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EFFECT OF CORPORATE GOVERNANCE ON ENVIRONMENTAL DISCLOSURE OF LISTED CONSTRUCTION COMPANIES IN NIGERIA

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Abstract

This study analyzed the effect of corporate governance on environmental disclosure of listed construction firms in Nigeria. The broad objective is to evaluate how corporate governance affected environmental disclosure on listed construction firms in Nigeria between the periods 0f 2010-2018. Panel Least Squared (PLS) method of data analysis was used. Secondary sources of data were employed; the interested variables were sourced from the annual report of the quoted construction firms. The following variables were employed: environmental disclosure as the dependent variable, while board meeting, board gender diversity, board size, and board independence were the independent variables. The study employs descriptive statistics, correlation and regression analysis in the analysis. From the analysis result the study found that Board size was positively and significantly related to environmental disclosure. Board meeting was found to have a positive and statistically significant on environmental disclosure. Board gender diversity (BGD) has a positive effect and significant relationship with environmental disclosure. The researcher recommends that Board size should be increased to up to 7 members for improved quality and quick decision making in relation to environmental disclosure. Nigeria construction firm should ensure that their board is composed of independent persons, with high level of integrity that can match words with action to improve their environmental disclosure. Board meeting should be ignored since it has insignificant effect on environmental disclosure of quoted construction firm in Nigeria.

Keywords: Corporate governance, environmental disclosure, board meeting, board gender diversity, board size, and board independence

1.1 Background of the Study

A call for companies' environmental impact assessment and disclosure has assumed enormous dimensions over the decades. This clarion call aimed at providing a sustainable environment that will be conducive to the human and corporate organizations to operate efficiently (Votsi, Kallimanis, & Pantis, 2017). Disclosure is a means through which a company reports its environmental activities to the stakeholders (Hendri & Puteri, 2015). In recent times, corporate governance has been considered essential and relevant in sustainability reporting because research results reveal that it is a factor that influences the level of environmental disclosure (Omer & Andrew, 2014). Through environmental disclosure, firms project their corporate governance effectiveness in promoting sustainability, accountability, and transparency (Ajibodade & Uwuigbe, 2013).

Environmental disclosure by corporations has been increasing steadily in both size and complexity over the last two decades (Smith, 2003). Research attention over the years has attempted to understand and explain this area of corporate reporting which appears to lie outside the conventional domains of accounting disclosures. The evolving challenge in contemporary business firms is the need to reconfigure their performance indices to incorporate societal and environmental concerns as part of the overall objective of business. Environmental and social reporting provides a strategic framework for achieving holistic re-appraisal of corporate performance. Although it is not a new concept, environmental disclosures remain an interesting area of discourse for academics and an intensely debatable issue for business managers and their stakeholders.

According to Hendri & Puteri, (2015), Corporate environmental reporting refers to the way and manner by which a company communicates the environmental effects of its activities to particular interest groups within society and to society at large. Companies through the process of environmental communication may seek to influence the public's perception towards their operations. They attempt to create a good image (Dibia, & Onwuchekwa, 2015). The increasing demand for companies to be socially responsible seems to have witnessed considerable perceptual divergences especially within the context of the stakeholder-shareholder debate. The idea which underlies the "shareholder perspective" is that the only responsibility of managers is to serve the interests of shareholders in the best possible way, using corporate resources to increase the wealth of the latter by seeking profits.

Environmental disclosure aligns with the triple bottom line framework which emphasizes balancing all stakeholder concerns. Employees are major stakeholders whose welfare is paramount for enhanced organizational performance and as such workers health and safety cannot be overemphasized (Osazuwa, Ahmad, & Adam, 2017).

Construction firms in Nigeria are mainly extractive in nature and employees are predisposed to dangerous and hazardous experiences such as mechanical, chemical, physical and biological risks factors (Saman, 2019). However, the International Labour Organization (ILO) (1959) emphasized that employee health and safety should be part of organizations culture aimed at protecting workers against health hazards as a result of work schedules. Cole (2002) noted that employees who are healthy and safe at work are more committed and utilize the best of their potentials to work thereby yielding results.

Waste management embodies integrated programs aimed at proper utilization of waste before their final disposal. Waste can be managed though the 3Rs also known as waste hierarchy (reduce, reuse and recycle). Waste management strategies embodying the 3Rs ensure maximum product benefits which generates minimal amount of waste to the environment in line with the Sustainable Development Goals (SDGs) (Miradha, et al, 2017).

Companies making some form of environmental disclosure or the other are only reporting such information as a matter of policy as they are not mandated to do so. Thus, the information provided are not consistent across the sample studied as they are voluntary in nature. The companies have not reported the direct or indirect cost incurred by them in trying to mitigate or control the effect of their operation on the environment. Overall, the sampled companies showed 12.5% disclosure based on the Environmental Disclosure Index, a very insignificant percentage. The information reported are mostly general in nature usually relating to the companies stands on health, safety and environment which are not useful to stakeholders.

The corporate governance mechanisms as they relate to the extent of the environmental disclosure are discussed as follows: The large composition of the board is perceived to be capable of influencing the extending which corporate entities disclose their activities in any environment. Corporate governance and environmental disclosure may be described as the systematic disclosure of social and environmental effects of organisations' economic action to particular interest groups within society and the society at large (Gray, Owen & Manders, 1987). Businesses can disclose their social and environmental impact through voluntary and mandatory disclosures in their annual reports. Corporate governance and environmental disclosure appears to be one of the most important new worldwide governance practices, with many governance principles now recognizing the importance of addressing issues regarding the well-being of the company. It is basically pictured as reflecting the evolution of companies' governance systems from a shareholder perspective to reflect broader stakeholders concerns (Igalens and Point, 2009). Against this backdrop, the study analyzes effect of corporate governance on environmental disclosure of listed construction companies in Nigeria.

1.2 Statement of Problem

The increasing demand for companies to be socially responsible seems to have witnessed considerable perceptual divergences especially within the context of the stakeholder-shareholder debate. Over the past decades, corporate governance and environmental disclosure have attracted significant attention from finance, accounting and development experts and have been debated extensively.

Several studies were carried out on corporate governance and environmental disclosure though with mixed findings, (Hackson & Milne 2016; Adams and Hart, 2008) highlighted the importance of company size as a major determinant of environmental disclosure of construction companies in Nigeria. Mgbame and Onoyase (2015) found that board size, board independence, audit committee independence and managerial ownership concentration have positive and significant relationship with environmental reporting. Eneh (2019) found that for firms at the lowest ED quantile, board independence has a negative effect but as firms move up the ED quantile to higher environmental disclosures. Usman and Kamarul (2018) found board size, board independence and board diversity were found to enhance the disclosure of sustainability information. However, board meeting was found to be insignificantly related to sustainability disclosure. Akbas (2016) found that, only board size has a statistically significant and positive relationship with the extent of environmental disclosure.

The current study, therefore, complements the previous empirical studies by using annual data of 2018, descriptive, correlational analysis, Panel Least Square (PLS) Fixed-Random effect approach. Furthermore, most studies concentrated on Banking, Oil and Gas, manufacturing companies, no study to the best of my knowledge looked at the construction company. In our own study, we focus on the construction companies in Nigeria.

1.3 Objectives of the Study

The broad objective of this study is to analyze the effect of corporate governance on environmental disclosure of listed construction companies in Nigeria. This study specifically intends to achieve the following objectives:

i. To determine the extent to which board meeting affects environmental disclosure of listed construction companies in Nigeria.

ii. To evaluate the extent to which board gender diversity affects environmental disclosure of listed construction companies in Nigeria.

iii. To assess the extent to which board size affects environmental disclosure of listed construction companies in Nigeria.

iv. To ascertain the extent to which board independence affects environmental disclosure of listed construction companies in Nigeria.

1.4 Research Questions

The following are the research questions

i. How does board meeting affect environmental disclosure of listed construction companies in Nigeria?

ii. To what extent does board gender diversity affect environmental disclosure of listed construction companies in Nigeria?

iii. To what degree does board size affect environmental disclosure of listed construction companies in Nigeria?

iv. How far does board independence affect environmental disclosure of listed construction companies in Nigeria?

1.5 Research Hypotheses

The following research hypotheses are formulated

Ho_1: Board meeting does not have significant effect on environmental disclosure of listed construction companies in Nigeria.

Ho_2: Board gender diversity has no significant effect on environmental disclosure of listed construction companies in Nigeria

Ho_3: Board size has no significant effect on environmental disclosure of listed construction companies in Nigeria

Ho_4: Board independence has no significant effect on environmental disclosure of listed construction companies in Nigeria.

1.6 Scope of the Study

Content Scope – The study evaluated the effect of corporate governance on environmental disclosure of listed construction companies in Nigeria.

Periodic Scope – This study covered a period of 9 years, from 2010 to 2018, because it is a very significant period, being the period the listed firms performed extremely well.

Territorial/ Geographical Scope – This study looked at listed construction companies in Nigeria.

Sectorial Scope – This study concentrated on quoted construction companies in Nigeria. Seven construction companies are quoted in the Nigeria Stock Exchange.

Variable scope - dependent variable; the environmental disclosure and the independent variables as, board meeting, board gender diversity, board size and board independence.

REVIEW OF RELATED LITERATURE

2.1 Theoretical Framework

This study is anchored on signaling theory.

Signaling Theory

The signaling theory was propounded by Michael Spence in 1973.
Signaling theory states that Corporate Financial decisions are signals sent by the company's managers to investors in order to shake up these asymmetries. Signaling theory is based on the assumption that information is not equally available to all parties at the time and that information asymmetry is the rule. The theory has however been used to explain voluntary corporate disclosure (Healy & Palepu, 2001), an economies-based voluntary disclosure theory states that in instances where there exists an asymmetric distributions of information, management of firms make voluntary disclosures mainly to distinguish themselves from their peers when the benefits of such disclosure far outweigh the related disclosure cost. Researcher has used the signaling theory, not only as an explanation to the disclosure of voluntary financial information, but also to explain the rational for the disclosure of non-financial information, including environmental information, voluntarily. Bewley and Li, (2000); Clarkson Fang, Li and Richardson, (2013) posit that better environmental performers tend to disclose more environmental information as a way of revealing their nature as better performers. According to De Villiers and Marques (2016), firms use their environmental disclosures as an instrument to communicate, create and enhance their reputation. This agreed with the submission of Hasseldine, Salama and Toms (2005).

Thus, in line with the predictions of the signaling theory, the study concludes that good environmental performers tend to make more environmental disclosure as a way of informing key stakeholders of their strategies and achievements. When environmental performance is better the perceived benefits of making more environmental disclosure are seen to be higher and the perceived related cost such as risk of legal exposition is lower, thus firms are motivated to disclose more environmentally – related issues (Aert & Cormier, 2009).

2.2 Empirical Studies

Akbas, (2019) analyze the relationship between selected board characteristics and the extent of environmental disclosure in annual reports of Turkish companies, using a sample of 62 non-financial firms listed on the BIST-100 index at the end of 2011. The content analysis is used to measure the extent of environmental disclosure. Four board characteristics, namely board size, board independence, board gender diversity and audit committee independence, are considered as the independent variables that may have an impact on the extent of the environmental disclosures of Turkish companies. According to the results of the regression analysis, only board size has a statistically significant and positive relationship with the extent of environmental disclosure. This result implies that firms with larger boards disclose more environmental information than firms with smaller boards. On the other hand, the rest of the independent variables are found to be unrelated to the extent of environmental disclosure. The low degree of independence and gender diversity on the boards of the sample companies for the time period analyzed in the study could be one possible explanation for this result.

Baje, Yemenu, & Surur, (2020) examine the motivational factors influencing social and environmental reporting from large tax payers in Ethiopia. An explanatory research design through quantitative research approach was employed by using both primary and secondary data source which was collected from 262 sampled firms in 2018. The regression result revealed that firm age, size, profitability, board size and industry sensitivity had a positive and significant influence on social and environmental reporting, whereas, leverage had a negative and significant impact on social and environmental reporting. This result implied that beyond the voluntary nature of Ethiopian companies' social and environmental reporting, they have been using their reporting to legitimize their position in the society.

Ghasempour and Yusof (2014) examined the effects of fundamentals on voluntary disclosure by businesses using 65 listed companies on the Tehran stock exchange from 2005-2012. Data was collected from financial reports and database of the sampled companies, the data were analyzed using panel regression. The findings revealed that firm size, business complexity, earnings volatility and firm value have a significant and positive impact on voluntary disclosure, whereas leverage had a significant and negative impact on voluntary disclosure and that no relationship existed between financial performance and voluntary disclosure.

Umoren, Isiavwe-Ogbari and Morenike (2016) studied the relationship between corporate social responsibility (CSR) disclosures and performance of listed firms in Nigeria for the period of 2 years from 2013 – 2014. Ex-post facto research design was adopted for the study. The population of the study consisted of 188 quoted companies from 8 sectors on the Nigerian Stock Exchange, judgmental sampling technique was used to select a sample of 45 companies. Secondary data were obtained from online published annual reports of the selected companies, while CSR disclosures was captured through the help of a check list containing 20 disclosure items. The data obtained were analyzed using descriptive statistics, correlation and regression. Findings revealed that company size influence CSR disclosures while profitability does not. The limitation of the findings is that the study failed to test for normality and post regression diagnostics such as multi-collinearity and heteroscedasticity properties of the data. Secondly in a study where the dependent variable is dichotomize; the appropriate regression technique should be tobit regression and not ordinary least square as used in the study.

Cunha and Mendes (2017) examined the effect of financial performance on voluntary disclosures between the period of 2005 and 2011 using a sample that comprises of 263 observations. Secondary data was collected from annual reports of the companies for the years 2005 and 2011. The study made use of an ordinal logistics model to explore the financial determinants of voluntary information disclosures. The findings suggest that there is an inverse relationship between voluntary corporate governance disclosures and financial performance, more also that firm size and growth opportunities had a significant and positive effect on voluntary corporate governance disclosures while financial leverage negatively affect voluntary corporate governance disclosures. The limitation of the above findings is that the subjectivity involved in the construction of voluntary disclosures index was not tackled as the perception of users of financial statements was not captured in formulation of the disclosures index.

Alhassan & Mohammed (2016) examine the relationship between the corporate characteristics of firm age, audit firms and tax rate on the one hand and environmental reporting on the other, through environmental policy administrators. The following variables were chosen environmental policy, firm age, audit firm, and effective tax rate. The study considers environmentally sensitive firms listed on the NSE for the 6-year period ranging from 2009 to 2014. Data of the selected sample were analyzed using Stata13 to produce statistical results. The outcome of evaluated data was very encouraging as it shows an average disclosure rate of 60.36% given by the simple average disclosure index. Besides, the discovery also pointed out that a significant relationship exists between corporate characteristics and sustainability reporting. Environmental reporting should be made mandatory and an effective and efficient enforcement of G4 be done, so that the positive trends in environmental reporting could be maintained and sustained. An analysis of the moderating influence of environmental protection agencies on environmental disclosure due to corporate characteristics and the test of G4 in a developing and Africa’s largest economy is a new experience. The study was restricted to only environmentally sensitive firms listed on the NSE.

Yusuf, Adebayo, & Yusuf (2018) examined the effect of financial performance on Voluntary Disclosure of listed financial firms in Nigeria for the period of 10 years from 2008-2017. The study adopted ex-post facto research design. A sample of forty five (45) out of fifty-seven (57) financial firms listed on the floor of Nigerian Stock Exchange as at 31st December, 2017 was selected using purposive sampling. Secondary data was collected from Annual Reports and Accounts of the sampled firms and the Nigerian Stock Exchange Fact book. The findings revealed that financial performance have no significant effect on voluntary disclosure of listed financial firms in Nigeria. The control variable (Size and Age) have a significant effect on voluntary disclosure. Based on the findings, the study recommended that regulatory authorities that are charged with the responsibilities of regulating the information disclosed in financial reports should review their disclosure requirements and incorporate voluntary disclosure items into them.

Mgbame & Onoyase (2015) examine the effect of corporate governance on environmental reporting. This study makes use of board size, board independence, and audit committee independence to proxy for corporate governance. The findings of the study show that board size, board independence, audit committee independence and managerial ownership concentration have positive and significant relationship with environmental reporting. Based on the findings, the recommendation is that companies that want to improve on their environmental reporting quality should pay closer attention to corporate governance mechanisms (in this case board size, independence and audit committee independence) and on ownership concentration within the companies.

Ajibolade, & Uwuigbe, (2013) examined the effects of corporate governance (CG) mechanisms on corporate social and environmental disclosure (CSED) among firms listed on the Nigerian Stock Exchange. Forty firms were selected for the study using judgmental sampling technique. A content analysis of information in the corporate annual reports and websites of the selected firms for the period 2006-2010 provided data for the study. CSED was measured using50 items of information and CG mechanisms examined were CEO duality, Board size, proportion of nonexecutive directors and audit size. Data obtained were analyzed using correlation and regression analysis. Findings revealed a significant negative relationship between CEO duality and CSED; and significant positive relationships between proportion of non- executive directors, board size, audit size and CSED. The study concluded that an effective board with higher number of non executive directors (independent directors) and larger size and higher quality audits will be more supportive of firms disclosing a wider range of information to stakeholders including social and environmental information.

2.3 Gaps in Literature

Majority of the empirical studies reviewed such as Ghasempour and Yusof (2014) examined the effects of fundamentals on voluntary disclosure by businesses using 65 listed companies on the Tehran stock exchange The findings revealed that firm size, business complexity, earnings volatility and firm value have a significant and positive impact on voluntary disclosure, Ajibolade, & Uwuigbe, (2013) examined the effects of corporate governance (CG) mechanisms on corporate social and environmental disclosure (CSED) among firms listed on the Nigerian Stock Exchange. CEO duality and CSED; and significant positive relationships between proportion of non- executive directors, board size, audit size and CSED. Alhassan **&** Basariah (2016) studied board characteristics and sustainability reporting: environmental agencies' moderating effects, all the relationships measured had significant relationships and applied the latest version of global reporting initiative (G4) found positive significant effect on environmental disclosure

While most of the reviewed studied such as Baje, Yemenu, & Surur, (2020) examine the motivational factors influencing social and environmental reporting from large tax payers in Ethiopia. Leverage had a negative and significant impact on social and environmental reporting. Umoren, Isiavwe-Ogbari and Morenike (2016) studied the relationship between corporate social responsibility (CSR) disclosures and performance of listed firms in Nigeria. Findings revealed that company size influence CSR disclosures while profitability does not significantly affect disclosures. Cunha and Mendes (2017) examined the effect of financial performance on voluntary disclosures The findings suggest that there is an inverse relationship between voluntary corporate governance disclosures and financial performance, Yusuf, Adebayo, & Yusuf, (2018) examined the effect of financial performance on Voluntary Disclosure of listed financial firms in Nigeria. The findings revealed that financial performance have no significant effect on voluntary disclosure of listed financial firms in Nigeria found negative insignificant effect on environmental disclosure.

Again, most studies concentrated on banking, oil and Gas, and manufacturing companies, no study to the best of my knowledge looked at the construction companies. In our own study, we will focus on the construction companies in Nigeria. Having reviewed the research on the related field of studies, most authors make use of short periods, like 5years, 4years etc. This study will cover a period of 9 years. Many of the studies reviewed have weak methodology and the research intends to adopt descriptive research design for this study.

METHODOLOGY

3.1 Research Design

This study adopted ex-*post facto* research design that focuses on secondary data. *Ex- post facto* research design involves collecting and analyzing data about some variables which are already in place. We therefore prefer to use Ex-post facto research design because it is secondary data that needs not be manipulated.

3.2 Nature and Sources Data

The study employed a panel data set from the annual report and financial statement of firms listed on the Nigerian Stock Exchange. The panel covered a period of nine (9) years from 2010 to 2018 and a cross section of seven firms. Thus, it is a secondary data set. The data ranges from environmental disclosure as the dependent variable while board meeting, board gender diversity, board size, and board independent are the independent variables. The data were sourced from the annual report of the selected construction firms in the Nigerian Stock Exchange

3.3 Area of the study

In conducting this research the area of study focuses on quoted construction firms in Nigeria under NSE from which the data required for a thorough analysis were derived.

3.4 Population of the study

The population for the study consists of the total construction companies listed on the Nigeria Stock Exchange which is total number of 7 companies in the Nigeria stock exchange fact book, the firms includes:

- Arbico Plc
- Julius Berger Nig. Pc.
- Syke Shelter Fund Plc
- Smart Product Nig. Plc
- UACN Property development Company Plc.
- Union Homes Real Estates Investment Trust (REIT)
- UPDC Real Estate Investment Trust

3.5 Sample and Sampling Techniques

The sample of the study included the entire construction firms listed at the market. Since the number of construction firms listed are seven (7) the study selected the whole listed firms. Data were gathered from the published financial statement, for a nine (9) years period spanning from 2010-2018, which is IFRS regime.

3.6 Method of Data Analysis

The methodology adopted in this study is the linear regression, employing the technique of ordinary least square (OLS). The choice of OLS was guided by the fact that it has optimal properties which include linearity, neutrality, sufficient, least variance and mean square. These describe that properties of estimators can be obtained from any techniques but minimum variance property distinguished the ordinary least square (OLS) estimates as the best when compared with other linear estimates from econometric techniques. This particular property of small least variance is the reason for the popularity of the OLS method.

3.7 Model Specification

The study modified the work of Bello, and Kamarul (2017) who investigated the extent and determinants of sustainability disclosure practice in Nigeria. The study spanned from 2010-2015.

The model is stated thus:

SDP= (BS, BOI, BD, BM)

Where

SDP = sustainability disclosure practice

BS = Board size, , and

BOI = Board independence

BD= Board diversity

BM = Board meetings

The model was modified to enable us look at the topic from another dimension. Thus we state our modified model as:

The model to be regressed in this study is presented in a relational form as follows

ED =F (BSIZE, BIND, BMEET, BGD)

Where

ED= environmental disclosure

BSIZE= Board Size

BIND= Board Independent

BMEET= Board Meeting

BDG= Board Gender Diversity

With the linear expression of the model being

$ED=bo+b_1BSIZE + b_2\,BIND + b_3\,BMEET + b_3\,BDG + u$

Where

Bo= constant

βi-β4 is parameters to be estimated

3.8 Apriori Expectation

This is based on the principle of finance theory. Here our results can be checked for both the size and sign of finance a' priori expectation. Furthermore, it compares the result gotten from the work and result of real life situation.

VARIABLES	SIGN
Board Size	+
Board Independent	+
Board Meeting	+
Board Gender Diversity	+

3.9 Variables and Their Measurement

Variables	Measurement
Environmental disclosure	Environmental reporting will be measured using a dummy variable and assign a value of "5" if environmental issues are disclosed and "4" if otherwise (Fatma, Salma & Khaled, (2019)
Board size	Total number of directors on the board of a company (Hamid, 2015)
Board independence	The percentage of independent directors of the total number of directors on the board of a company (Mgbeme, 2015)
Board meeting	Total number of board meeting held annually in a company (Mohammed, 2019)
Board gender diversity	The total number of male and female members of the board of a company (Othman & Amear, 2009)

3.10 Description of Statistical Tools

The regression method of data analysis was adopted in this study. To be specific, the Panel Least Square regression technique was adopted to analysis the relationship between the dependent variable (Environmental disclosure) and independent variable (Corporate governance) in the model. OLS correlation method is appropriate therefore; descriptive statistics and multiple regression analysis were the major statistical tools used in analyzing the data.

The Ordinary Least Squares Theorem is supported by Koutsoyiannis (1985) and Nyong (1993) cited in Okeke (2016) as the Best Linear Unbiased Estimator (BLUE), thus this study adopted it. Tests done using OLS include r^2, t-test, F-test and auto-correlation analysis. The Statistical Package E-view version 8.0 window is the computer software used for the analysis of our model above. The explanation to the test statistics are:

i. Coefficient of Determination (R^2) Test = measures the explanatory power of the independent variables on the dependent variable. The coefficient of determination varies between 0.0 and 1.0. A coefficient of determination, say 0.25 means that 25% of changes in the dependent variable is explained by the independent variable(s).
ii. F-Test = measures the overall statistical significance of the model. When the f-test is more than 2, the overall significance is good, otherwise is not.
iii. Student T-Test = measures the individual statistical significance of the estimated independent variables. At 5% level of significance, reject null hypotheses for tests with probability estimates lower than 5% (0.05) and conclude that they are statistically significant. Otherwise, we accept (when probability estimates are above 0.05) and conclude that there is no overall statistical significance.
iv. Durbin-Watson (DW) test = test for autocorrelation. This is used to check for the appropriateness of the models for analysis. Any equation with Durbin-Watson less than or

greater than values not approximately 2, is not acceptable. Unacceptable Durbin-Watson suggests that the analysis cannot be relied on.

DATA PRESENTATION, ANALYSIS AND INTEPRETATION

This study investigates the effect of corporate governance on environmental disclosure trying to find out how far corporate governance has affected environmental disclosure in Nigeria. The population for this study consists of only 7 listed construction companies in Nigeria that have 2010 to 2018 annual financial reports. We selected the sample of seven (7) construction companies over 9 years period from 2010 to 2018. In identifying the possible firm's corporate governance or characteristics and exogenous factors that would influence firm's decision and performance or otherwise, we conducted descriptive statistics, correlation matrix and panel regressions. The variable for this study include environmental disclosure ED which is dependent variable. The independent variables were- board size (BSIZE), board independence (BIND), board meeting (BMEET) and board gender diversity (BGD). This study analyzed and interpreted the data collected from seven (7) listed construction companies in Nigeria for a period of nine years. In analyzing the data, the study adopted the Ordinary Least Square (OLS) analysis to identify the possible effects of corporate governance on environmental disclosure. Below is the descriptive statistics from seven sampled construction companies in Nigeria.

4.1 Descriptive Analysis

The descriptive statistics for the dependent and independent variables used in this study were presented in table 4.1 below:

Table 4.1: Summary of descriptive statistics for the variables employed in this study:

	ED	BSIZE	BIND	BMEET	BGD
Mean	0.750000	5.750000	2.375000	7.625000	1.800000
Median	5.000000	6.000000	2.000000	8.000000	2.000000
Maximum	4.000000	6.000000	3.000000	10.00000	2.000000
Minimum	0.000000	5.000000	2.000000	4.000000	1.000000
Std. Dev.	0.438529	0.438529	0.490290	1.612253	0.405096
Skewness	-1.154701	-1.154701	0.516398	-0.785964	-1.500000
Kurtosis	2.333333	2.333333	1.266667	2.609381	3.250000
Jarque-Bera	9.629630	9.629630	6.785185	4.372570	15.10417
Probability	0.008109*	0.008109*	0.033621**	0.112333	0.000525*
Sum	30.00000	230.0000	95.00000	305.0000	72.00000
Sum Sq. Dev.	7.500000	7.500000	9.375000	101.3750	6.400000
Observations	63	63	63	63	63

Source: Researchers' computation (2020) from E-view 9
*Note: *1% level of significance **5% level of significance*

The table shows the descriptive of mean, standard deviation, Jarque-Bera (JB) Statistics normality test, minimum, median and maximum values of the variables used. The study used data from 7 firm year observations of annual reports from the Nigerian stock exchange for a period of nine years spanning 2010 to 2018. From the table above, the dependent variable is environmental disclosure while board size (BSIZE), board independence (BIND), board meeting (BMEET) and board gender diversity (BGD) are measures of independent variables.

As shown in the table 4.1 above, the average or mean value of environmental disclosure stood at 75% while the median value was 1 and the standard deviation was 43.9% approximately. The maximum and minimum values stood at 1 and 0% respectively because it's a binary number that assumes zero and one. This is to say that the mean and average environmental disclosure is 75% respectively. The result provided some insight into the nature of the selected firms under study. Firstly, the great difference between the mean and median values of environmental disclosure shows that the sampled firms differ greatly; this was also reaffirmed by the standard deviation value which indicates that the sampled construction companies are not dominated by firms whose environmental disclosure is below average. It shows that half of the selected firm or 75% of the firm sampled have high return on dependent variables. The variation in the maximum and minimum values of environmental disclosure of selected firms revealed that our sampled firms are homogeneous and the selected estimation techniques must not take into consideration hetero-scedasticity problem.

This therefore justifies the use of Panel Least Square (PLS) regression technique. In the same vein, board independence (BIND) stood at mean value of 2.38% approximately suggesting that half or 2.38% of board members of firms under study are non executive directors that is independent directors while 30% are executive directors. Furthermore, we observed on the average that board committee members in our sampled firms comprised of 1.8% accounting financial experts while the maximum and minimum values stood at 3 (75%) and 2 (50%) respectively. Again, board meeting expressed in the frequency of meetings indicates that on average additional one sitting of the committee improves environmental disclosure by approximately 7-8 days. Similarly the mean value of board size is 5.7 (i.e 5 members) with minimum of 5 members and maximum of 6 members respectively.

Lastly, in table 4.1, the Jarque–Bera (JB.) which tests for normality or existence of outliers or extreme value among the variables shows that environmental disclosure, board size and board gender diversity are normally distributed at 1% level of significance while board independence is normally distributed at 5% level with exception of board meeting that is normally distributed at above 10% level of significance. This means that no variables with outlier, even if there are, they are not likely to distort the conclusion and are therefore reliable for drawing generalization. The descriptive statistics in general revealed that there is no sample selection bias or outlier in the data that would impair the generalization from this study. This also justifies the use of Ordinary Least Square estimation technique. Hence, any recommendations made to a very large extent would represent the characteristics of the true population of study.

4.2: Correlation Analysis

The aim of using correlation matrix is to see if there is any multi-collinearity problems among the variables used and to determine the degree of association that existed among the variables. The problem of multi-collinearity exists if independent variables are highly or perfectly correlated with each other with correlation values exceeding 0.90% according to Tabachnick and Fidell (2007) as cited by Shukeri and Islam (2012). Therefore, Pearson's correlation matrix was applied to check the degree of association between corporate governance and environmental disclosure variables among quoted firms in Nigeria so as to determine the nature or degree of association i.e. positive or negative correlation and the significance of the relationship between dependent variable and independent variables. Therefore, in examining the association among the variables, we employed the Pearson correlation coefficient (correlation matrix) and the results are presented in the table 4.2 below.

Table 4.2 Result of Pearson Correlation Matrix

	ED	BSIZE	BIND	BMEET	BGD
ED	1.000000	0.282277	-0.252154	-0.177859	0.664549
BSIZE	0.282277	1.000000	-0.054263	-0.329767	0.273293
BIND	-0.252154	-0.054263	1.000000	-0.359677	-0.356566
BMEET	-0.177859	-0.329767	-0.359677	1.000000	-0.132146
BGD	0.664549	0.273293	-0.356566	-0.132146	1.000000

Source: Researcher's summary of correlation analysis (2020). E-view 9

From the correlation matrix table, the result shows that environmental disclosure are positively correlated with two variables; board size (BSIZE) and board Gender diversity (BGD) but negatively correlated with board independence (BIND) and board meeting (BMEET). The above results show that there exists a negative and strong association between environmental disclosure and board size (ED/BSIZE=-0.17). There also exists a positive and very strong association between environmental disclosure and board Gender diversity (ED/BGD =0.52). In the case of environmental disclosure and board independence and board meeting, there exists a negative and strong association ((ED/BIND & BMEET)=-0.25 & -17).

There exists a negative and strong association between board independence and board size (BIND/BSIZE=0.28). It was also observed that there exists a negative and very strong association between board Gender diversity and board independence (BGD/BIND =0.35). However, none of the variables was found to be more than 0.90. i.e no two exploratory variables were perfectly correlated. The highest correlation is between two variables which are board Gender diversity that are highly correlated with environmental disclosure (BGD/ED=066) which indicate that multi colinearity is not a serious problem that would distort the regression result in the model used for analysis. A close look at the value of the Pearson correlation coefficient results revealed that all the variables are strongly associated with environmental disclosure.

Therefore, in checking for multicollinearity problem, the study noticed from the correlation table above that no two explanatory variables were perfectly correlated and thereby ruled out the case of having an outlier. This indicates the absence of multi-collinearity problem in the model used for the analysis. This also justifies the use of the ordinary least square.

4.3 Test of Hypotheses and Discussion of findings

In order to examine the relationship between the dependent variable (environmental disclosure) and the independent variables (BSIZE, BIND, BMEET and BGD) and to test the formulated hypotheses, we employed a Panel Regression Analysis since the data had both time series (2010-2018) and longitudinal properties (7 quoted companies). Our analysis is presented in table 4.3 below.

$$ED_{it} = \beta_0+\beta_1 BSIZE_{1t} +\beta_2 BIND_{1t} +\beta_3 BMEET_{1t} +\beta_4 BGD_{1t} + \varepsilon \ldots\ldots\ldots\ldots\ldots 1$$

Table 4.3: Summary of regression result

Dependent Variable: ED
Method: ML - Binary Logit (Newton-Raphson / Marquardt steps)
Date: 09/24/21 Time: 16:49
Sample: 2010 2018
Included observations: 63
Convergence achieved after 5 iterations
Coefficient covariance computed using observed Hessian

Variable	Coefficient	Std. Error	z-Statistic	Prob.
C	0.106500	1.220370	0.906692	0.3695
BSIZE	0.435562	0.175699	2.479023	0.0171
BIND	0.016341	0.090805	0.179961	0.8580
BMEET	0.074279	0.041780	2.777863	0.0023
BGD	0.341570	0.103912	3.287121	0.0020

McFadden R-squared	0.583621	Mean dependent var	0.936508
S.D. dependent var	0.245805	S.E. of regression	0.245815
Akaike info criterion	0.592122	Sum squared resid	3.504640
Schwarz criterion	0.762212	Log likelihood	-13.65184
Hannan-Quinn criter.	0.659019	Deviance	27.30369
Restr. deviance	29.79520	Restr. log likelihood	-14.89760
LR statistic	2.491512	Avg. log likelihood	-0.216696
Prob(LR statistic)	0.646156		

Obs with Dep=0	4	Total obs	63
Obs with Dep=1	59		

Sources: E-VIEW OUTPUT 2021
Source: Researchers' summary of Panel Regression Result (2020) from E-view 9

The results presented above will be analyzed using three criteria; Accounting a priori criteria, statistical criteria and Finametric criteria.

- **Accounting a priori Criteria**

The a'priori expectation is used to determine the existing Accounting theories and this indicates the signs and magnitude of our variables.

- From the result in table 4.3, the result shows a regression line intercept of 0.106500. The value is positive and statistically insignificant 0.906692 with p-value of 0.3695 which is less than 0.05. Hence this is an indication that the environmental disclosure will be constant at 2% per percent per annum when there is no change in the explanatory variables.
- The regression result shown in Table 4.3, shows a significant positive relationship between board size and environmental disclosure. The value for board size is 0.435562; this implies that One percent increase in board size, ceteris paribus, will lead to about 43 percent increase in environmental disclosure. This is consistent with

apriori expectation. This result supports the fact that increasing board size enhances environmental disclosure of construction firms.

- Board independent has a positive correlation with environmental disclosure. The value for Board independent is 0.016341; this implies that One percent increase in Board independent, ceteris paribus, will lead to about 1 percent increase in environmental disclosure. This is consistent with apriori expectation. This result supports the fact that decrease in Board independent improves the environmental disclosure of construction firms.

- Board meeting has a positive correlation with environmental disclosure. The value for Board meeting is 0.074279; this implies that One percent increase in Board meeting, ceteris paribus, will lead to about 7 percent increase in environmental disclosure. This is consistent with apriori expectation. This result supports the fact that increasing Board meeting improves the environmental disclosure of construction firms.

- Board gender diversity has a negative correlation with environmental disclosure. The value for Board gender diversity is 0.341570; this implies that One percent increase in Board gender diversity, ceteris paribus, will lead to about 3 percent decrease in Board gender diversity. This is consistent with apriori expectation. This result supports the fact that increase in Board gender diversity increase the environmental disclosure of construction firms.

Statistical Criteria

- From the results obtained, the board size is revealed positive and statistically significant with their Z- value and p-value of 2.479023 (0.0171) respectively. This is because their p-value was less than 5% level of significance. This result means that board size is positive and has significant impact on environmental disclosure of construction firms.

- The board independence has a positive insignificant impact on environmental disclosure of construction firms. This was revealed through their Z -value which is 0.179961 while the p-value of 0.8580 was greater than five percent level of significance. This result means that board independence is not significant in causing changes in environmental disclosure of construction firms when it is at lower side.
- The Board meeting has a positive and has significant impact on environmental disclosure in Nigeria. This is because their t-value is 2.777863 while the Z -value of 0.0023, were greater than five percent level of significance. This result means that Board meeting is causing changes in environmental disclosure of construction firms in Nigeria Stock Exchange.

- The board gender diversity has a positive significant impact on environmental disclosure. This was revealed through their Z -value which is 3.287121 while the p-value of 0.0020, were less than five percent level of significance. This result means that board gender diversity is significant in causing changes in environmental disclosure of construction firms in Nigeria Stock Exchange.

- From the result, the value of the coefficient of determination R^2 is 0.583621 which implies that 58% of the variation in environmental disclosure is explained by the independent variables included in the model. While about 42 % are accounted for by variables outside our model. This further shows that there is a high goodness of fit in the model.

- The LR-statistics value of 2.491512 in the model, which is a measure of the joint significance of the explanatory variables, is found to be statistically significant at 1 percent level as indicated by the corresponding probability value of 0.000. This indicates that there is a significant differences between the dependent and independent variables.

4.4 Hypotheses Testing

The need to examine the relationship between the collected data and the stated hypotheses has called for this section. This result will be compared with the statistical criteria to see if the preconceived notion in this research work holds or not. However, if the probability value is less than 0.05%, alternative hypothesis is accepted, but when it is greater than 5%, null hypothesis is accepted.

Hypothesis One

Ho_1: Board size has no significant effect on environmental disclosure of listed construction companies in Nigeria.

From the result report of our z-test in table 4.3 above, it was observed from Board size the value is 2.479023 with the probability of 0.0171 which is less than the desired level of significant (0.005), We accept the alternative (Hi) which says that Board size has significant effect on environmental disclosure of listed construction companies in Nigeria.

Hypothesis Two

Ho_2: Board meeting does not have significant effect on environmental disclosure of listed construction companies in Nigeria.

From the forgoing result we find out that computed value for Board meeting is 2.777863 while its probability is 0.0023. This shows that the Board meeting is statistically significant. Based on this analysis we reject (H1) and accept (H0), which implies that Board meeting has significant impact on environmental disclosure of listed construction companies in Nigeria.

Hypothesis Three

Ho_3: Board gender diversity has no significant effect on environmental disclosure of listed construction companies in Nigeria.

Drawing inference from our regression result in table 4.3, we found that the value of Board gender diversity is 3.287121, while its probability is 0.0020, this shows that Board gender diversity is statistically significant. Furthermore, since its probability (0.0020) is less than 0.05% level of significance, we reject the null hypothesis (H0) and accept alternative hypothesis (H1) which says that Board gender diversity has significant effect on environmental disclosure of listed construction companies in Nigeria.

Hypothesis Four

Ho_4: Board independence has no significant effect on environmental disclosure of listed construction companies in Nigeria.

From table 4.3 above, we find out that computed value for Board independence is 0.179961 while its probability is 0.8580. This shows that the Board independence is statistically insignificant. Based on this analysis we reject (Hi) and accept (H0), which implies that Board independence has no significant effect on environmental disclosure of listed construction companies in Nigeria.

4.5 Discussion of the Findings

Board size and Environmental Disclosure: The study found that Board size has significant effect on environmental disclosure of listed construction companies in Nigeria. The implication of these findings is that, for Construction Company to be functional to achieve their aim and purposes, the Board size need to satisfy the expected needs of the company, and must be seen to be fair or equitably satisfying in the environmental disclosure. This further agreed with the findings of Akbas (2019) who found positive and significant effect between board size and environmental disclosure. The findings contradict with the findings of Odoemelam & Okafor (2018) who found insignificant effect between board size and environmental disclosure.

Board meeting and Environmental Disclosure: The study found that Board meeting has significant impact on environmental disclosure of listed construction companies in Nigeria. The implication of this study is that board meeting has translated to a meaningful growth on environmental disclosure. The study contradicts the study of Bello and Kamarul (2017) who found that board meeting has insignificant effect on sustainability disclosure. The finding is in line with the study of Odoemelam & Okafor (2018) who found significant effect between board meeting and environmental disclosure.

Board gender diversity and Environmental Disclosure. It was observed from the analysis that Board gender diversity has significant effect on environmental disclosure of listed construction companies in Nigeria. Based on the empirical findings, it can be said that the contribution of Board gender diversity for the growth of the environmental disclosure is estimated to be positive and significant. The study was in line with the study of Ozordi, Uwuigbe, Obarakpo and Gbenedio (2018) who found positive and significance influence between Board gender diversity and environmental disclosure. The findings corroborates with study of Onuorah, Egbunike and Gunardi, (2019) found a positive significant effect between proportion of women in the board and voluntary disclosure

Board Independence and Environmental Disclosure: The study found that Board independence has no significant effect on environmental disclosure of listed construction companies in Nigeria. This implies that Board Independence has not contributed to significant impact on Environmental Disclosure. The findings contradict with study of Bassem, (2017) who found positive significant effect between Board Independence and Environmental Disclosure. The finding of this study also contradicts the result Ofoegbu, Odemelam and okafor (2017) who found positive significant effect between Board Independence and Environmental Disclosure.

SUMMARY OF FINDINGS, CONCLUSION AND RECOMMENDATION

5.1 Summary of findings:

Based on a sample of 7 listed construction firms from Nigeria Stock Exchange for nine fiscal years from 2010-2018 and using four measures of corporate governance (BSIZE, BIND, BMEET and BGD). The study found that:

1. Board size was positively and significantly related to environmental disclosure
2. Board meeting was found to have a positive and statistically significance on environmental disclosure.
3. We also found that board gender diversity (BGD) has a positive effect and significant relationship with environmental disclosure.
4. Board independence was also found to have a positive and statistically insignificance on environmental disclosure

5.2: Conclusion:

The major objective of the study is to ascertain the influence of corporate governance on environmental disclosure of listed construction companies in Nigeria. The study was carried out by examining the relationship between the extent of overall environmental disclosure and some selected corporate governance mechanisms in Nigeria for the period of Nine (9) years (2010-2018). The study avoided possible spurious relationship between the dependent and independent variables by controlling some of the company attributes. In line with previous studies, regression analysis approach was used, and the source of secondary data was various annual reports of the sampled companies. The Panel regression analysis indicates that corporate governance significantly influences the extent of environmental disclosure. The study provides evidence that the level of corporate environmental disclosure in Nigeria is shallow. This study perceived that unstable institutions, weak legal environment and lack of environmental disclosure standard are a contributor to unconcerned approach exhibited by corporate entities towards the natural capital.

Furthermore, a better-enhanced medium of communicating corporate activities within the environment should be devised by regulators businesses in Nigeria. For example, the implementation of integrated reporting should be made compulsory. An effective environmental law by legislative arm of government and efficient judiciary system to make corporate entities answerable for their actions towards the environment is required. Finally, there is the need for every company having an environmental/ecological committee to be proactive with regards to environmental issues.

Overall, the findings suggest that corporate characteristics encourage more intensive environmental disclosure as a complement to their own monitoring role while the reduction in agency costs expected through significant board size and board gender diversity results in an improved need for intensive auditing.

5.3: Recommendation

On the basis of the findings and conclusions of the study the paper recommends among others that:

1. Board size should be increased to 7 members for improved quality and quick decision making in relation to environmental disclosure
2. Nigeria construction firms should ensure that their board is composed of independent persons, with high level of integrity that can match words with action to improve their environmental disclosure.

3. Board meeting should be ignored since it has insignificant effect on environmental disclosure of quoted construction firms in Nigeria.
4. Board should be diversifying with gender of adequate knowledge, expertise and experience so as to improve their environmental disclosure.

References

Adams, C. A. & Hart, G. F. (1998). The changing portrayal of the employment of women in British banks and retail companies corporate annual reports. *Accounting, Organizations and Society*, 23(8), 781-812.

Ajibodade, S. O., & Uwuigbe, U. (2013). Effects of corpo-rate governance on corporate social and environ-mental disclosure among listed firms in Nigeria. European Journal of Business and Social Sciences, 2(5), 76–92

Ajibodadeso & Uwuigbe U. (2013) Effects of corporate governance on corporate social and environmental disclosure among listed firms in Nigeria – *European Journal of Business and Social Sciences, 5 (7) 32-45*

Akbas, H.E (2016) Relationship between selected board characteristics and the extent of environmental disclosure in annual reports of Turkish companies. *South East European Journal of Economics and Business* 11 (2) 2016, 7-19

Alhasan, N. & Mohammed R. (2016), Corporate governance in five Arabian Gulf countries. *Managerial Auditing Journal*, 28(1), 7 – 22.

Baje, K.B; Yemenu, K.A and Surur, S.A (2020). Elucidative motives of social and environmental reporting in Ethiopian companies. *African Journal of Business Management.* 14(1), 1-8,

Bewley, J. & LI , K.Y. (2000). Audit quality and earnings management for Taiwan IPO firms, *Managerial Auditing Journal*, 20 (1), 86-1

Cole, A. (2002). The impact of auditor's opinion on earnings management: Evidence from Romania. *Network Intelligence Studies*, 3, (5) 61-73.

Cunha, H & Mendes, G. B. (2017) Board characteristics and earnings management of listed food and beverages firms in Nigeria, *European Journal of Accounting, Auditing and Finance Research*, 3, (8) 25-41

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

Eneh O. M.(2019) Corporate governance and environmental disclosures in Nigeria: a Quantile regression approach. *International Journal of Academic Management Science Research 31 (2) 39-45*

Ghasempour, M. W., & Yusof K. R., (2014).Corporate governance, firm characteristics and earnings management in an emerging economy. *Journal of Jamar*, 11 (1) 20-33.

Gray, R., Owen, D. & Manders, K. (1987). Corporate social reporting: Accounting and accountability. London: PrenticeHall.

Hackson, A &. Milne, C. R (2016). Firm performance and mechanisms to control agency problems between manager and shareholders. *Journal of Financial and Quantitative Analysis*, 31, 377-397

Haseldine, D. R., Salama, C. M.,., & Toms, A. E. (2005). Number of directors and financial performance: A meta-analysis. *Academy of Management Journal*, 42,674–686.

Healy, L., & Paleu, J. H. (2001) Stewardship theory or agency theory: CEO governance and shareholder returns. *Australian Journal of Management*, 16: 49-65.

Hendri, S., & Puteri, K. (2015). Impact of corporate governance on corporate environmental disclosure: Indonesian evidence, International Conference on Trends in Economics, Humanities and Management (ICTEH'15), August 12 –13, Pattaya (Thaila

Igalens, J. & Point, S. (2009). Towards a new governance of companies. The company faces its stakeholders. Paris: Dunod., 208p

Mgbame C.O. & Onoyase O. J. (2015). The effect of corporate governance on the extent of environmental reporting in the Nigerian oil industry. *international Journal of Business and Social Science* 6, (10) 67-78;

Mgbame, M., & Onoyase, W. (2015). International accounting standards and accounting quality. *Journal of Accounting Research*, 46(3), 467.

Miradha, H. W. Syaiful, A.,Ridho, P. O. Awang, A. Kevin, S. G.&Totok, R. B. (2017). 3R implementation in waste management at PT. PJB UP Muara Tawar. Journal of Business and Management, 19 (6), 64-70.

Omer C. and Andrew M. (2014). Understanding audit quality: insights from audit professionals and investors. *Asia pacific Journal of Management, 18, (8) 245-268.*

Osazuwa, N.P, Ahmad, A.C & Adam, N.C (2017). Environmental disclosure in Nigerian quoted companies: the longitudinal study. *International Journal of Trade, Economics and Finance, 2 (1), 39-43.*

Saman U. P.(2019). Environmental accounting and financial performance of oil and gas companies in Nigeria. *Research Journal of Finance and Accounting* 10 (2) 192-222

Smith D. (2013) Determinants of corporate social and environmental information disclosure practices. *International Journal of Business Management, 7 (2), 142-149.*

Umoren, M. B. U., Isiawe-Ogbari, J., & Morenike, M. B. (2016), November 22-25). The Relationship between characteristics of the board of directors and company performance –New Zealand evidence. paper presented at the 21st asian pacific conference on international accounting Issues, Las Vegas, USA

Usman B. B. & Kamarul B. A, (2018), Board governance mechanisms and sustainability disclosure: a moderating role of intellectual capital. *Asian journal of multidisciplinary studies. 6 (8) 56-67*

Votsi N. P. Kaleimais, A. S and Pantis JD (2017) Corporate board characteristics and corporate organization to operate efficiently. *International Journal of Auditing, 11 (1), 51-69*