

## EFFECT OF CORPORATE GOVERNANCE MECHANISMS ON ENVIRONMENTAL DISCLOSURE OF LISTED OIL AND GAS FIRMS IN NIGERIA

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### Abstract

*This study assessed the effect of corporate governance mechanisms on environmental Reporting of listed oil and gas firms in Nigeria from 2011 to 2020. The study used Board Size (BS), Board Independence (BI) and Board Ownership (BO) as measures of corporate governance and environmental disclosure index as a measure of environmental disclosure. Firm age was used as a control variable. Descriptive research approach was employed in this study. Data were collected from audited financial statements of the eight sampled oil and gas firms via content analysis. Panel data regression techniques were carried out and the result shows that, board independence, board ownership have a significant effect on environmental disclosure of the sampled firms while board size does not significantly affect environmental reporting of the sampled firms. Based on the findings, the study concludes that corporate governance mechanisms as a set of policies and guidelines can be used by an organization to manage and control the operations of a firm so as to reduce inefficiencies as well determine to a large extent the type of information a firm discloses for public consumption. Arising from the findings, the study recommends that, companies should pay closer attention to corporate governance mechanisms (board independence and ownership) so as to enhance more disclosure about environmental issues.*

**Keywords:** Board Size, Board Independence, Board Ownership, corporate governance mechanisms, environmental disclosure

### 1. INTRODUCTION

The objective of business corporations today is becoming greater than just creating goods and services, but among other things, making provision to address the environmental issues that arise due to the production of goods and services. It is evident that the operations of most companies especially in the oil and gas sector, pose serious environmental problems such as soil, air, water and noise pollution, loss of biodiversity, global warming, and extreme weather conditions, among others. Evidently, the World Bank reported in 1999 that the Niger Delta region has the agricultural potential of feeding the whole of West Africa. Today, hunger in the area is widespread (Eneh, 2019). The unwarranted poverty in the oil producing states can be traced to the high activity level in the Niger Delta which has exposed the area to dangers of water, land, and air pollution as well as oil spills, which harm aquatic life as well as the entire ecosystem, topography, and surface vegetation (Imobighe, 2011). Nigeria's Federal Office of Statistics (FOS) revealed that about

50% of the active labour force engaged in one type of agricultural activity or another with yam, cassava, plantain, maize, cocoyam, and vegetables as the main food crops in the Niger Delta (Osemene & Fagbemi, 2019). Oil spillage, which eventually leads to germination failure of crops on underutilized farmland, contributes to reduced income from farming, and these issues lead to lower standard of living (Bayo, Adewunmi & Odunwole, 2011). Consequently, most farmers are unable to send their children to school. In a bid to balance these negative, adverse and challenging consequences of their operations, companies engage in other corporate responsibilities aimed at sustaining the environment they operate within.

Consequently, companies report their commitment towards environmental activities in various forms of media ranging from stand-alone environmental reports, triple bottom line reports, sustainability reports to annual reports (Sharifah, Bakhtiar, Nor, & Noor, 2011). The growing need for environmental reporting

cannot be overemphasised. Environmental reporting is the systematic disclosure of environmental effects of a company's economic action to various stakeholders. Environmental reporting is aimed at providing vital and realistic information of a company's operations and activities on the environment.

This has triggered an increase in stakeholders concerned with the attitude of firms towards environmental issues (Leszczynska, 2010). This increasing concerns about the environmental impact of the business activities has led firms to examine, monitor, and try to minimize their overall environmental footprint (Adams & Frost, 2008). Companies are therefore required to reveal their interference function in mitigating the detrimental impact of their actions on individuals and the climate in their yearly report (Okpala, 2019) Environmental disclosure practice has grown significantly over the last ten years, especially in developed countries (KPMG, 2017). However, environmental disclosure is still weak and evolving in developing countries including Nigeria (Okpala, 2019). According to a survey made by PricewaterhouseCoopers (PWC) in 2016 revealed that most investors are dissatisfied with current environmental reporting practise and are seeking improved sustainability disclosures. As a result, companies have a pressing need to provide more reliable information about their environmental disclosure (Clarkson, Fang, Li, & Richardson, 2013). The quality of environmental information is essential to enable stakeholders make accurate reasonable assessments of performance and take appropriate action. Therefore, there is a need for more studies and research into the factors that influence quality of environmental disclosure.

Environmental reports puts a company in a competitive advantage, attracts more customers and investors. However, the voluntary nature of environmental disclosure has made it lacking in various company reports (Al-Janadi, Rahman, & Omar, 2012). Disclosures on environmental reports now relies solely on the management of a company, who determine the manner and way in which these information are disclosed to the public.

However, all companies today are statutorily required (Code of Corporate Governance, 2018) to put in place a mechanism termed corporate governance, through which their affairs are directed and controlled. This barely existed before the 1990s (Keasey, Short, & Wright, 2005). Corporate Governance basically entails

the interaction between various participants (shareholders, board of directors, and company's management) in shaping the corporation's performance and the way it is preceding towards achieving its set goals. The relevance of corporate governance has increased several times since the concept was introduced. Corporate governance helps in guaranteeing that the business environment is fair and transparent and that companies can be held accountable for their actions. It is also important to remember that although corporate governance has emerged to direct and control companies, it also affect what these companies disclose regarding their effort in sustaining the environment. Regardless of the type of venture, only good governance can deliver sustainable good business performance (Chen & Lee, 2012). Therefore it is logical that good corporate governance is capable of influencing the level and extent of voluntary disclosures of financial and non-financial information of companies.

Adequate disclosure of information is essential because without such information, it becomes impossible to properly judge the opportunities and risks of investment. According to Meek, Roberts, and Gray (1995), there is uncertainty about the quality of firms in terms of the nature of their assets and riskiness of cash flows and their securities. Thus, investors demand information to assess the timing and uncertainty of current and future cash flows so that they may value firms and make other investment decisions. Additional disclosure about environmental issues will help investors to reduce the likelihood of making the wrong investment decisions. This is due to the fact that, the change in environment and the increase in business complexity are giving rise to additional demands for information (FASB, 2001). Companies satisfy this demand by voluntarily supplying additional information in their annual reports.

Corporate governance mechanisms that ought to determine how and by whom the corporations are governed and how a proper responsive and information disclosure to stakeholders should be, is perceived to control the kind of environmental activity a firm will engage in and report. This has aroused curiosity as to whether corporate governance of listed oil and gas firms in Nigeria rather than enhance detailed and factual disclosure of environmental activities in the Oil and Gas sector, aid in creating information asymmetry. Also, majority of the reviewed works are in developed countries with

few in developing countries. These developed countries have different legal provisions in respect of environmental disclosure. It is therefore expected that, similar studies under different legal jurisdiction might produce results that are different. It is against this backdrop that this study seeks to examine the effect of corporate governance mechanisms on environmental disclosure of listed oil and gas firms in Nigeria, using the following hypothesis;

- i. Board Size has no significant effect on environmental reporting of listed oil and gas firms in Nigeria.
- ii. Board Independence has no significant effect on environmental reporting of listed oil and gas firms in Nigeria.
- iii. Board ownership has no significant effect on environmental reporting of listed oil and gas firms in Nigeria

## **2. REVIEW OF RELATED LITERATURE.**

### **Corporate Governance Mechanisms**

Corporate governance is a concept with a great deal of attention worldwide in both the private and public sectors. It is a concept of concern that deals with the relationship between the internal governance mechanisms of corporations and the scope of corporate accountability. Adedotun (2003) views corporate governance as the framework for accounting for decision making. It is an effective management relationship within the organization integrity to enhance firm performance for the benefit of all stakeholders.

Although the corporate governance codes, regulations and practices may vary from country to country, Millstein Report (1998) posits that there are four core principles of corporate governance which are fairness, transparency, accountability and responsibility (Omolo, 2015). Fairness in this context entails ensuring the protection of shareholder rights and the equitable treatment of all shareholders while transparency is by the timely and quality disclosure of adequate, clear and comparable information concerning corporate performance, governance and ownership. Accountability and responsibility is the obligation of the organization to account for its activities, accept responsibility for them, and to disclose the results in a transparent manner.

The high level of corruption in every sector coupled with mismanagement across different tiers of government in Nigeria necessitates the need to align with international best practices. This led the Securities and Exchange

Commission (now the Nigerian Exchange group) in 2002 to collaborate with the Corporate Affairs Commission to set up a committee to identify weaknesses in the corporate governance practices in Nigeria and come up with necessary recommendations to improve corporate governance in Nigeria. (Institute of Chartered Accountants Nigeria, 2007). In 2018, ICAN called for protection of private investors and independent non-executive directors and non-executive directors that chair oversight committees; that they ought not to be excluded in the corporate governance code as released by the Financial reporting Council of Nigeria.

There are several mechanisms through which corporate governance is harnessed in every organization. These mechanisms include board size, board independence, ownership concentration, board financial expertise, board leadership, board composition, board diversity and board culture (Ogbechie, 2010). The study has selected Board size, Board Independence, Board ownership and firm age as a control variable because this study has a limited scope and cannot cover all corporate governance mechanisms.

### **Environmental reporting**

The Chartered Institute of Management Accountants (CIMA, 2012) defines environmental reporting as the public disclosure of information concerning an entity's environmental performance and it makes organisations appear more accountable for the economic, environmental and social consequences of their activities. Environmental reporting can also be defined as public disclosure by a firm of its environmental performance information, similar to the publication of its financial performance (Online Business Dictionary, 2010). Environmental reporting according to Beredugo and Mefor, (2012), is very important as it enhances the quality of decision making, requiring firms to establish a standard and set reduction targets and the realisation of the importance of changing unsustainable consumption and production patterns alongside protecting and managing Nigerian national resources; the information contained in environmental reports are necessary for accountability, comparability and probity, hence when not made available could be held synonymously with being bias, not transparent, fraudulent and liable to risk which in turn could dissuade patronages from consumers, suppliers, investors and surrounding communities.

There are positive indicators of environmental reporting practices in companies and business organisations in developing countries, however the practice is not serious enough, as there are no specialised activities in companies or factories to apply it or the planning of research to specifically target and define consumers, public or owners' needs, instead the practice is carried out in a random manner (Beredugo and Mefor, 2012). A study by Uwuigbe and Jimoh (2012) supports this view that environmental reporting is not so serious in developing countries e.g Nigeria, this study indicated that most companies in Nigeria majorly disclose information related to products and consumers, employees and community involvement but contains very little quantifiable data about environmental issues treated by the firms and the extent to which the said firms have addressed the issues.

#### **Board size and Environmental Reporting**

This refers to the total number of executive and non-executive directors on the board of a company that is saddled with the responsibility of ensuring that the decisions reached by the management are in the interest of the firm and minimizes the costs. This usually includes executive directors and non-executive directors of a company. The board of directors with more than seven members is unlikely to be ineffective (Florackis, 2008). This is because a larger number of people with wide range of expertise and experience will tend to add value to crucial decisions reached by companies. It is expected that large board will be able to maintain independence from the board and thereby encourage management to disclose more information.

#### **Board independence and Environmental Reporting**

This is the level of independence of members of board of directors of a company envisaged by the proportion of non-executive directors to board of directors' size. The seminar work of Fama and Jensen (1983) suggests that boards with a higher proportion of independent directors work in the best interest of the shareholders in order to maintain good reputation in society. The Cadbury Committee (1992) affirmed the need for a higher proportion of non-executive directors to executive directors on the board. Consistent with this, boards with a significant proportion of non-executive directors can limit the exercise of managerial discretion by exploiting their monitoring ability and protecting their

reputations as effective and independent decision makers (Ajiboladea & Uwuigbeb, 2013).

#### **Board Ownership and Environmental Reporting**

Board ownership is a percentage of shares held by institutional shareholders comprising of banks, pension funds, endowment funds, mutual funds and insurance companies (Lakhal, 2005). It is generally argued that the efficacy and effectiveness of board is reduced due to the presence of institutional investors. Jensen and Meckling (1976) argued that separation of ownership and control result in increasing demand of information disclosure by firms. Hence, it could be assumed that institutional shareholding decreases the probability of providing enhanced corporate environmental reporting. Investors having larger stake in the firm confine the decision making power of the board, which reduces the board autonomy and activism (Lakhal, 2005). However, Jouirou and Chenguel (2014) found no substantial association between the institutional ownership and the level of reporting. Some studies have also found a negative association between institutional ownership and corporate disclosures (Shan, 2009). However, Majeed, Aziz and Saleem (2015), Masud, Nurunnabi and Bae (2018) and Naseer and Rashid (2018) in their studies found that institutional ownership, ownership concentration positively affects CSR reporting of companies.

#### **Theoretical Review**

This section reviews agency theory in relation to the effect of corporate governance mechanisms on environmental reporting. This is because, the board of directors as an agent of the company is concerned about developing good corporate environmental practices on behalf of the shareholders of the company. This is essential for the creation of a positive image of the company for prospective investors.

#### **Agency theory**

This theory was initiated by Jensen and Meckling (1976). It assumes that the actions and decisions between two parties are determined by the members of a group. According to Jensen and Meckling (1976) an agent-principal relationship is a contract under which one or more persons (the principal) engage with another person (the agent) to perform some service on their behalf which involves delegating some decision-making authority to the agent.

The manager is responsible for acting on behalf of their principal (shareholders) in monitoring the business operation and achieving the objectives and goals of the company as well as maximising the shareholders wealth. When the manager fails to act in the best interest of the shareholders, agency conflict arises (Brennan, 1995). Thus, in order to avoid a breach of action by the manager against the shareholders, strict control and monitoring are needed to ensure that their (managers) efforts are focused on maximising the shareholders' wealth (Halme & Huse, 1997).

As such, appropriate corporate governance mechanisms have been introduced to control agency problems and to ensure that managers act in the best interests of their shareholders (Ho & Wong, 2001). In the context of environmental issues, the board of directors, as an agent of the company, is concerned about developing good corporate environmental practices on behalf of their shareholders (principal). This is essential for the creation of a positive image of the company to other investors with a view to persuading them to invest in the company. In addition, executing good corporate environmental behaviour may lead to an improvement in the company's reputation, a gain in public prestige (Halme & Huse, 1997) and a boost in shareholders' confidence in respect of the security of their investment. Different managements have contradicting opinions regarding environmental issues because this practice requires a large investment (Buniamin et al., 2011). Therefore, different boards of directors will institute mechanisms that are peculiar to their needs and introduce the creation of tailor-made corporate environmental practices.

### **Stakeholder theory**

The stakeholder theory was first championed by Freeman (1970). It holds that the purpose of the firm is to create wealth or value for its stakeholders by converting their stakes into goods and services or to serve as a vehicle for coordinating stakeholder interests. It is concerned with the relationship between the business organization and its behaviour within its external environment in the process of achieving organizational objectives. Accordingly, the corporation ought to be managed for the benefit of its stakeholders, i.e. its customers, suppliers, owners, employees and local communities, and to maintaining the survival of the firm.

It is often assumed that environmental reporting influences the reputation of companies from the instrumental stakeholder perspective, which is seen as an intangible asset of firms (Zhang, 2016). Simply put, companies comply with the interests of stakeholders, such as public, government and customers, regarding environmental issues then; stakeholders in turn tend to respond positively to companies that make significant efforts in sustaining their environment over companies who do not. The stakeholder theory provides also theoretical framework for investigating the relationship between various firm characteristics and environmental disclosure.

### **Review Empirical Studies**

#### **Board Size**

Ika, Nugroho, Achmad and Widagdo (2021) empirically examine the impact of corporate governance practices on environmental reporting. The corporate governance characteristics utilized in the study are audit committee effectiveness, board size, and ownership concentration while size and profitability was used as control variables of the study. The study made use of one hundred and two (102) manufacturing companies listed on the Indonesia Stock Exchange (IDX) from 2015 to 2017 were used as a sample, resulting in 306 company observations. Employing data panel regression analysis, the results indicate that audit committee effectiveness and board size positively influence environmental reporting. This study made use of data from 2015 to 2017 and was published in 2021. The time lag between 2018 and 2021 is enough for significant changes to have been taken place which will prove otherwise of the findings hence the need for another study.

In the same vein, Yusoff, Darus and Rahman (2015) examined the potential links between Corporate Governance Mechanisms and Environmental Reporting practices from the perspective of Agency theory. They used content analysis to gather relevant information from 100 leading Malaysian Public listed Companies covering a period of three years. Regression analysis was used and the results showed a positive significant relationship between board size and environmental reporting of firms. This indicates that the larger the board size, the higher the level of environmental reporting of firms.

Ogungbade (2021) examined the effect of corporate governance mechanisms comprising Board Size, Audit committee size and Gender diversity on Corporate Social Responsibility

disaggregated into Education, Health and community development. Data were collected from audited annual reports of the 12 Deposit Money Banks listed on Nigerian Stock Exchange. Findings show that audit committee size significantly improves CSR spending on education and health, but it has an insignificant effect on community development. Board size and gender diversity have insignificant positive effect on CSR activities on education, health and community development. Gender diversity has the largest impact on CSR compared with board size and audit committee size. Furthermore, the study revealed that firm size insignificantly moderated the effect of audit committee size and board size on CSR activities on education and health.

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Osemene and Fagbemi (2019) examine the relationship existing between corporate governance and environmental reporting of listed consumer goods' companies in Nigeria. The study focused on the effect which board size, board independence, ownership concentration, females on the board, CEO duality and independent audit committee have on environmental reporting. Descriptive and inferential statistics were used to analyze the secondary data obtained from the annual reports of the 20 consumer goods' companies used in the study. Results obtained revealed positive significant effect of board size, board independence and institutional ownership on environmental reporting. The control variables firm size, leverage and profitability also exhibited significant positive relationship with

environmental reporting. This study is timely and used the same variables with the proposed study.

### **Board Independence**

[Raimo, de Nuccio](#) and [Vitolla](#) (2022) examined corporate governance and environmental disclosure through integrated reporting. A manual content analysis based on an environmental disclosure index consisting of 30 items was performed to measure the amount of environmental information. In addition, a regression analysis was performed on a sample of 129 international firms to examine the impact of the corporate governance mechanisms on the level of environmental information disseminated through integrated reports. The results show a positive effect of the board size, board gender diversity and corporate social responsibility committee existence on the level of environmental disclosure. Furthermore, they show a non-significant impact of board independence.

Eneh (2019) examined the impact of corporate governance mechanisms on the level of environmental disclosure (ED) in Nigeria. This study utilized the ex-post facto research design. A sample of 40 companies listed in the manufacturing and Food and Beverage sector was used for the study. The necessary data was extracted from the annual reports of corporate organizations for the period 2011-2017 financial years. The data analysis method used is the conditional quantile regression estimator. The results reveal 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, we observed that the effect of board independence becomes positive and significant at 5%. The study recommends the need for more independent directors to be brought into corporate boards and those directors should be such that hold fewer multiple directorship and are devoted to effective monitoring. Secondly, the study recommends that increasing or reducing the presence of foreign ownership will not still be effective if these contextual challenges are not addressed. Thirdly, the study recommends that companies should adopt the optimal board size that ensures that environmental issues are addressed.

Also, Naseer and Rashid (2018) investigated the relationship between corporate governance characteristics and environmental reporting of firms in Pakistan. Data were obtained from annual reports of 50 non-financial companies listed on the Pakistan Stock Exchange (PSX) for

the years 2014-2015. A multifactor regression model comprising of six elements of CG ie board size, board independence CEO duality audit committee independence, proportion of female directors on board and international investors is used to assess the impact of CG elements on companies environmental reporting activities. The results showed a higher proportion of independent non-executive directors on the board associated with greater environmental reporting. It can thus be averred that inclusion of higher proportion of non-executive on the board would result in more individuals having the incentive to protect their reputation by promoting higher transparency through disclosure of material information including social and environmental impact of business activities. This was found to agree with the work of Ienciu (2012).

Mgbame and Onoyase (2015) examined the effect of corporate governance on environmental reporting. Using simple random sampling technique, a total of 14 listed firms were selected for the study. Using multiple regression analysis, the found that, board independence have a positive and significant relationship with environmental reporting.

Ienciu (2012) analysed the relationship between environmental reporting and corporate governance characteristics of Romanian listed entities. Data were obtained from 64 firms listed on the Bucharest stock Exchange. Content analysis was employed for the data. It was found that board independence explains the level of environmental reporting within companies.

**Board ownership**

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From the empirical review, works on Environmental reporting are very scanty in developing economies like Nigeria, this work is an attempt aimed at filling this gap.

**3. METHODOLOGY**

Descriptive research approach was employed in this study. The population used for this study consists of all the twelve (12) listed oil and gas firms in Nigeria as at December 2020. Using filtering sampling method, the study selected eight (8) companies based on the following criteria: 1) Annual reports of the company must be publicly available and accessible via reliable sources such as the company’s websites. 2) Financial statements must contain relevant information on the study variables 3). The companies must be listed on the Nigeria exchange group during the study period (2011-2020).

Panel regression was used as a tool of statistical analysis. This is because, the data used for this study is both time series and cross-sectional in nature.

**Model Specification**

To ascertain the effect of corporate governance mechanisms on environmental disclosure of listed oil and gas firms in Nigeria, the following multiple regression model were employed:

$$Y = \beta_0 + \beta_x + e \dots \dots \dots (1)$$

Where:

Y = Environmental disclosure

x = Corporate governance mechanisms

β = Coefficient of corporate governance mechanisms

e = Error term

Equation (1) can further be expressed as:

$$Environmental\ disclosure = f(corporate\ governance\ mechanisms) + c \dots \dots \dots (2)$$

From equation 2, a control variable is then included. The introduction of the control variable is to ensure a better certainty of the relationship existing between the dependent and the explanatory variables.

The equation therefore is represented as;

$$ED = f(BS, BI\ and\ BO) + Age \dots \dots \dots (3)$$

From equation 3, the regression model of the study can be presented as follows;

$$ED_{it} = \beta_0 + \beta_1 BS_{it} + \beta_2 BI_{it} + \beta_3 BO_{it} + \beta_4 AG_{it} + e_{it}$$

Where: ED = Environmental disclosure index

BS = Board size

BI = Board independence

BO = Board ownership  
 AG = Age of the firm  
 $i_t$  = firm  $i$  at time  $t$   
 $e$  = error term

**4. ANALYSIS AND DISCUSSION**

**Descriptive Statistics**

Descriptive statistics shows summary statistics of all the variables of study. The result for the descriptive statistics is presented in Table 1.

**Table1: Descriptive Statistics of the Study Variables**

| Variable | N  | Mean  | Std. Dev. | Min   | Max   |
|----------|----|-------|-----------|-------|-------|
| EDI      | 80 | 2.21  | 0.82      | 0.125 | 2.83  |
| BS       | 80 | 8.9   | 2.62      | 4     | 16    |
| BI       | 80 | 62.38 | 15.41     | 31.25 | 90    |
| BO       | 80 | 15.77 | 22.28     | 0.00  | 78.20 |
| AG       | 80 | 42.88 | 12.30     | 18    | 65    |

Source: STATA Output Version 16.0

Results from Table 1 show the descriptive characteristics of the study variables with 80 observations. This implies that data about the study variables were collected from eight (8) companies for ten (10) years. This therefore means that the study data are of panel attributes. It shows that environmental disclosure index ED has a mean of 2.21 and a standard deviation of 0.82. This shows that most of the sampled oil and gas companies report their environmental issues in terms of money, given an index of 2.21 out of a total index of 3, which is the highest reporting quality index. The table also showed that ED has 0.125 and 2.83 as lowest and highest index among the sampled oil and gas companies in Nigeria. Board size has a mean of 8.9 with deviation of 2.62 which is less than the mean. This implies a low variation in BS among the sampled oil and gas companies in Nigeria. The table also revealed that among the sampled companies, the lowest and highest size of the board were 4 and 16 members respectively. Furthermore, Board Independence (BI) has a mean of 62.38 with a deviation of 15.41 which is lower than the mean, implying a low variation in BI among the samples companies for the period under consideration. The table also showed 31.25 and 90 as lowest and highest

values for BI respectively. The table showed that data relating to Board Ownership (BO) with mean of 15.77 and deviation of 22.28. The deviation being higher than the mean entails a wide variation in BO among the sampled oil and gas companies in Nigeria for the period examined. It was further revealed that BO on minimum was 0.00 and maximum 78.20. On Age the control variable, the table reveal on average, the sampled companies Age was 42.88 years having deviation of 12.30. The deviation being below the mean implies low variation in AG among the sampled companies. The table further revealed that the least Age among the sampled companies was 18 years and highest 65 years. The importance of this control variable is that, the firms are old enough to have impacted negatively on the environment, made efforts to clean their mess and report same.

**Correlations Analysis**

It is needful to determine whether the variables used are associated. In order to estimate the extent of the relationship between the study variables, correlation analysis is employed. The correlation result is presented in Table 2 showing the correlation coefficient of the dependent and independent variables.

**Table 2: Correlations Results**

|     | ED     | BS     | BI     | BO     | BM     |
|-----|--------|--------|--------|--------|--------|
| ED  | 1.0000 |        |        |        |        |
| BS  | 0.3454 | 1.0000 |        |        |        |
| BI  | -      | -      | 1.0000 |        |        |
| BO  | 0.3259 | 0.1776 | 0.0178 | 1.0000 |        |
| Age | 0.0848 | 0.2029 | 0.0178 | 0.1161 | 1.0000 |
|     | 0.4633 | 0.3621 | 0.2407 |        |        |



Source: STATA Output Version 16.0

Table 2 presents the correlation coefficients of each of the study variables. According to Gujarati and Sangeetha (2007), a correlation of more than 0.70 is considered harmful. Therefore, since none of the correlation as presented in Table 2 is not more than 0.70 it indicates that the variables are not highly correlated to the extent of affecting the outcome of the study. However there exists presence of negative correlations among the variables. The negative correlation indicates that the two

variables involved moved slightly in opposite direction, as one variable increases, the other decreases.

**Regression Analysis**

The study adopts multiple regressions as the major data analysis technique. Data robustness test was also performed to ensure that data employed used in the study meets basic regression assumptions before panel regression analysis is performed.

**Table 3: Regression result**

| VARIABLE                         | B       | Z     | P-value |
|----------------------------------|---------|-------|---------|
| BS                               | 0.0059  | 0.24  | 0.810   |
| BI                               | -0.0051 | -2.02 | 0.043   |
| BO                               | -0.0015 | 1.97  | 0.049   |
| AG                               | -1.9869 | -1.51 | 0.132   |
| Constant                         | 2.2558  | 5.08  | 0.000   |
| R <sup>2</sup> (within) = 0.1549 |         |       |         |
| R2 (between) = 0.4351            |         |       |         |
| R2 (overall) = 0.2423            |         |       |         |
| Wald Chi <sup>2</sup> =170.12    |         |       |         |
| p-value=0.0000                   |         |       |         |

Source: STATA Output Version 16.0

In line with the Lagrangian multiplier test, the random effect regression analysis was carried out for the study as presented in Table 3. The result presents the coefficient, z-values and p-values for the study’s independent variables as well as the overall R-squared for the general regression and the Wald statistics.

The Wald Chi-Square that shows the combined significance of all the estimated parameters in predicting the value of the dependent variable in a random effect regression model is statistically significant with a value of 170.12 and a p-value of 0.00. This implies that the model is fit for analysis. Since the study made use of panel data, the R-square is computed both within, between and overall. R-square within estimates the extent to which the independent variables account for changes in the dependent variable. As presented in Table 3, the R-square (within) shows a value of 0.1549 representing 15.49% of variables that influence environmental disclosure. This shows that the study’s independent variables jointly account for 15.49 percent of the changes in environmental disclosure within each company under study during the study period.

In a similar manner, R-squared between shows the extent to which the independent variables account for the difference in the dependent

variable between the companies under study. As presented in Table 3, the R-squared between shows a value of 0.4351 representing 44 percent. This implies that, the independent variables of the study combined to account for 44 percent of the changes in environmental disclosure between the sampled companies. The overall R-squared which is the coefficient of determination shows a value of 0.2423. This shows that, 24.23 percent of the sum variations in environmental disclosure can be explained by corporate governance mechanisms.

Table 3 further present on average, the statistical relationship between the dependent and independent variables of the study in terms of coefficients and p-values. BS shows a coefficient of 0.006. This clearly shows that BS of listed oil and gas firms in Nigeria positively impacts on the environmental disclosure of listed oil and gas firms in Nigeria. A unit change in BS will lead to a 0.6% increase in environmental disclosure of listed oil and gas firms in Nigeria. This effect however is insignificant (p-value of 0.810) indicating that BS insignificantly affects environmental disclosure of listed oil and gas firms in Nigeria. Board Independence (BI) reveals a coefficient of -0.005. This shows that the BI of the sampled firms negatively affects their environmental disclosure. A unit increase in BI will lead to a

-0.5% decrease in environmental disclosure of listed oil and gas firms in Nigeria. This negative effect is however significant (p-value of 0.043) implying that BI significantly affects environmental disclosure of listed oil and gas firms in Nigeria. This outcome could be ascribed to dominance of executive members in the board, who may be negligent in environmental disclosure due to the cost implication involved in non-financial disclosure which in the long-run, affects the organisation's profitability. Board ownership shows a coefficient of -0.002. This implies that BO of listed oil and gas firms negatively affects their environmental disclosure. A unit change in BO will lead to a -0.2% decrease in environmental disclosure of listed oil and gas firms in Nigeria. This effect is however significant (p-value of 0.049). The outcome of this result is an indication that the BO of the sampled oil and gas companies are more profit driven, consequently, little attention is given on environmental disclosure.

#### **Test of Hypotheses**

The hypotheses formulated in the introductory part of this paper are tested here. Each of the formulated hypotheses is tested at 5 percent using the p-value as presented in Table 3. The criteria for rejecting/accepting the null hypothesis is that, if the p-value is greater than 0.05, accept the null hypothesis but if the p-value is less than or 0.05, reject the null hypothesis.

Ho<sub>1</sub>: Board size has no significant effect on environmental reporting of listed oil and gas firms in Nigeria.

From Table 3, the p-value of BS is 0.81 which is greater than 0.05. The null hypothesis is accepted and the alternative hypothesis is rejected. The study therefore maintains that, board size has no significant effect on the environmental disclosure of listed oil and gas firms in Nigeria.

Ho<sub>2</sub>: Board independence has no significant effect on environmental reporting of listed oil and gas firms in Nigeria.

Given that, BI has p-value of 0.04 which is less than 0.05. The null hypothesis is rejected and the alternative hypothesis is accepted. The study therefore affirms that, board independence has a significant effect on the environmental disclosure of listed oil and gas firms in Nigeria.

Ho<sub>3</sub>: Board ownership has no significant effect on environmental reporting of listed oil and gas firms in Nigeria.

From Table 3, BO has p-value of 0.05 which is equal to 0.05. The null hypothesis is rejected

and the alternative hypothesis is accepted. The study therefore holds that, board ownership has a significant effect on the environmental disclosure of listed oil and gas firms in Nigeria.

#### **Discussion of Findings**

Going by the probability value of the explanatory variable, the findings made from the empirical analysis is that, Board size (BS) has an insignificant effect on the environmental disclosure (ED) of listed oil and gas firms in Nigeria. Since the probability value of BS is greater than 0.05. The import of this is that, board size is an insignificant determinant of environmental disclosure. This goes to show the size of a board of a firm (whether big or small) does not in a way affect its disclosure about their efforts in sustaining the environment. What matters is the ability of the board to comprise of members who believes in sustaining the environment and also versed with the advantages of disclosing same. This finding agrees with that of Beredugo and Mefor (2012) and Uwuigbe and Jimoh (2012) but disagrees with the works of Mgbame and Onoyase (2015) In line with the result of the test of hypothesis two, Board independence (BI) has a significant effect on environmental disclosure (ED) of listed oil and gas firms in Nigeria. this is because; the probability value of BI passes the significance test at five percent level, therefore, we accept the alternative hypothesis that board independence has a significant effect on environmental disclosure of listed oil and gas firms in Nigeria. What this outcome means is that independent directors influence environmental reporting among Nigerian firms. This is to say, when directors of a company are independent, they have the free will to listen to the yearnings and aspirations of the varying stakeholders and deliberate objectively on the issues with the aim of balancing the interest of those stakeholders. This position is in line with the findings of Raimo, de Nuccio and Vitola, (2022), Eneh, (2019) as well as Mgbame and Onyase (2015) who also found a positive relationship between board independence and environmental disclosure. This finding is also in agreement with the stakeholders' theory.

The result also shows that board ownership (BO) has a significant effect on environmental disclosure of listed oil and gas firms in Nigeria. As presented in Table 4.7, the probability of board ownership passed the significance test at five percent level. This means that if the directors of the board also have a stake in the company, there is that likelihood that they will

give listening ears to the cries of other stakeholders about the negative effects of the firm on the environment in general so as to be adjudged legitimate. The finding of this study is in line with Ogbechie (2010) but contradicts Oba and Fodio (2012) as well as Mgbame and Onoyase (2015).

## 5. CONCLUSION AND RECOMMENDATION

The study provided empirical evidence on the effect of corporate governance mechanisms (proxed by board size, board independence and board ownership) on environmental disclosure (proxed by environmental disclosure index) of listed oil and gas firms in Nigeria. Arising from the findings, the study therefore concludes that, board independence and board ownership have significant effect on environmental disclosure of firms.

Based on the findings, it is therefore recommended that, policies, and guidelines be established by companies to manage, control and reduce inefficiencies in environmental disclosure, and as well determine to a large extent the type of information a firm discloses for public consumption on its environmental issues. Management of organisations most especially oil and gas firms in Nigeria for maximal environmental disclosure, should adopt and implement policies that guide and strengthen quality of Board Independence (BI) and Board Ownership (BO), This is due to the fact that they are found to have significant effect on the environmental disclosure of listed oil and gas firms in Nigeria. Also, in considering environmental disclosure, less attention should be given to Board Size (BS) as it has no significant effect on the environmental disclosure of listed oil and gas firms in Nigeria. Last but not the least, companies that desire to improve their level of environmental disclosure so as to enjoy the benefits that come with doing so, should pay closer attention to corporate governance mechanisms (board independence, ownership).

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