for the period of 2016. They revealed that profitability has a positive significant association with environmental disclosure. Consistent with the legitimacy theory, management can attempt to attain compliance or social outlooks and values through disclosure (Portella & Bora). Legitimacy theory proposes that profitable companies are more likely to disclose more environment-related information.

H_1: In line with foregoing, the study hypothesed that ROA has a positive significant influence on ROA of listed oil and gas firms in Nigeria

Firm Size and CEAD

The size of the disclosing firm is often considered by several studies as one of the explanatory variable that determine the extent of CEAD. Patten (2002) argued that bigger companies tend to disclose more information than smaller ones because of visibility concern. Using legitimacy theory, Cormier and Gordon (2001) contended that as a firm increases in size, it turn out to be more noticeable and therefore, more accountable for environmental disclosure issues. In sum, larger companies are expected to disclose more environmental information than small ones (Abusufian, 2012; Jurica, Lady & Prillia, 2012; Shehu & Farouk, 2013;. Based on these explanations, firm size represents the monetary quantum of company's total assets.

Recently, studies conducted by Umulkher and Muganda (2017) who investigated the determinants of CEAD among in Kenya. They documented a strong statistical evidence that firm size have positive and significant influence on CEAD in Kenya. Further, Kokubu et al (2001) have conducted a similar study titled "Determinants of environmental reporting publication in Japanese listed companies between the period of 1998 – 2000 using a sample of 1203 listed companies and logistics regression analysis was employed as technique of data analysis. The findings of the study reveals that firm size have a significant positive influence on environmental accounting disclosures.

Moreso, various researches such as (Reverte, 2008; Amman, Jaussaud & Martinez, 2012; Faris et al., 2012; Uwalomwa & Jafaru, 2012; Christiana & Zuaini, 2012; Suttipun & Stanton, 2012; Victor & Fodio, 2012; Farouk & Shehu, 2013; Makori & Jagonjo, 2013; Octaviana, 2013; Zuriyati et al., 2013; 2015; Abdulazeez, 2016; Suraya et al., 2016; Khalid et al., 2017) have unanimously examined the relationship between firm size and environmental accounting disclosure and the result shows a significant positive relationship between a firm size and the extent of CEAD. They showed in their findings that firms with larger assets size invest heavily on CEAD. Therefore, the larger a firm`s operating assets the greater its investment in corporate social and environmental accounting disclosures.

Another recent studies in which attempt was made to investigate the relationship between firm size and CSR was conducted by Akano, Jami'u, Olaniran and Oluwalogbon (2013) who investigated the various factors that determine the level of disclosure in the annual reports and accounts of commercial banks in Nigeria. The outcome of multivariate analysis they used reveals that value of total assets among other determinants they investigated have positive relationship and statistically significant with the level of corporate social responsibility disclosure in the annual reports and accounts of commercial banks in Nigeria. Several researches such as (Ponnu & Okoth, 2009; Shehu & Faruk, 2013) have reported a statistical and significant positive relationship between firm size and CEAD.

The earlier work of Jurica, Lady and Prillia (2012) has drawn a conclusion on the positive impact of company size on CEAD. Their findings indicated that most firms that are strongly engaged in environmental accounting disclosures are of a larger size. This serve as a challenge to Hussain et al (2006) whose study on corporate attributes and environmental disclosure found an insignificant relationship between firm size and environmental accounting disclosures. Another contrary study was that conducted by Moreira and Maria (2010) whose findings also reported an insignificant negative relationship between size and CEAD.

The studies conducted by Ebiringa, Yadirichukwu, Chigbu and Ogochukwu (2013) have also examined the effects of firm size and profitability on corporate social disclosures in the Nigerian oil and gas sector using a sample of 20 listed oil and gas firms in the Nigerian stock exchange and the OLS regression results shows that an insignificant negative correlation exist between firm size and the level of corporate social responsibility disclosures among the listed oil and gas firms in Nigeria. Most recently, Agyemang et al. (2020) studied the effect of board attributes on environmental accounting disclosure of listed mining companies in China. They took a sample of 34 mining companies for the period of 2000 to 2018. They documented a positive significant association between firm size and environmental accounting disclosure. Khaireddine et al. (2020) studied the effect of board attributes on environmental and ethics disclosure. Using a sample of 82 firms listed in the French stock market for the period of 2012 to 2017, the study revealed a positive significant relationship between firm size and environmental disclosure. Also, Chowdhury et al. (2020) examined companies' characteristics and environmental disclosure of listed companies in Bangladesh for the period of 2016. The found that firms size has a positive significant association with environmental disclosure. This has been affirmed by Fahd and Nidheesh (2020) who examined the effect of firm attributes on environmental disclosure. They showed that firm size is positively related to environmental disclosure score. Therefore, agency theory suggests that an effective supervision can decrease manager's opportunism and increase the degree of information disclosure of the firm. Thus, it is expected that larger firms might have strong internal control mechanisms and have effective supervision because they are closely monitored in the market.

H_2: Consistent with the agency theory, it is hypothesized that firm size has a positive significant influence on CEAD.

Firm Growth and CEAD

Literature documents a relationship between firm growth and the extent of CEAD. Consequently, this has gathered momentum as posited in literature that a firm which is consistently maintaining sound growth is more likely to voluntarily disclose environmental accounting information (Faris et al., 2012). Similarly, Shehu and Farouk (2013) argued that, a firm with sound growth opportunities is more likely to embark on corporate social responsibility activities. On contrary, corporate social responsibility disclosure is not influenced by firm's growth opportunities (Jurica, Lady & Prillia, 2012). Firm growth indicates how the resources available at the disposal of a firm are effectively and efficiently utilized. By implication, it describes the level of changes in the firm`s current and future opportunities as a result of prudent utilization of resources. It is therefore, the difference between the firm's current and future value of assets. Different explanatory variables were used in literature all in an attempt to examine the relationship between such variables and the extent of CEAD. Firm growth despite it seemingly crucial importance as firm characteristic or performance indicator as the case may be have been abandoned by most previous researches. Therefore, it is expected that firm growth may be positively and significantly

associated with the level of CEAD. The literature provides some explanations for this positive relationship.

Notable studies in this area were the study conducted by Faris et al (2012) which was titled financial and non- financial determinants of corporate social responsibility disclosure (CSRD)" in a sample of sixty (60) selected listed firms in Jordan for the period ranging between 2006 – 2010. The multiple regression results shows that companies that are consistently maintaining growth opportunities are more likely to embrace CEAD voluntarily. This further clarify the fact that the higher a firm`s growth potential, the higher the extent of CEAD. Therefore, the proponents of legitimacy theory argue that, growing firms disclose more environmental information to legitimise their activities (Chowdhury et al., 2020).

H_3: In line with the legitimacy theory arguments, it is hypothesised that firm growth has a positive significant effect on CEAD.

Leverage and CEAD

Literatures argue that increasing debt ratio in capital structure of a firm will likely increase the conflicts between the management, shareholders and the corporate lenders/ creditors. With respect to CEAD, firms that have higher financial leverage are more inclined to build good relations with multiple stakeholders group, hence, are more likely to adequately disclose more social and environmental accounting information (Abdulazeez & Salisu, 2016). In addition, it was argued that as firm debt (leverage) increases, the investors' monitoring demand for information also increases in order to keep themselves abreast about operating performance of the company ,including environmental performance (Freedman & Jaggi, 2005; Andrikopoulos & Kriklani, 2013; Pahuja, 2009; Huang & Kung, 2010). Furthermore, it is posited that companies with higher leverage are more likely to increase the volume of corporate environmental information disclosure to reduce agency costs (Ho & Taylor, 2007). This has been affirmed by the recent study of Chowdhury et al. (2020) who studied the effect of companies' characteristics on environmental disclosure of listed companies in Bangladesh. They showed that firms leverage has a positive significant association with environmental disclosure.

On contrary, the earlier views were opposed by the fact that less leverage firms may be able to have enough funds for financing environmental information disclosures. (Brammer & Pavelin, 2008). This has been confirmed by the study of Agyemang et al. (2020) who documented a negative significant association between firm leverage and environmental Accounting disclosure of listed mining firms in China. Similarly, it has been argued that environmental information disclosure may increase brand-named costs for high leverage companies and such costs could make credit negotiations more difficult and costly (Cormier & Gordon, 2001). Moreover, it has been contended that high leverage companies have little environmental issues to report since they are more probable to conform to environmental regulations (Wu Liu & Sulkowski, 2010). Umulkher and Muganda (2017) found that financial leverage has a positive and significant influence on CEAD in Kenya. Recently, Fahd and Nidheesh (2020) examined the effect of firm attributes on environmental disclosure. They took a sample of listed companies in India for the period of 2007 to 2016. The findings showed that firm leverage is positively related to environmental disclosure score. Consistent with the agency cost theory, which suggests that an increase in firm leverage increases the financial information disclosure level.

H$_4$: In line with the agency cost theory, it is hypothesised that leverage has a positive significant effect on CEAD.

Managerial Shareholdings and CEAD

As documented in literature, there are mixed opinions regarding the relationship between managerial shareholdings and the level of CEAD. However, company with a larger managerial ownership is said to have serial increase in productivity and economic performance comprising corporate social and environmental accounting disclosures (Abduazeez & Salisu, 2016). It is argued that managerial shareholdings would have a positive influence on environmental information disclosure, since social and environmental information disclosures improve the social image of the company, even if the disclosure was made at the expense of it resources and managerial returns (Singh & Joshi, 2009). Similarly, a firm with good and reasonable proportion of managerial shareholdings is more likely to have tremendous effect on corporate environmental information disclosure (Zauwiyah, Salleh & Junaini, 2003). In contrast, the managerial shareholdings of a firm have no influence on corporate environmental information disclosures (O'Donovan, 2002; Jurica, Lady & Prillia, 2012). Managerial shareholding

Abusufian (2012) examined the link between managerial shareholdings and CEAD and their statistical findings reveal that managerial shareholdings have positive significant impact on CEAD among firms. Sukcharoensin (2012) explored the determinants of voluntary corporate social responsibility disclosure in Thailand. They showed that managerial ownership have positive significant relationship with the extent of CEAD among listed firms.

Moreover, (Jurica, Lady & Prillia, 2012; Suttipun & Stanton, 2012; Christian & Lillian, 2013; Khalid et al., 2017) examined the relationship between managerial shareholdings and corporate social and environmental accounting disclosure and produced a similar evidence that managerial shareholdings have positive influence on corporate environmental information disclosure and practices. According to agency theory perception, company disclosure is employed to harmonize the interests of management and investors. Agency theory recommends that best practices of corporate governance make firms more answerable to shareholders and other investors and thus, it aids to reduce managerial opportunism, thereby dipping the agency costs. Thus, it is expected that managerial shareholdings is positively associated with CEAD.

 H$_5$: In line with the above arguments, it is hypothesised that managerial shareholdings have positive significant effect on CEAD

Multi-National Companies Pressure and CEAD

Literature argues that pressure from the subsidiaries of Multi-national Companies (MNC`s) with regard to the extent to which they contributes to the operating environment is on two folds; firstly, compliance with the more stringent requirements of the mother company alongside the legal pressure in the operating country and secondly, the fear to lose international reputation or defeated by the competitors for their failure to have more sophisticated environmental management reporting systems that facilitate adequate environmental accounting information disclosure in their corporate annual reports (Abdulazeez & Salisu, 2016). In addition, pressures exerted on subsidiaries of (Multi-national companies 'MNC') could have been the result of foreign directors having a reasonable quantum of shares in the aggregate

shareholdings of the firm and thus, the influence of these foreign directors may determine to a larger extent the level of CEAD by firms (Abdulazeez & Ja'afar, 2017).

Similarly, it was argued that, environmental protection rules are quite stringent in developed countries like the US, the UK and Australia. Hence, companies whose subsidiaries are situated in these countries are likely to disclose more environmental information compared to domestic companies (Joshi, Swaidan & Kumar, 2011). Therefore, it needs to be stressed at this point that Multi-national companies pressure refers to the influence exerted by the mother company on its subsidiaries operating in other countries in an attempt to CEAD. However, multi-national companies (MNC) pressure can be measured using a dummy value of '1' if there is compliance with the foreign legal requirements / pressure and '0' if otherwise. Thus, it is expected that MNC's pressure would have a significant impact on CEAD. Hence, literature provides concrete explanation for this positive relationship.

 Empirical evidences such as Aldrugi and Abdo (2014) who examined the motives that make companies disclose environmental accounting information by listed oil and gas firms in Libya. The result indicates that pressure by subsidiaries of Multi- national companies is positively and significantly influencing the CSR disclosure practices among listed oil and gas firms in Libya. In contrast, Hossain et al (2006) reported in his findings that subsidiaries of multi-national companies have insignificant positive impact in determining CSR disclosure.

Contrarily, Abusufian (2012) in a study of seventy (70) sampled firms in Bangladesh using 2010 annual reports and accounts have documented from his OLS regression model that MNC's pressure is positive but insignificant factor for corporate social responsibility disclosure among listed firms in Bangladesh. However, bearing in mind the nature of variations in terms of the environment and period used in the earlier researches, and most importantly, the scarce number of studies across the globe that have employed multi-national companies pressure (MNC) as a variable by the earlier studies, have rendered their findings inconclusive and not truly representative. Indeed, there is no local study to the best of the researcher's knowledge that employed MNC's pressure as a variable that may influence firms to embark on CEAD. Hence, a different result could have been obtained if it were conducted in Nigeria and in a different sector like oil and gas firms by properly taking into consideration the flaws and gaps as documented by the previous studies. This therefore, calls for an in-depth investigation in this area.

Based on the empirical review of literatures, the results from previous studies shows a mixed, conflicting and inconclusive findings in addition to environmental, methodological, periodical, theoretical and variable inclusion gaps hence, making it imperative, necessary and desirable for a similar study to be conducted in a developing economy like Nigeria.

METHODOLOGY AND MODEL SPECIFICATION

The study employed correlational and ex-post factor designs. Correlational research design is preferred in this study as the study investigated the relationships between variables and to examine the impact on the dependent variable, in order to establish the causal relationship or otherwise among the variables. The study examines the determinants of CEAD (ROA, firm size, firm growth, leverage, managerial shareholdings, and multi-national companies pressure). Ex-post factor design was employed as it aids generating data from the annual reports and accounts of the listed oil and gas firms in Nigeria as depicted on the floor of the Nigerian stock exchange (NSE) during the period of the study.

The population consists of all the fourteen (14) oil and gas firms listed on the floor of the Nigerian Stock Exchange as at 31st December, 2019. The study intended to take the entire population as only those firms that have been listed on the floor of the Nigerian stock exchange as at 31st December, 2019 was considered as sample firms and otherwise, were dropped thereby, justifying the use of filter as sampling technique of the study. For firms that provide all the required information, censoring technique was used as sampling technique of the study. This is based on the notion that the firms must have made available their published annual reports and accounts for the period of the study (2010-2019) and be listed on the floor of the Nigerian Stock Exchange as at 31st December, 2016. Thus, as the size of the population is reduced using filter, the sample of the population was determined and using larger number of years (2010 – 2019) has ensured larger observation and consequently, leading to good results and the more better would be findings of the study.

The study has extracted data from secondary sources only; this is because the estimation of the model that is adopted in the study requires the use of quantitative financial figures from financial statements. Thus, the main sources of data for the study are the annual reports and accounts from NSE fact-book for each year covered by the study (2010 to 2019). Indeed, the various data were sourced based on the measures of the variables.

To examine the determinants of CEAD of listed oil and gas firms in Nigeria, the panel regression technique of data analysis was used. This comprises of Ordinary Least Square (OLS) regression model using Random Effect Model (REM) and Fixed Effect Model (FEM) as well as the Generalized Least Square (GLS) regression model was tested and the most suitable model for the study was applied. While OLS is more convenient and useful technique in describing the normality of the data distribution, the relationships between the explanatory variables and the explained variable; as well as the model that is more suitable (between fixed and random), GLS on the other hand, is very crucial and more relevant in checking any unobserved heterogeinity that is encountered in the hausman specification test. Indeed, STATA (version 16) application was used as the tool of data analysis for the study.

Variables Measurement and Model Specification

The variables of the study are the fundamental determinants proxies; (ROA, Firm size, Firm growth, Leverage, Managerial shareholdings & Multi-national companies' pressure) as explanatory variables, and the CEAD as dependent variable. The measurement of the variables of the study is depicted in table 3.2 as follows;

Table 3.2.

Variables Measurement

S/N	Variables	Acronym	Measurement	Source
1	Global Environmental Index	GEI	Computed using 38 global environmental disclosure index.	(Abusufian,2012;Jurica, Lady & Prillia, 2012; Umulkher & Muganda, 2017).
2	Return On Assets	ROA	Is measured as the ratio of profit after tax to total assets.	(Reverte, 2008; Shehu & Farouk, 2013; Abdulazeez, 2016; Umulkher & Muganda, 2017).
3	Firm Size	FS	Is measured as the natural logarithm of firm's total assets	(Abusufian, 2012; Faris et al, 2012; Shehu & Farouk, 2013).
4	Firm Growth	FG	Measured as changes in assets(i.e. previous minus current value of firm's assets	(Jurica, Lady & Prillia, 2012; Faris et al., 2012; Shehu & Farouk, 2013).
5	Leverage	LEV	Measured as the ratio of total debt to total assets.	(Reverte, 2008 & Faris et al., 2012).
6	Managerial Shareholdings	MS	Measured as the ratio of shares owned by members of the management to the total number of firm's shareholdings.	(Jurica, Lady & Prillia, 2012; Shehu, 2013 & Abdulazeez, 2016).
7	Multi-National Companies pressure	MNC	Measured using a dummy value of "1" if there is strict compliance with foreign pressure and/ or presence of foreign directors & "0" value if otherwise.	(Hossain et al., 2006; Abusufian, 2012; Aldrugi & Abdo, 2014).
8	Firm Age	FA	Measured as years of listening in the Nigerian Stock Exchange.	(Abusufian, 2012; Ja'afar, 2017).
9	Big Four Audit Firms	BIG 4	Measured using a dummy value of "1" if audited by big four & "0" value if otherwise.	(Nuryanan, 2013).

Specifically, while the thirty-eight (38) global environmental disclosure index (GEDI) was used as the most generally acceptable measure for CEAD and bearing in mind the number of indices it contains, it will be more convenient, accurate and effective on the other hand, if the indices will be broken down into four (4) perspectives; (1) legal activity (2) Philanthropic activity (3) Ethical activity and (4) Economic activity, (Carroll, 1991). Therefore, this provides the basis for accurate apportionment of the

GEDI. Thus, because of the aforementioned reasons, it needs to be stated at this point that Carroll's Index is reflecting a subset of Global Environmental Index (GEI).

Model specification

In order to test the hypotheses of this study, the parsimonious model is specified as follows;

$$GEI_{it} = \alpha + \beta_1 ROA_{it} + \beta_2 FS_{it} + \beta_3 FG_{it} + \beta_4 LEV_{it} + \beta_5 MS_{it} + \beta_6 MNC_{it} + \beta_7 FA_{it} + \beta_8 BIG4_{it} + \varepsilon_{it}$$

Where:

GEI_{it}	=	Global Environmental Index of firm 'i' at time't'
ROA	=	Return on Assets of firm 'i at time't'
FS	=	Firm Size of company 'i at time't'
FG	=	Firm Growth of firm `i` at time't'
LEV	=	Leverage of `i` at time't'
MS	=	Managerial Shareholding of firm 'i' at time't'
MNC	=	Multi-National Companies Pressure of firm 'i' at time't'.
FA	=	Firm Age of firm 'i' at time't'.
BIG4	=	Big Four Audit Firms
E_{it}	=	Stochastic error term of firm 'i' at time't'
B_o	=	Is the intercept or constant term
$\beta_1 - \beta_8$	=	Coefficients of explanatory variables.

RESULTS

Descriptive Statistics

Table 4.1 shows clearly the variables represented by the explained variable GEI, the explanatory variables viz; ROA, FS, FG, LEV, MS and MNC's as well as the control variables; FA and BIG 4 audit firms. Table 4.1 reports the descriptive statistics for the predictive and predictor variables respectively (CEAD, ROA = Return on Assets, FS = Firm Size, FG = Firm Growth, LEV = Leverage, MS = Managerial Shareholdings, Multi-National Companies, FA = Firm Age and BIG4 = Big Four Audit Firms). The high standard deviations of firm size is (25.97) and managerial shareholdings, (223.47) relative to the standard deviations of other variables included in the model of the study which ranges between 0.07 to 0.63. This high standard deviation of firm size and managerial shareholdings may indicate that our sample firms are of different sizes and maturity. This is supported by the average values of firm size, (43.18), managerial shareholdings, (25.20) and firm age, (1.35) accordingly. Hence, this justified the inclusion of firm size, managerial shareholdings and firm age in the model of the study.

Table 4.1

Descriptive Statistics

Variable	Min.	Max.	Mean	Std. Dev.	Skewness	Kurtosis
GEI	0.145	0.921	0.461	0.177	0.461	2.680
ROA	0.008	0.558	0.078	0.073	3.807	24.845
FS	4.045	138.828	43.178	25.967	0.876	3.794
FG	-1.682	1.983	0.777	0.626	-0.866	4.702
LEV	0.289	0.951	0.692	0.144	-0.728	3.364
MS	0.002	0.200	25.204	223.471	8.776	78.013
MNC	0.000	1.000	0.738	0.443	-1.080	2.165
FA	1.000	1.580	1.352	0.157	-0.218	2.003
BIG4	0.000	1.000	0.875	0.333	-2.268	6.143

Source: STATA Output Result

However, CEAD represents 46% of disclosure on average. This indicates that majority of the environmental accounting information representing 54% in the listed oil and gas firms in Nigeria are determined by other factors. This result is not surprising due to the prevailing nature of oil and gas activities and its effects on the environment which is seriously alarming and devastating. Thus, most of the CEAD are caused by other factors rather than the explanatory variables used in the study. The average return on assets (ROA) of the listed oil and gas firms in Nigeria is 8%. This shows that the listed oil and gas firms in Nigeria can generate approximately 8% of their profit after tax from the utilization of their total assets indicating that 92% of their profit after tax can be realized from other sources. This may be due to inability of the management of the oil and gas firms to make prudent utilization of their firms' assets efficiently and effectively.

Indeed, firm growth shows an average value of 78%. This indicates that listed oil and gas firms in Nigeria are experiencing persistent growth opportunities as a result of massive and consistent changes in the value of the firms' assets. This may be highly inspiring considering the nature of oil and gas activities in Nigeria and the relative potentials that are availed of the sector. Thus, only 22% is lost due to some peculiarities. The average leverage for the listed oil and gas firms in Nigeria accounts for about 69%. This shows that oil and gas firms in Nigeria depends more on debt than assets covering only 31%. The implication of this is that lending institutions for oil and gas firms in Nigeria are conducive and favourable. This may be due to the highly profitable nature of the oil and gas business and the readiness of such firms to comply with the stringent lending terms and conditions as regulated by the CBN in particular and the deposit money banks in general. In addition, the statistics shows an average of 74% of multi-national companies' pressure and 26% of domestically-based companies. This is supported by the standard deviation (0.44) of the foreign subsidiaries / foreign directors' of the listed oil and gas firms in Nigeria. This signifies that majority of the listed oil and gas firms in Nigeria have either foreign subsidiaries or foreign directors in the board composition of the firms.

Correlation Matrix

Table 4.3 encloses the correlation matrix of the predictive and predictor variables and also between predictor variables themselves. It is observed that the variables correlate perfectly well (between 0.45 and 0.07) and all are significant at either 1 or 5 percent except for Return on assets, Leverage, Managerial shareholdings and Multinational companies' pressure that statistically shows insignificant results. Thus, there is no correlation coefficient particularly large (greater than 0.5) approximately. Contrarily, the associations between most of the predictor variables are minimal and negligible. Hence, there is no problem of singularity of data.

Table 4.3 reports the association between dependent and independent variables as depicted respectively (CEAD, ROA = Return On Assets, FS= Firm Size, FG= Firm Growth, LEV=Leverage, MS= Managerial Shareholdings, MNC= Multinational Companies', FA= Firm Age, BIG4= Big Four audit firms).

Table 4.3

Correlation Matrix of Dependent and Independent Variables

Variable	CEAD	ROA	FS	FG	LEV	MS	MNC	FA	BIG4
CEAD	1.000								
ROA	-0.068	1.000							
FS	0.157***	-0.147**	1.000						
FG	0.206***	-0.101*	0.322***	1.000					
LEV	0.176***	0.108*	0.319***	0.201***	1.000				
MS	0.075	-0.009	-0.079	-0.016	0.110	1.000			
MNC	0.264***	0.229***	0.107*	0.202***	-0.072	0.067	1.000		
FA	0.210***	-0.216***	0.670***	0.383***	0.256	-0.053	0.332***	1.000	
BIG4	0.450***	-0.431***	0.212***	0.372	0.164**	0.042	-0.226***	0.484***	1.000

Source: STATA Output Result

Table 4.2 indicates that there is a negative correlation between CEAD and Return on Assets while there is a statistical positive correlation between Firm Size, Firm Growth, Leverage, Managerial Shareholdings and Multi-National Companies pressure. Indeed, the two control variables (Firm Age and Big 4) audit firms shows a statistical positive correlation with CEAD. However, adequate care should be taken when interpreting the result in respect of Return on Assets (ROA) as this does not mean that ROA has a negative relationship with CEAD. Rather, it specifically means that the correlation or relationship between Return On Assets and CEAD is not as strong as that of Firm Size, Firm Growth, Leverage, Managerial Shareholdings, Multi-National Companies, Firm Age, Big 4 and CEAD. We can only establish if there is a negative or positive relationship between the explanatory variables as well as

the two control variables and CEAD through the inferential statistics and test of hypothesis. The correlation between Return on Assets and Managerial Shareholdings is very weak showing an approximate value of 7 and 8 percent respectively. This is not surprising as the relationship between the independent variables is not expected to be strong.

Interestingly, the other explanatory variables as well as the control variables viz; Firm Size, Firm Growth, Leverage, Multi-national Companies, Firm Age and Big4 shows an approximate values of 16, 21, 18, 26, 21 and 45 percent respectively. This implies that the higher the proportion of the explanatory variables as well as the control variables, the more listed oil and gas firms in Nigeria will be tempted to CEAD.

Regression Results

This section provides the regression result of the predictive variable CEAD and the predictor variables (return on assets, firm size, firm growth, leverage, managerial shareholdings, multi-national companies, firm age and Big4). The summary of the regression result extracted from the model of the study (GEI_{it} $= \alpha + \beta_1 ROA_{it} + \beta_2 FS_{it} + \beta_3 FG_{it} + \beta_4 LEV_{it} + \beta_5 MS_{it} + \beta_6 MNC_{it} + \beta_7 FA_{it} + \beta_8 BIG4_{it} + \varepsilon_{it}$) is presented in Table 4.4.

Table 4.4

Summary of Regression Results

Variables	Beta Coefficients	T-values	P-values
ROA	0.079	0.400	0.688
FS	0.002	2.450**	0.014
FG	-0.043	-1.670*	0.096
LEV	0.214	1.850*	0.064
MS	0.000	-0.430	0.665
MNC	0.274	7.120***	0.000
FA	-0.729	-4.060***	0.000
BIG4	0.475	8.400***	0.000
R^2			0.491
Wald-Chi^2			101.380
F-Sig.			0.000

Source: STATA Output Results

The cumulative R^2 (0.49) reflects the coefficient of determination. It provides the proportion of the aggregate variation in the predictive variable explained by the predictor variables jointly. Thus, it implies that 49% of aggregate variation in CEAD of listed oil and gas companies in Nigeria is caused by their level of profitability (ROA), total assets, firm growth, leverage, managerial shareholdings, multi-national companies pressure, firm age and big4 audit firms.

Return on Assets and Environmental Accounting

Our expectation is that profitability which is proxied by (ROA) has significant impact on CEAD. From the table 4.4, the result in respect of Return on assets and CEAD shows that ROA shows a p-value of 0.688 signifying that it is not significant in explaining CEAD of listed oil and gas firms in Nigeria. The result further shows a t- value of 0.40 and a beta coefficient of 0.079. This signifies that ROA is statistically, positively but insignificantly influencing CEAD of listed oil and gas firms in Nigeria. Thus, for Hypothesis 1 (H_1) is supported. The finding is consistent with Jariya (2015) who established that profitability does not have a significant influence on the CEAD.

Firm Size and Environmental Accounting

In respect of corporate size, our expectation is that large firms have stronger incentives and desires as such; they are more likely to disclose CEAD over the smaller firms. From table 4.4, the result in respect of firm size and CEAD shows that firm size is significant at 5% in explaining CEAD of listed oil and gas firms in Nigeria. The result also shows a beta coefficient value of 0.002 with a corresponding t-value of 2.45. This signifies that firm size is statistically, positively and significantly influencing CEAD of listed oil and gas firms in Nigeria. This may be due to the fact that bigger companies have more possessions at their disposal. Thus, competing with bigger firms and convincing their creditors and investors; they have to embark on CEAD for them to have a superiority over smaller companies. Thus, Hypothesis 2 (H_2) is supported. This is line with the findings of Faris et al. (2012), Uwalomwa and Jafaru (2012), Christiana and Zuaini (2012), Jurica, Lady and Prillia (2012), Suttipun and Stanton (2012), Victor and Fodio (2012) Agyemang et al. (2020) and Khaireddine et al. (2020) who showed that firm size is positively related to environmental disclosure thus, suggesting that larger firms are more likely to disclose environmental accounting information.

Firm Growth and Environmental Accounting

From the table 4.4, firm growth has a t- value of -1.67 and a beta coefficient value of -0.0430625 which is significant at 5% level of significance. This signifies that firm growth is statistically negative and significantly contributing to CEAD of listed oil and gas firms in Nigeria. Thus, it implies that for every one unit decrease in firm growth of listed oil and gas firms in Nigeria, CEAD will decrease by approximately 4%.This may be due to the fact that firm which is consistently maintaining sound growth record is more likely to embark on CEAD than a newly established firm with little or no growth record or declining growth opportunities.

Furthermore, firms with sound growth prospects are more likely to have good track record most especially in terms of environmental expansion, rise in the number of branches, annexation of new markets and clients, growth in the number of products and services among others than a firm with little or no record in terms of growth potentials. Hence, firms with these sound track records are generally more inclined to environmental accounting disclosures than those firms with little, poor or no growth potentials. Thus, it explains the fact that firms with little, poor or no growth potential may be battling with insider abuses, crisis and mal-administration thereby, preventing them to embark on those socio-philanthropic activities beyond their normal business legal requirements. Thus, for Hypothesis 3, is supported. Despite the scanty number of literatures in this area, the findings regarding the impact of firm growth on CEAD is found to be consistent with the work of Abusufian (2012), Faris et al (2012), Shehu and Farouk (2013) and contradicts the findings of Jurica, Lady and Prillia (2012) and Chowdhury et al.

(2020) who argued that growing firms disclose more environmental information to legitimise their activities.

Leverage and Environmental Accounting

The regression result from table 4.4 discloses that leverage has a significant influence on CEAD at 5% level of significance. This suggests that for every unit increase in leverage, CEAD will increase by 21%. It further buttresses the fact that the more leveraged listed oil and gas firms are, the higher will be the quantum of CEAD. More so, highly levered firms tend to be more inclined to CEAD than those firms with very scanty level of leverage. Obviously, it needs to be stated at this point that the quantum of debt a company have at its disposal will determine to a larger extent its ability to finance its assets over a given period of time. Thus, firms with larger proportion of debt-assets strongly tend to embrace CEAD. Conversely, firms with lower and poor debt – assets proportion may have little or nothing to embrace CEAD. Therefore, the more sound the level of firms' leverage, the more is expected of them to embark on CEAD. Thus, Hypothesis 4 is supported which predicts that leverage has a significant influence on CEAD of listed oil and gas firms in Nigeria. This is consistent with the findings of Cormier and Gordon (2001), Faris et al (2012), Shehu and Farouk (2013), Andrikopoulos and Kriklani (2013), Abdulazeez and Salisu (2016), Umulkher and Muganda (2017) and Nidheesh (2020) who documented that firm leverage is positively related to environmental disclosure.

Managerial Shareholding and Environmental Accounting

Our expectation is that a company with larger managerial ownership is said to have serial increase in productivity and economic performance including corporate social and environmental accounting disclosures. The regression result reveals that managerial shareholdings have a negative and insignificant influence on CEAD of listed oil and gas firms in Nigeria. This is not surprising since the corporate governance ethics in Nigeria has conferred strong power on the management team of the listed firms for decision making purpose. This explains the fact that a firm with continuously decline in managerial shareholdings is more likely to reduce the level of environmental accounting disclosure. Conversely, a firm with larger quantum of shares owned by managers will be more tempted to disclose environmental accounting information. Thus, the higher the proportion of managerial shareholdings of a firm, the more such firms will be willing to disclose CEAD. This may be due to the obvious reasons that managers as the decision makers of a firm and with large proportion of equity holdings may have strong influence on CEAD. Thus, for Hypothesis 5 (H_5) is not supported. The finding is line with prior studies by Jurica, Lady and Prillia (2012), Suttipun and Stanton (2012), Christian and Lillian (2013) and more recently Khalid et al. (2017) and contradicts the findings documented by Zauwiyah, Salleh and Junaini (2003), Singh and Joshi (2009), Uwalomwa and Jafaru (2011), Abusufian (2012) and Sukcharoensin (2012) who found negative insignificant relationship between managerial shareholdings and CEAD.

Multi-National Companies and Environmental Accounting

Considering the relationship between multi-national companies and CEAD, a strongly and positively significant relationship emerged and it has been supported statistically at 1% level of significant. More interestingly, the regression result also shows a beta coefficient and t-values of 0.274 and 7.12

respectively. This signifies that for every seven naira twelve kobo increase (N7.12) in foreign directors' shareholdings, CEAD will increase by 27%. This finding is not surprising as environmental protection laws are quite stringent in developed countries like the US, the UK, Japan and Australia. Hence, companies whose subsidiaries are situated in these countries will be tempted to disclose more environmental accounting information compared to domestically based companies.

More so, the higher the presence / proportion of foreign subsidiaries, the more the pressure that will be exerted on listed oil and gas firms and consequently, the more firms will be tempted to disclose environmental accounting information. Indeed, the number of foreign directors and the extent of their equity holdings in a company will determine to a larger extent the level of firms' participation in CEAD. Hence, firms with large number of foreign directors will ultimately have larger proportion of foreign equity holdings. Consequently, this will massively increase the level of CEAD. . Thus, for Hypothesis 6, H_{06} is rejected. This positive association is not strange and consistent with the findings documented by previous studies notable among which were Joshi, Swaidan and Kumar (2011) and Aldrugi and Abdo (2014) who revealed that pressure by subsidiaries of Multi- national companies is positively and significantly influencing the CSR disclosure and showed that multi-national companies have positive significant influence on environmental accounting disclosure.

CONCLUSION AND RECOMMENDATIONS

The study draws its conclusions based on the empirical and statistical evidence arrived upon after the analysis and discussions of the result from the preceding chapter stated as follows: ROA has positive but insignificant impact on CEAD. This means that there is no significant association between ROA and CEAD disclosures and that ROA cannot determine the level of CEAD in the listed oil and gas firms in Nigeria. Thus, it is concluded that firms with higher or lower profitability potentials may not necessarily engage in CEAD as depicted by the beta coefficient of ROA in the regression results. Firm size has positive and significant effect on CEAD of listed oil and gas firms in Nigeria. Therefore, it is concluded that larger firms have actively involved in determining the level of CEAD of listed oil and gas firms in Nigeria. The study found a negative association between firm growth and CEAD. It is concluded that growing firms disclose more environmental information to legitimise their activities. Leverage was statistically found to have a positive and significant influence on CEAD. This signifies that there is a significant relationship between leverage and the level of CEAD of the listed oil and gas firms in Nigeria. It is therefore, concluded that an increase in firm leverage increases the financial information disclosure level of listed oil and gas firms in Nigeria. It was further concluded that any increase or decrease in the proportion of leverage will have increasing or decreasing effect on CEAD. Also, firms with higher or lower proportion of managerial shareholding may not necessarily be committed to CEAD as depicted by the beta coefficient in the regression result of the study. It further signifies that there is a strong degree of association between multi-national companies (MNC) pressure and CEAD of listed oil and gas firms in Nigeria. It is therefore, concluded that a firm with a larger number of foreign subsidiaries as well as higher proportion of foreign directors' representation may have more inclinations of disclosing CEA information to portray good reputation and justify their natural existence.

Finally, the explanatory variables (Determinants) have significant influence on CEAD of listed oil and gas firms in Nigeria, except Profitability (ROA) and Managerial Shareholdings that were statistically found to be positively and negatively insignificant respectively. However, the findings of the research underlined the economic importance of ROA, Firm Size, Firm Growth, Leverage, Managerial

Shareholdings and Multi-National Companies' pressure of listed oil and gas firms in Nigeria toward enhancing effective and hitch-free participation in CEAD by the listed oil and gas firms in Nigeria. Thus, this study recommends that regulatory bodies such as Security and Exchange Commission (SEC) should ensure that listed oil and gas firms regularly and strictly comply with the corporate governance codes and ethics most especially in relation to board of directors' appointments, representation, ownership-structure and overall community involvement in corporate environmental decision making process. The study is limited to listed oil and gas firms in Nigeria. Therefore, findings of this study may be applicable to other sectors of the economy. Future studies can explore all or other sectors of the economy so as to enable generalisation of findings.

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