

## Effect of Corporate Governance Practices on the Performance of Oil and Gas Companies in the Niger Delta Region of Nigeria

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### **Abstract**

*The study empirically examined the effect of corporate governance practices on the performance of oil and gas companies in the Niger delta region of Nigeria. The study adopted ex-post facto research design. The findings of this research showed that three of the independent variables examined had significant effect on performance of oil and gas companies in Nigeria. First, board size had a significant relationship with performance. Secondly, internal control had a significant negative relationship with performance of oil and gas firms in Nigeria. Board gender diversity had a significant effect on performance. The study recommended that Oil and gas companies in Nigeria should ensure that there are sufficient directors on the board with requisite experience that can impact performance positively. Oil and gas companies in Nigeria should continue to ensure firm control over operation to enhance performance, but they should always carry out cost and benefit analysis of internal control.*

**Keywords:** *Corporate Governance, Board Size, Board Independence, Internal Control Measures, Board Gender Diversity, Company Size, Company Age, Performance*

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### **Introduction**

Corporate governance became a central issue in both academic and social circles following the several corporate collapses of the 1990s which undermined people's confidence in corporate leadership and cast doubts on the credibility of financial statement. Some of these failures resulted from weaknesses in the internal control infrastructures and operating environments, and a lack of commitment to high ethical standards. These events of the 90s, led to the call for good governance and corporate responsibility to help assure well-functioning markets necessary to facilitate economic growth and development. Corporate governance is one of the tools that can be used to ensure companies operate in a manner that will contribute to the provision of reliable information, reduce exposure to the risk of fraud and failure and enhance protection of investors and other stakeholders. Generally, the elements and instruments of good corporate governance consists of policies, rules, processes, practices, programmes and institutions used in administering, directing and controlling the operations and affairs of an organization (Bayoumi & Youssef, 2015).

Oil and gas companies are established with the aim of effectively utilizing various resources to meet the goals of the organisation and ensure a financially stabled future. It is however regrettable that some organisations are faced with negative effects, such as: corporate

governance failure, poor financial reporting and capital shortage, which poses a serious challenge to the survival of the organization (Hamid, 2008). Corporate governance has not only become a key determinant in the identification of company's strengths and weaknesses, the aim of corporate governance report is to improve corporate governance environment (Bhagat & Bolton, 2009).

Thus, corporate governance mechanism does not only improve the performance of the firm but also provides opportunities to reallocate resources. In Nigeria, various committees have been inaugurated to review the corporate governance code. For example, the Corporate Governance Code 2003, was reviewed and new issues such as differentiating independent and executive directors, training of directors, separation of functions of chairpersons of the board and chief executive officer, amongst others were raised. Subsequently, due to some shortcomings and inconsistency. This study seeks to investigate the effect of corporate governance mechanisms on the performance of oil and gas firms in the Niger-Delta region of Nigeria.

### **Theoretical framework**

#### **1. Agency theory**

Berle and Means (1932) were the first scholars to explore the concept of agency and the applications towards the development of large corporations. They asserted that the interest of managers differs from those of the owners of the firm. The theory posited the presence of agency problem and since then, it has been a motivating factor for the economists to nurture the aspects of agency theory. If an organisation is managed by a person or group of persons who are not the real owners, then there is a chance that they may not work for the owners' benefit. In a joint stock company, the ownership is held by individuals or groups in the form of stock and these shareholders (principals) delegate the authority to the managers (agents) to run the business on their behalf, but the major issue is whether these managers are performing for the owners or themselves.

However, Bayoumi and Youssef (2015) argued that agency theory provided a method of explaining the difference between the owner and the employees to a point whereby only continuous supervision and sufficient planned remuneration policy can bring a positive relationship between the two parties. Similarly, Solanke (2019) posited that diversity of private interest motivates individuals to utilize the information in their possession to boost their own interest which may not be the same with the organisation's interest. Agency theory improves internal control for the firm and guides company to be properly controlled to achieve performance in an organization (Kotlar & Sieger, 2019). This study is anchored on the agency theory because corporate governance arose to address problems of expropriation of firms' resources by managers who are motivated by self-interest.

### **Concept of corporate governance**

In present times, corporate governance has continued to serve as veritable determining factor in ascertaining company's strong points and weaknesses. One of the crucial functions achieved by corporate governance is to guarantee a high standard financial reporting practice. Various countries across the globe have set the generally acceptable corporate governance standards as guiding principles for the operation of companies. These include: Cadbury Report of the United Kingdom; Sarbanes – Oxley of the United States of America; The Dey Report of

Canada; The Vienot Reporting of France; the Olivencia Report of Spain; the King's Report of South Africa; Principles and Guidelines on Corporate Governance applicable in New Zealand; while the Cromme Code is of German origin (Akeju & Babatunde, 2017).

Corporate governance is not about management activities, skills and techniques, neither is it about the formulation of business strategies. Corporate governance is concerned with managing and directing a company in the interest of the shareholders, other stakeholders and the wider society. Hence, corporate governance is concerned with how those who have powers to direct a company use those powers and how the board of directors and other senior managers take responsibility for deciding a company's strategy. Corporate governance addresses questions such as: in whose interest is the company run? Who makes decisions for the company? How do those who have the powers to make decisions for the company use such powers? Are those charged with the governance of the company held accountable for the way they use their powers? And how are risks managed?

The achievement of an organisation's objectives through effective communication, leadership, motivation, as well as proper guidance of subordinates is directing as a managerial function (Akpanuko *et al.*, 2019), while Sreeti (2017) ensured that those charged with governance are held to account by evaluating their decisions on transparency, inclusivity, equity and responsibility. However, corporate governance is a set of connections between stakeholders, shareholders, its board and the management of the company. The objectives of the company are set through the provision of corporate governance structure, and the means of accomplishing those objectives and supervising performance are determined (Eti & Ibitayo, 2019).

### **Performance**

Company performance is part of an organisation's effectiveness which includes operational and financial results. However, performance is how companies make efficient resources to consistently enhance capabilities to achieve goals. While financial performance indicates the total attainment of a company in terms of profits, sales and growth measured on financial basis. It is an important variable for business survival and growth (Owolabi & Obida., 2012). In this study, performance of oil and gas companies on the floor of Nigerian Exchange Ltd from 2003 to 2021 shall be measured using profitability for performance of companies and board size, Board independence, internal control measure and board gender diversity as variables of corporate governance.

Corporate governance is a concept and a holistic approach to managing companies and involves mechanisms which cut across the major parties to corporate governance such as the Board of Directors, audit committee, external auditors and shareholders. Consequently, the effectiveness of a corporate governance system depends, to an extent on the collective effort of the members in corporate governance. However, experience has shown that in many quoted companies especially in developing countries like Nigeria, corporate governance is solely in the hands of the Board of Directors, other major actors in corporate governance such as audit committee, external auditors, internal auditors as well as shareholders play passive roles in the governance of such companies. This is the reason why a number of companies still experience corporate governance failure (Akpanuko *et al.*, 2019). This challenge will continue until the

major actors in corporate governance are actively involved in the governance of companies (Akpanuko *et al.*, 2019). In explaining the concept of corporate governance, Emile The management and directing of a company in the interest of the shareholders, other stakeholders and the wider society is corporate governance. Thus, corporate governance is concerned with how to direct a company by Board of Directors and other senior managers who take responsibility of deciding a company's strategy.

### **Empirical review**

Nwaolisa and Chijindu (2016) on the influence of financial structure on profitability with special reference to oil and gas firms in Nigeria, the ex-post facto method of design was adopted. The data for the study were obtained from the published annual reports and accounts of ten (10) oil and gas firms listed on the Nigerian Stock Exchange. The findings of the study indicated that financial structure has negative effect on the profitability of oil and gas firms in Nigeria. Another study by Iskakou and Yilmaz (2015) on performance evaluation of major integrated oil and gas companies, the researcher adopted the quantitative research design along with comprehensive theoretical background on the global oil and gas industry. Four (4) international oil companies were selected for the study. All companies showed relatively good result from the financial ratios computed on liquidity position, Exxon Mobil Corporation had the most outstanding result on leverage on short term asset management, most healthy turnover assets management was observed from Exxon Mobil

Hassan and Farouk (2014) researched on firm attributes and earnings quality of listed oil and gas companies. Multiple panel regression techniques was adopted by the researchers and data were collected from the annual reports and accounts of the firms. The findings revealed that leverage, liquidity and firms growth has a significant positive impact on earnings quality while firm size, institutional ownership and profitability have a significant but negative influence on earnings quality. Another study in relations to board size, Eisenberg *et al.* (2009) found that small board has direct positive impact on the performance of firms and enhances efficiency. Ruth and Korolo (2017) revealed that large board delay decision, leading to inefficiency and unnecessary crisis. However, Rini and Djoko (2018) found that size of the board has little or no effect on firms if the enterprise has adequate internal control system which are in line with the philosophy of the firm. Sixtus *et al.* (2019) evaluated the relationship between board diversity and a company's financial performance in Nigeria. The researcher obtained data for the study from the bank's annual report from 2006 to 2017. The review used a recurrence survey of board information and fixed impact model to investigate the information. The review showed a positive and significant relationship between gender diversity and bank's financial performance. The review also showed a negative and no significant relationship between board size and bank's performance. As a result, the study suggested women into the board to work on their financial performance.

Abbas *et al.* (2018) examined the relationship between the quality of board and performance of cited Nigerian customer product companies. The review used information from 27 customer commodity companies recorded in Nigeria between 2011 and 2017. The review used autoregressive distribution lag to evaluate the information. The review showed a no significant relationship between board size, board construction, and customer company performance. As a result, the review suggested a regular board meeting and board autonomy to improve

performance. Aifuwa *et al.* (2020) investigated the impact of board gender diversity on corporate performance. The review used information from shopper product companies from 2013 to 2018. The review used the least squares – method of the board to investigate the information. The study showed a positive and significant relationship between board gender diversity and corporate performance. As a result, the study suggested that women should always be in the board to enhance performance.

Osemwegie and Ugbogbo (2019) investigated board gender diversity and financial performance of selected Nigerian bank. The study used 15 quoted banks on the Nigerian Exchange Limited from 2009 to 2017. The review used pearson product moment correlation coefficient, variable iteration tests and recurrence studies to analyse the information. The review showed a positive and significant relationship between board gender diversity and financial performance. As a result, the study suggested gender diversity in companies' boards. Ahmadu (2017) investigated the diversity and financial performance of corporate boards : Evidence from Nigeria's cited Deposit Money Bank. The study investigated the size of the board on gender diversity, ethnic diversity, board organization, unfamiliar fascism and return on investment. The review used information from the cash banks of the 10 cited stores between 2010 and 2014. Multivariate recurrence was used to analyse the information. The review showed that the gender of the board has a significant effect on financial performance. The review then suggested that Nigerian cited store cash banks should raise the scope of women on the board to tackle financial performance.

### Research methodology

The study adopted ex-post facto research design. The research was set out to examine corporate governance and performance of oil and gas companies in the Niger Delta region, using administrative headquarters, Lagos, Nigeria. This study covered from 2003 to 2021 because the index case of corporate governance infraction occurred in 2003. The sample size of the study consists of eight oil and gas companies listed on the bourse of the Nigerian Exchange Limited whose annual report and accounts are up to date. The eight companies with complete annual report and accounts are ; 11plc, Ardova plc (Forte oil), Conoil, Eternaoil, Japaul Gold and ventures plc, Mrs (Texaco chevron), Oando, and Total Energies Marketing Nigeria. The study employed the Panel Least Squares regression technique. The functional relationship between the variables of this study is as stated in the model below:

$$\text{Profitability} = f(\text{Corporate governance}) \text{-----}(1)$$

Where

Profitability is represented by Return on Assets.

Corporate governance attributes examined in this study are board size, board independence, internal control and board gender diversity. Consequently, the study model shall be:

$$\text{ROA} = f(\text{BSIZE, BIND, INCONTR, BGDIV}) \text{-----}(2)$$

Where,

ROA = Return on Assets

BSIZE = Board size

BIND = Board independence

INCONTR= Internal control



BGDIV = Board gender diversity

**Model B (With firm size and firm age as moderating variables)**

$$ROA = f(\text{BSIZE}, \text{BIND}, \text{INCONTR}, \text{BGDIV}, \text{FRMS}, \text{FAGE}) \text{-----}(3)$$

Where,

ROA = Return on Assets

BSIZE = Board size

BIND = Board independence

INCONTR= Internal control

BGDIV = Board gender diversity

FSIZE = Firm size

FAGE = Firm age

In econometric form, the models shall be stated thus:

$$ROA_{i,t} = \beta_0 + \beta_1 \text{BSIZE}_{i,t} + \beta_2 \text{BIND}_{i,t} + \beta_3 \text{INCONTR}_{i,t} + \beta_4 \text{BGDIV}_{i,t} + \varepsilon_{i,t} \text{-----}(4)$$

**Model B (With firm size and firm age as moderating variables)**

$$ROA_{i,t} = \gamma_0 + \gamma_1 \text{BSIZE}_{i,t} + \gamma_2 \text{BIND}_{i,t} + \gamma_3 \text{INCONTR}_{i,t} + \gamma_4 \text{BGDIV}_{i,t} + \gamma_5 \text{FRMS}_{i,t} + \gamma_6 \text{FAGE}_{i,t} + \varepsilon_{i,t} \text{-----}(5)$$

$$ROA_{i,t} = \gamma_0 + \gamma_1 \text{BSIZE}_{i,t} + \gamma_2 \text{BIND}_{i,t} + \gamma_3 \text{INCONTR}_{i,t} + \gamma_4 \text{BGDIV}_{i,t} + \gamma_5 \text{FRMS}_{i,t} + \gamma_6 \text{FAGE}_{i,t} + \gamma_7 \text{FSIZE} * \text{BSIZE}_{i,t} + \gamma_8 \text{FSIZE} * \text{BIND}_{i,t} + \gamma_9 \text{FSIZE} * \text{INCONTR}_{i,t} + \gamma_{10} \text{FSIZE} * \text{BGDIV}_{i,t} + \gamma_{11} \text{FAGE} * \text{BSIZE}_{i,t} + \gamma_{12} \text{FAGE} * \text{BIND}_{i,t} + \gamma_{13} \text{FAGE} * \text{INCONTR}_{i,t} + \gamma_{14} \text{FAGE} * \text{BGDIV}_{i,t} + \varepsilon_{i,t} \text{-----}(6)$$

Where,

FSIZE\*BSIZE; FSIZE\*BIND; FSIZE\*INCONTR; and FSIZE\*BGDIV = Interaction terms

FAGE\*BSIZE; FAGE\*BIND; FAGE\*INCONTR; and FAGE\*BGDIV = interaction terms

Others are as defined earlier

$\beta_0, \gamma_0$  = Regression constants

$\beta_1 - \beta_5, \gamma_1 - \gamma_{17}$  = Regression coefficients

$\varepsilon_{i,t}$  = Stochastic error term

$i,t$  = Firm  $i$ , in year  $t$

The aprior is such that:

$a_1 \text{ BIND}, a_2 \text{ BS}, a_3 \text{ INTC}$  and  $a \times \text{BGD} > 0$

**Data analysis**

Descriptive statistics

TABLE 1  
Descriptive statistics and normality test of the variables of study

|           | ROA    | BSIZE | BIND   | INCONT<br>R | BGDIV | FSIZE  | FAGE   |
|-----------|--------|-------|--------|-------------|-------|--------|--------|
| Mean      | 0.043  | 0.089 | 0.623  | 0.057       | 0.098 | 7.593  | 26.911 |
| Median    | 0.044  | 0.090 | 0.667  | 0.060       | 0.100 | 7.620  | 28.00  |
| Maximum   | 1.763  | 0.200 | 1.000  | 0.090       | 0.375 | 9.030  | 50.00  |
| Minimum   | -0.714 | 0.000 | 0.000  | 0.000       | 0.000 | 4.470  | 1.000  |
| Std. Dev. | 0.184  | 0.028 | 0.179  | 0.012       | 0.089 | 0.645  | 11.903 |
| Skewness  | 4.779  | 0.620 | -0.648 | -1.973      | 0.773 | -1.363 | -0.196 |

|                    |              |              |              |              |              |              |             |
|--------------------|--------------|--------------|--------------|--------------|--------------|--------------|-------------|
| Kurtosis           | 55.660       | 4.826        | 3.630        | 11.122       | 3.174        | 8.774        | 2.098       |
| Jarque-<br>Bera    | 17425.75     | 29.647       | 12.612       | 496.02       | 14.728       | 248.02       | 5.888       |
| <b>Probability</b> | <b>0.000</b> | <b>0.000</b> | <b>0.002</b> | <b>0.000</b> | <b>0.000</b> | <b>0.000</b> | <b>0.05</b> |
| Observatio<br>ns   | 146          | 146          | 146          | 146          | 146          | 146          | 146         |

Source: Researcher's Estimation, 2024. \* denote significant at 1% . From Eviews

TABLE 2  
Correlation analysis of the variables of study.

| Variable | ROA             | BSIZE            | BIND             | INCONTR          | BGDIV            | FSIZE            | FAGE |
|----------|-----------------|------------------|------------------|------------------|------------------|------------------|------|
| ROA      | 1               |                  |                  |                  |                  |                  |      |
| BSIZE    | 0.56<br>0.497   | 1                |                  |                  |                  |                  |      |
| BIND     | 0.22<br>0.787   | 0.377**<br>0.000 | 1                |                  |                  |                  |      |
| INCONTR  | 0.142<br>0.82   | 0.582**<br>0.000 | 0.430**<br>0.000 | 1                |                  |                  |      |
| BGDIV    | -0.031<br>0.704 | 0.039<br>0.634   | 0.219**<br>0.007 | 0.066<br>0.419   | 1                |                  |      |
| FSIZE    | -0.103<br>0.215 | 0.363**<br>0.000 | 0.109<br>0.189   | 0.310**<br>0.000 | 0.262**<br>0.001 | 1                |      |
| FAGE     | 0.083<br>0.313  | -0.051<br>0.536  | 0.083<br>0.311   | 0.243<br>0.003   | 0.313**<br>0.000 | 0.419**<br>0.000 | 1    |

Source : Researcher's compilation, 2024. From Eviews 10

Tables 1 and 2 present the descriptive statistics of the variables used in this study and correlation analysis. The mean of the dependent variable (return on assets) is very far from both the maximum and minimum values indicating that there is wide variation in the return on assets of the oil and gas companies studied. The standard deviation confirms that the deviations from the mean is high. For the independent variables, the mean ranges between 0.06 and 27.9. The standard deviations for the independent variables are low implying that the pattern of the

observations is similar. The result in Table 4b shows that the predictor variables except board gender diversity have a positive association with the criterion variable but the relationship is not significant.

Similarly, the association between board gender diversity and return on asset is not significant. The Jarque-Bera statistic and the skewness indicate that the data series is non-normally. This suggests that the ordinary least square regression may produce a spurious result if used for estimation of the specified model. Consequently, pre-estimation tests such as cross-sectional dependence test and unit roots test were conducted to determine the appropriate statistical method to be adopted for estimating the specified model.

### Tests of panel and time series properties

#### Cross-section dependence test

The oil and gas companies which is the unit of analysis of this study are governed, operate in the same environment and regulated by the same laws. This suggests that their corporate governance practices may not be different. This implies that there may be some levels of interdependencies, which could lead to spatial autoregressive processes, therefore, it is necessary to conduct the cross – section dependence test, a pairwise average of a sample correlation that checks for the existence of cross-sectional dependence. The cross – section dependence test is most suitable when the number of cross-sectional units exceeds the time-periods as evidenced in this study.

TABLE 3  
Cross-section dependence test of the variables of study

| Test                     | Statistic | d.f. | Prob.  |
|--------------------------|-----------|------|--------|
| Breusch-Pagan LM         | 165.68    | 28   | 0.000  |
| Pesaran Scaled LM        | 18.40     |      | 0.000  |
| Bias-corrected scaled LM | 18.18     |      | 0.000  |
| Pesaran CD               | 3.17      |      | 0.0015 |

Source: Researcher's estimation, 2024. From Eviews 10.

The result of cross-section dependence test in Table 3 implies that there is cross-sectional dependence among the companies investigated, suggesting the presence of unit roots and cointegration in the data series. Therefore, unit roots test was conducted to verify that the variable are cointegrated.

#### Individual and Panel Unit roots test and cointegration test



TABLE 4  
Individual unit roots test of the variables of study

| Variable | <i>ADF-Fisher Chi-Square</i> |                              | Level of Integration |
|----------|------------------------------|------------------------------|----------------------|
|          | @ Level                      | @ 1 <sup>st</sup> Difference |                      |
| ROA      | 38.83*                       | 53.50*                       | I (0)                |
| BSIZE    | 21.23                        | 37.76**                      | I (I)                |
| BIND     | 26.57**                      | 28.69**                      | I (0)                |
| INCONTR  | 32.79**                      | 35.16*                       | I (0)                |
| BGDIV    | 18.20                        | 52.23*                       | I (I)                |

Denote significant at the 1%, 5%, level of significance

Source: Researcher's estimation, 2024.

TABLE 4b

Result of panel data unit root test in levels of the variables of study

| Variable | Homogenous Unit Root | Heterogeneous Unit Root |             | Order of integration |
|----------|----------------------|-------------------------|-------------|----------------------|
|          | Process              | Process                 |             |                      |
|          | Intercept and Trend  | IPS                     | ADF-Fisher  |                      |
|          | LLC                  | IPS                     | ADF-Fisher  |                      |
|          | <i>I(0)</i>          | <i>I(0)</i>             | <i>I(0)</i> |                      |
| ROA      | -3.47**              | -3.87**                 | 38.83**     | I[0]                 |
| BSIZE    | -1.09                | 3.25**                  | 37.77**     | I[I]                 |
| BIND     | -0.984               | -1.907*                 | 26.57*      | I[0]                 |
| INCONTR  | 0.263                | -2.52*                  | 32.79*      | I[0]                 |
| BGDIV    | -4.44**              | -4.76**                 | 52.23**     | I[I]                 |

. indicate significant at 1% and 5% levels respectively; IPS = Im, Pesaran & Shin; LLC = Levin, Lin & Chu. From Eviews 10

Source: Author's estimation

TABLE 5  
Kao residual cointegration test of variables of the study

| Method | Statistic | Prob. |
|--------|-----------|-------|
| ADF    | -1.898    | 0.03  |

Source: Researcher's estimation, 2024. From Eviews 10

Time series data that are not stationary at levels often lead to spurious regression results, which implies the existence of a high and significant relationship among variables when in fact, it is otherwise. Consequently, the study had to test for the statistical properties of variables to ensure that some of the variables are not integrated of a higher order. The purpose is to verify the

absence or otherwise of second order integrated  $\{I(2)\}$  variables to obviate spurious regression result. The Augmented Dickey Fuller (ADF) for stationarity presents more robust result than other stationarity techniques such as Levin, Lin and Chu t-test, Im, Pesaran and Shin w-stat and Philip-Perron Chi-Square test which have inherent individual weaknesses, therefore, the ADF was preferred for interpretation purposes. The results reported in Tables 4a and 4b indicates that there are no unit roots both at level and first difference. The null hypothesis assumes that the variable of interest has a unit root and therefore non-stationary against the stationarity alternative.

Specifically, the ADF result of the panel unit root shows that the null hypothesis of unit roots should be rejected by the study, implying that there is a long run relationship among the variables as they are stationary either at levels or first difference or both. The result shows that ROA, BIND and INCONTR are stationary at both levels and first difference, while BSIZE and BGDIV are stationary at first difference. The Kao residual test in Table 5 reveals that the variables are cointegrated.

### Test of hypotheses

TABLE 6

Panel OLS, fixed and random effect models of variables of study

| Variable                                   | Panel OLS |         |       | Fixed effects |         |         | Random effects |         |       |
|--|-----------|---------|-------|---------------|---------|---------|----------------|---------|-------|
|  | Coeff.    | t-value | Prob. | Coeff.        | t-value | Prob.   | Coeff.         | t-value | Prob. |
| C  | -0.083    | -0.995  | 0.322 | 0.041         | 1.352   | 0.179   | -0.049         | -0.074  | 0.458 |
| BSIZE                                      | 0.145     | 0.175   | 0.861 | 0.038         | 0.252   | 0.802   | 0.199          | 0.303   | 0.763 |
| BIND                                       | -0.218    | -0.840  | 0.403 | -0.130        | -2.635  | 0.009*  | -0.099         | -0.500  | 0.648 |
| INCONTR                                    | -0.079    | -0.752  | 0.454 | -0.008        | -0.232  | 0.817   | -0.001         | -0.015  | 0.988 |
| BGDIV                                      | 3.169     | 1.702   | 0.099 | 0.092         | 0.160   | 0.873   | 1.361          | 0.999   | 0.319 |
| R <sup>2</sup>                             | 0.203     |         |       | 0.245         |         |         | 0.02           |         |       |
| Adj R <sup>2</sup>                         | -0.011    |         |       | 0.185         |         |         | -0.01          |         |       |
| F-stat                                     | 0.948     |         | 0.546 | 3.96          |         | 0.000** | 0.661          |         | 0.620 |
| D-W  | 1.861     |         |       | 1.275         |         |         | 1.857          |         |       |
| Redundant fixed effect:                    |           |         |       |               |         |         |                |         |       |
| Cross-section F Hausman Test ( $\chi^2$ ): |           |         |       | 4.57          |         | 0.000** |                |         |       |

|                           |       |        |
|---------------------------|-------|--------|
| Cross -section<br>random  | 2.118 | 0.714† |
| Period random             | 2.538 | 0.638† |
| Cross-section<br>& period | 2.829 | 0.587† |

\*, \*\* significant at 1%, 5% respectively. † indicates that random effect is efficient and consistent under H<sub>0</sub>. From Eviews 10.

Source: Researcher's estimation, 2024.

TABLE 7

System-GMM/DPD results and the moderating effect of firm size and firm age

| Variable                                   | Model I (Sys-GMM) |         |         | Model II (moderated) |         |       |
|--|-------------------|---------|---------|----------------------|---------|-------|
|  | Coeff.            | t-value | Prob.   | Coeff.               | t-value | Prob. |
| ROA(-1)                                    | -0.06             | -0.643  | 0.521   | -                    | -       | -     |
| BFSIZE                                     | 2.302             | 2.809   | 0.001*  | -6.96                | -0.69   | 0.49  |
| BIND                                       | -0.036            | -0.121  | 0.904   | -0.12                | -0.09   | 0.93  |
| INCONTR                                    | -2.029            | -2.213  | 0.032** | 16.08                | 0.85    | 0.39  |
| BGDIV                                      | 5.161             | 2.542   | 0.012** | 0.87                 | 0.26    | 0.74  |
| C  | -                 | -       | -       | 0.38                 | 0.366   | 0.72  |
| <u>Moderating variables:</u>               |                   |         |         |                      |         |       |
| <b>Panel A</b>                             |                   |         |         |                      |         |       |
| FBSIZE                                     |                   |         |         | -0.13                | -0.82   | 0.41  |
| FAGE                                       |                   |         |         | 0.19                 | 1.81    | 0.07  |
| <b>Panel B</b>                             |                   |         |         |                      |         |       |
| FBSIZE*BFSIZE                              |                   |         |         | 1.15                 | 0.86    | 0.39  |
| FBSIZE*BIND                                |                   |         |         | -0.04                | -0.25   | 0.80  |
| FBSIZE*INCONTR                             |                   |         |         | -1.45                | -0.52   | 0.60  |
| FBSIZE*BGDIV                               |                   |         |         | -0.09                | -0.21   | 0.84  |
| FAGE*BFSIZE                                |                   |         |         | -0.05                | -0.63   | 0.53  |
| FAGE*BIND                                  |                   |         |         | -0.01                | -0.73   | 0.47  |
| FAGE*INCONTR                               |                   |         |         | -0.13                | -0.78   | 0.44  |
| FAGE*BGDIV                                 |                   |         |         | -0.01                | -0.46   | 0.65  |
| <u>Period fixed effect dummy variable:</u> |                   |         |         |                      |         |       |
| @LEV@ISPERIOD("2005")                      | -0.042            | -0.599  | 0.550   |                      |         |       |
| @LEV@ISPERIOD("2006")                      | -0.050            | -0.724  | 0.470   |                      |         |       |
| @LEV@ISPERIOD("2007")                      | -0.055            | -0.786  | 0.433   |                      |         |       |
| @LEV@ISPERIOD("2008")                      | -0.069            | 0.976   | 0.331   |                      |         |       |

|                        |        |        |         |
|------------------------|--------|--------|---------|
| @LEV@ISPERIOD("2009")) | -0.126 | -1.735 | 0.085   |
| @LEV@ISPERIOD("2010")) | -0.079 | -1.079 | 0.283   |
| @LEV@ISPERIOD("2011")) | -0.156 | -2.184 | 0.031   |
| @LEV@ISPERIOD("2012")) | -0.112 | -1.533 | 0.128   |
| @LEV@ISPERIOD("2013")) | -0.075 | -1.082 | 0.281   |
| @LEV@ISPERIOD("2014")) | -0.111 | -1.557 | 0.122   |
| @LEV@ISPERIOD("2015")) | -0.113 | -1.524 | 0.130   |
| @LEV@ISPERIOD("2016")) | -0.189 | -2.628 | 0.009   |
| @LEV@ISPERIOD("2017")) | -0.146 | -1.825 | 0.070   |
| @LEV@ISPERIOD("2018")) | -0.158 | -1.916 | 0.057   |
| @LEV@ISPERIOD("2019")) | 0.141  | 1.744  | 0.083   |
| @LEV@ISPERIOD("2020")) | 0.049  | 0.568  | 0.571   |
| @LEV@ISPERIOD("2021")) | 0.026  | 0.276  | 0.782   |
| Arrelano-Bond (AR1)    | -1.742 |        | 0.082   |
| Arrelano-Bond (AR2)    | -2.399 |        | 0.016** |

Hansen J- stat 121.44 0.000\*

\*, \*\* significant at 1%, 5% respectively. From Eviews 10.

Source: Researcher's estimation, 2024.

Table 6 shows the regression result of the effect of the independent variables on the dependent variable using the panel least square estimations. From the panel OLS, fixed and random effects result only board independence has significant relationship with return on asset under the fixed effect model. In order to ascertain the robustness of the result, the standard Hausman test for cross-section random effects test is used to identify the time-varying conditions of the study data to determine which to interpret between the fixed and random effect models.

The result in Table 6 shows that the redundant fixed effect result passed the significance test at 5 per cent ( $F = 4.57$ ;  $p = 0.000$ ). This suggests that the fixed effect result is good for interpretation. The random effects result failed the significance test at the 5 per cent level ( $\chi^2 = 2.12$ ;  $0.714$ ;  $2.54$ ;  $p = 0.638$ ,  $2.83$  and  $0.587$  respectively), indicating that the null hypothesis stating that a random effect does exist in the cross sections of the data is valid. This also confirm that the random effect result can be chosen as the best method to estimate the relationships among the variables.

However, in order to achieve the most robust result for the specified model in this study, the System Generalized Method of Moment (Sys-GMM) was employed to estimate the specified model. The result of the sys-GMM is depicted in Table 7. The results in the first panel (*Model I*) shows that the coefficients of BSIZE ( $c = 2.302$ ,  $p = 0.001$ ), INCONTR ( $c = -2.029$ ,  $p = 0.032$  and BGDIV ( $c = 5.161$ ,  $p = 0.012$ ) are significant, but while the coefficient of BSIZE and BGDIV are positive, the coefficient of INCONTR is negative. The implication of the result is that while the size of the board and diversity of the board of oil and gas companies in Nigeria are important corporate governance that contributes to profitability, internal control has the tendency of reducing the profits of oil and gas companies in Nigeria. This suggests that internal control is a critical issues among oil and gas companies that should be given serious consideration

TABLE 8

Model summary on the moderating effect of firm size and firm age on the relationship between corporate governance and profitability of Oil and Gas companies

| Model II                    | R     | R2    | Adj. R2 | Std. error | Change statistics |          |      |      | Sig. F change |
|-----------------------------|-------|-------|---------|------------|-------------------|----------|------|------|---------------|
|                             |       |       |         |            | R2 change         | F change | df 1 | df 2 |               |
| A: DV & IV                  | 0.108 | 0.012 | -0.02   | 19.67      | 0.012             | 0.352    | 4    | 120  | 0.842         |
| B: DV, IV & Moderator       | 0.202 | 0.041 | -0.01   | 19.54      | 0.041             | 0.838    | 6    | 118  | 0.543         |
| C: B with interaction terms | 0.278 | 0.077 | -0.04   | 19.84      | 0.077             | 0.660    | 14   | 110  | 0.808         |

\* Significant at less than 5 percent.

Source: Researchers' compilation (2024) from IBM SPSS Statistics 26.

### Moderating effect of firm size and firm age

To establish the robustness of the study's model, the researcher tested for the moderating effect of firm size and firm age. This is because firm size and firm age are strong determinants of corporate governance practices (Soyemi and Olawale, 2019; Hassan and Bello, 2013). The results of the estimations presented in Tables 8 is essential for examining the moderating role of firm size and firm age on the effect of corporate governance and profitability of oil and gas companies in Nigeria. The parameters of interest are the change statistics. The results of the regression analysis of the effect of the predictors on the criterion variable are not significant: BSIZE {c = -6.96, t = -0.69, p = 0.49}; BIND {c = -0.12, t = -0.09, p = 0.93}, INCONTR {c = 16.08, t = 0.85, p = 0.39} and BGDIV {c = 0.87, t = 0.26, p = 0.74}:

The result in Table 8 shows that  $\Delta R^2 = 0.012$ ,  $\Delta F (4,120) = 0.352$  with  $p = 0.842$  are not significant. Moreover, when interaction terms were added to the model, the results were not significant for FSIZE\*BSIZE {c = 1.15, t = 0.86, p = 0.39}, FSIZE\*BIND {c = -0.04, t = -0.25, p = 0.80}, FSIZE\*INCONTR {c = -1.45, t = 0.52, p = 0.60} and FSIZE\*BGDIV {c = -0.09, t = -0.21, p = 0.84}; FAGE\*BSIZE {c = -0.05, t = -0.63, p = 0.53}, FAGE\*BIND {c = -0.01, t = -0.73, p = 0.47}, FAGE\*INCONTR {c = -0.13, t = -0.78, p = 0.44} and FAGE\*BGDIV {c = -0.01, t = -0.46, p = 0.65}. The  $\Delta R^2 = 0.077$  and  $\Delta F (14,110) = 0.660$  with  $p = 0.808$  in C, Table 8 confirms that the result is not significant, thus, firm size and firm age do not moderate the relationship between corporate governance and the profitability of oil and gas firm in Nigeria.

### Test of hypothesis

This was based on the coefficient of the independent variables in Table 7, Model I.  
H01

There is no significant relationship between board size and the performance (ROA) of oil and gas companies in Nigeria.

In the result shown on Table 7, the coefficient of BSIZE is positive (2.30) and significant at 5% ( $t = 2.81$ ,  $p = 0.001$ ). Consequently, the null hypothesis that board size has no significant relationship with the ROA of oil and gas companies is rejected implying that the corporate governance practices of oil and gas companies in Nigeria has significant influence on profitability. The result indicates that a unit change in BSIZE is likely to bring about 2.302 units change in profitability.

#### H02

There is no significant relationship between board independence and the performance (ROA) of oil and gas companies in Nigeria.

The focus of this hypothesis is on the effect of board independence (BIND) on the ROA of oil and gas companies in Nigeria. The result shows that the coefficient of BIND has a negative (-0.04) relationship with ROA. However, this result is not significant ( $t = -0.12$ ,  $p = 0.904$ ) leading to non-rejection of the null hypothesis. This implies that a unit change in BIND results in 0.04 units change in return on assets.

#### H03

There is no significant relationship between internal control and the performance (ROA) of oil and gas companies in Nigeria.

The regression result in table 7 shows that the coefficient of INCONTR is negative (-2.03) and significant ( $t = -2.21$ ,  $p = 0.032$ ) with ROA. Since this result is significant, the study rejects the null hypothesis, implying that internal control has a significant effect on ROA of oil and gas companies in Nigeria.

#### H04

There is no significant relationship between board gender diversity and the performance (ROA) of oil and gas companies in Nigeria.

This hypothesis captured the effect of board gender diversity on the return on assets of oil and gas companies in Nigeria. The result reveals that the coefficient of board gender diversity is 5.16 with  $t = 2.54$  and  $p = 0.012$ . As the result is significant, the study rejects the hypothesis of no significant relationship with return on asset. The result indicates that a unit change in board gender diversity will bring about 2.54 change in return on asset of the companies investigated.

### **Summary of findings**

The findings of this research show that three of the independent variables examined have significant effect on performance of oil and gas companies in Nigeria. First, board size has a significant relationship with performance. Large board size provides companies with a wide range of experience which can improve performance. Secondly, internal control has a significant negative relationship with performance of oil and gas firms in Nigeria. The probable reason for this is that oil and gas companies in Nigeria may be spending so much on internal control which may affect performance negatively. Thirdly, board gender diversity has a significant effect on performance, indicating that the presence of women on the board of oil and gas companies impacts performance positively. This is probably because the women on the board are frugal and are able to instill financial discipline.



### **Conclusion/ Recommendations**

Corporate governance is one of the tools that can be used to ensure companies operate in a manner that will ensure better performance in the interest of all stakeholders of the company. Weak corporate governance practices has been documented in extant literature to have led to corporate collapses. This study examined the effect of corporate governance on the performance of oil and gas companies in Nigeria and also investigated whether firm size and firm age moderate the relationship between corporate governance and performance of the oil and gas companies studied. The study recommended thus:

1. Oil and gas companies in Nigeria should ensure that there are sufficient directors on the board with requisite experience that can impact performance positively.
2. Oil and gas companies in Nigeria should continue to ensure firm control over operation to enhance performance, but they should always carry out cost and benefit analysis of internal control.
3. Oil and gas companies in Nigeria should ensure there is adequate number of women on their boards to enhance performance.
4. Further studies should be carried out to investigate why board independence of oil and gas companies in Nigeria had no significant effect on corporate governance.
5. Future studies should be carried out to examine why company size and company age of oil and gas in Nigeria are not important in the determination of the effect of corporate governance variables on the performance of the companies.

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