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Do Boards Determine Integrated Reporting in Nigerian Listed Oil and Gas Firms?

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Purpose: Integrated reporting is a process founded on integrated thinking, with the aim of issuing periodic integrated reports by firms about value creation over time. This study investigates the effect of board attributes (independence, diligence, and size) on the quality of integrated reporting of Nigerian listed oil and gas firms.

Design/Methodology: Panel data are obtained from annual reports of a purposive sample of 10 out of the 12 listed Oil and Gas firms in Nigeria from 2013 to 2017. These are analyzed using multiple regression techniques, via STATA 13.0 software.

Results: Based on the analysis conducted, findings show that the board independence and board size have a significant and positive effect, while board diligence has an insignificant and positive effect on the quality of integrated reporting, proxied by integrated reporting disclosure score (IRDSCORE). This outcome implies that having the optimum mix of members on the board influences the extent of integrated disclosures of listed oil and gas firms in Nigeria.

Practical Implications: Global corporate reporting is currently driving towards integrated thinking, incorporating financial, governance, social and environmental issues to promote long-term value creation. As a third world nation, the adoption of integrated reports is voluntary in Nigeria. However, considering the information needs of all stakeholders and appointing qualified persons on the board by shareholders, and formulating enabling policies in this direction by regulatory agencies would drive corporate reporting to be more integrative to drive long-term value maximization.

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Introduction

The preparation and publication of financial statements have been the basic way through which management communicates business activities to owners and other stakeholders. However, these statements were not integrated such that they failed to report how environmental and social activities may affect the performance of the firm. Consequently, in 2011, the International Integrated Reporting Council, which is a global body formed by regulators, investors, companies, standard-setting bodies, accountants and non-governmental organizations, launched a pilot program regarding the issuance of integrated reports. The Council aimed at the development of a framework for integrated reporting (IR Framework) based on the feedback from those actors that were affected by the shortcomings of the financial statements. As a result, corporate reporting shifted from the mere presentation of financial statements to the integration of financial statements, management commentary, governance issues, environmental concerns and remuneration reporting (The International Integrated Reporting Council (IIRC), 2013).

Integrated reporting attempts to merge financial and non-financial information, developing the integrated thinking, underlying the interdependencies between them, improving the quality of information, and identifying the material issues that affect the business, which lead to a better allocation of resources. All these elements support decision making and actions that are focused on value creation over the short, medium, and long runs (Hurghis, 2017). According to (Hurghis (2017), integrated reporting suffers the challenge of lack of interconnectivity and clear identification of the nexus between most of the content elements of the IR Framework and performance of firms. In spite of this challenge, integrated reporting has been considered as a process founded on integrated thinking, with the purpose to ensure the issuance of periodic integrated reports by organizations about value creation over time. As a result, the IIRC is looking forward to changing the face of corporate reporting.

The board of directors, pursuing the goal of wealth maximization on behalf of the shareholders, are duty bound to ensure adequate communication of all activities relating to shareholders' investments (Securities and Exchange Commission (SEC), 2016; Basuony & Mohamed, 2014; Huafang & Jianguo, 2007). Thus, the board has to maintain a comprehensive and cost-efficient communication channel for disseminating relevant information, including material non-financial and sustainability reports, which are crucial for informed decision-making by investors, stakeholders and other interested users. This is aimed at reducing information asymmetry between the board and other stakeholders (Beck, Campbell, & Shrives, 2010; Chen & Jaggi, 2000).

Currently, integrated reporting is a voluntary disclosure, except for firms listed on the floor of the Johannesburg Stock Exchange in South Africa (Hurghis, 2017). Consequently, the question lies in whether issuing integrated reports by firms would be affected by certain attributes of the board of directors. Therefore, this paper investigates the effect of board attributes on the extent of integrated disclosure of listed Oil and Gas firms in Nigeria. Specific objectives of the paper include: (i) To investigate the effect of board independence on the quality of integrated reporting of listed Oil and Gas firms in Nigeria based on the IIRC IR Framework; (ii) To ascertain the effect of board diligence on the quality of integrated reporting of listed Oil and Gas firms in Nigeria based on the IIRC IR Framework; and (iii) To assess the effect of board size on the extent of integrated reporting of listed Oil and Gas firms in Nigeria in relation to the IIRC IR Framework. Sequel to the objectives stated the following hypotheses are formulated:

Ho1:   Board independence has no significant effect on the quality of IR of listed Oil and Gas firms in Nigeria;

Ho2:   Board diligence has no significant effect on the quality of IR of listed Oil and Gas firms in Nigeria; and

Ho3:   Board size has no significant effect on the quality of IR of listed Oil and Gas firms in Nigeria.

The statutory responsibility of communicating the activities of an organization to its principal (shareholders) lies with the agent (board of directors). However, disclosing information adjudged to be voluntary is at the mercy of the board. Thus, considering the dimension of global corporate reporting, the outcome of this study would expose the importance of integrated reporting as well as the role the board to shareholders, which would guide them in the choice of members to constitute the board of directors. In addition, the outcome of this study is significant to regulatory agencies such as the Nigerian Stock Exchange (NSE) and the Securities and Exchange Commission (SEC) in their bid to formulating policies to regulate and set limits to what constitute voluntary disclosures, thus encouraging integrated reporting. Furthermore, the outcome of this study would add to the body of knowledge on the subject matter, and serve as a reference tool to research students and academics for further research.

The paper is structured into five sections, the first of which is this introduction. Section two presents the literature review, while section three contains the methodology. Finally, sections four and five present the results and discussion as well as conclusion and recommendations respectively.

Literature Review

Integrated reporting refers to the system of reporting that combines both financial and non-financial information in the report. Integrated reporting develops the integrated thinking underlying the interdependencies between financial and non-financial information thus, improving the quality of information and identifying the material issues that affect the business, which will lead to a better allocation of resources to enhance value creation over time (Gokten & Gokten, 2017; Hurghis, 2017). Integrated thinking considers the connectivity and interdependencies among a range of factors that affect the ability of the firm to create value over time. These factors include: the capitals that the firm uses or affects and the critical interdependency, including trade-offs between them; the capacity of the firm to respond to key stakeholders' legitimate needs and interests; how the firm develops its business model and strategy to respond to its external environment and the risks and opportunities it faces; and the firm's activities, performance and outcomes in terms of the past, present and future capitals (The International Integrated Reporting Council (IIRC), 2013). The contents of the Integrated Reporting Framework as developed by the IIRC is classified into guiding principles and the content elements. The guiding principles include strategic focus and future orientation; connectivity of information; stakeholder relationship; materiality; conciseness; reliability and completeness; and consistency and comparability. While the content elements include: firm's overview and external environment; governance; business model; risk and opportunities; strategy and resource allocation; performance; outlook; and the basis of preparation and presentation (Schorger & Sewchurran, 2015; Kocmanova & Docekalova, 2012).

The International Integrated Reporting Council (IIRC) (2013) opines that adopting integrated reporting will benefit the firm by improving the quality of information available to providers of financial capital to enable a more efficient and productive allocation of capital; promoting a more cohesive and efficient approach to corporate reporting that draws on different reporting strands and communicating the full range of factors that materially affect the ability of the firm to create value over time; enhancing accountability and stewardship for the broad base of financial, manufactured, intellectual, human, social and natural capitals and promoting the understanding of their connectivity; and supporting integrated thinking, decision making and actions that are geared towards value creation over the short, medium or long terms. Consequently, to ensure a global acceptability and adoption of integrated reporting, the IIRC collaborated with the Carbon Disclosure Project (CDP), Global Reporting Initiative (GRI), IFRS Foundation, International Federation of Accountants

(IFAC), Sustainability Accounting Standards Board (SASB) and the World Business Council for Sustainable Development (WBCSD) (Hurghis, 2017; Ruiz-Lozano & Tirado-Valencia, 2016).

The board of directors is typically the governing body of the organization; whose primary responsibility is to ensure that the organization achieves the shareholders' goal of value maximization (Ienciu, 2012; Mallin & Michelon, 2011). According to Securities and Exchange Commission (SEC) (2016), the board of directors is composed of executive and non-executive directors, of which at least one of the non-executive directors must be an independent person. In their role of maximizing shareholders' wealth, it is the duty of the board of directors to ensure that material and reportable non-financial and sustainability issues are disclosed. The level of disclosure is a strategic decision made by the board of directors (Rachagan, 2010; Patelli & Prencipe, 2007) thus, large board sizes could lead to more effective monitoring and reduce the opportunistic behavior by managers, which may prevent the withholding of information by management, especially voluntary disclosures. It has been argued that a greater number of directors on the board may reduce the likelihood of information asymmetry (Rouf, 2016; Chen & Jaggi, 2000). In addition, Akhtaruddin and Rouf (2012) argue that non-executive directors are needed on the board to monitor and control the actions of executive directors, who may engage in opportunistic behavior and also ensure that managers are working in the best interest of the principal. Cheng and Courtenay (2006) believe that a larger proportion of non-executive directors on the board would induce executive directors to disclosures more material non-financial and voluntary issues, which integrated reporting is inclusive.

Theoretical Framework

Theories that best explains the relationship between board composition and integrated disclosures include the agency theory, stakeholders' theory, signal theory, and legitimacy theory. The agency theory is a supposition that explains the relationship between principals (shareholders) and the agents (directors) in a firm. The shareholders employ directors to perform tasks on their behalf and thus, the directors are accountable to the shareholders and are required to render their reports at the end of the financial year. These reports are expected to include material non-financial and sustainability issues that are necessary enough to facilitate investors' decision making. Although the IR framework is a voluntary disclosure, its disclosure would change the behavior of shareholders and investors or reduce the information asymmetry between them and the management (Roxana-Loana & Petru, 2017). The stakeholders' theory is similar to the agency theory except that it incorporates the interest of all stakeholders rather than only shareholders. This shows that the directors owe every stakeholder the duty of making comprehensive information available for decision-making purposes, not only to investors (Eccles, Krzus, & Watson, 2011). In addition, the signal theory suggests that disclosing social and environmental issues convey a signal that they are engaged in proactive environmental strategy as they are incentivized to inform shareholders and other stakeholders by voluntarily disclosing more (Bakar, Sheikh, & Ameer, 2011). Therefore, these positive signals make companies more appealing to investors in the stock market. Moreover, according to the legitimacy theory, corporate social reporting provides information that legitimizes company's behavior with the aim to influence stakeholders' and eventually society's perceptions about the company (Hooghiemstra, 2000), resulting to higher firm value (Ortas, Gallego-Alvarez, & Alvarez, 2015).

Thus, the study adopts the stakeholders' and signaling theories because the duty of the board of directors to disclose material non-financial and/or environmental and social information about the firm is not only to send a signal to shareholders but it is meant to feed all stakeholders with the material information that would facilitate their decision making. As a result, the ability of the board to disclose adequate financial and non-financial information would help reduce the information asymmetry between the board and other stakeholders of the firm.

Review of Empirical Studies

There are a number of empirical studies relating to integrated reporting and board composition. Cheng and Courtenay (2006) analyze the association between board monitoring and the level of voluntary disclosures of the sample of 104 listed companies on the Singapore Stock Exchange for the year 2000. The study focused on the proportion of independent non-executive directors, the board size, and whether or not the same person doubles as the CEO and chairman of the board. The study found a significant and positive association between the proportion of independent non-executive directors and voluntary disclosures, while board size and CEO duality have no correlation with voluntary disclosures. This implies that as more independent non-executive directors are admitted on the board of the companies, they turned to disclose more voluntary information.

Lim, Matoksy, and Chow (2007) examine the association between board composition and different types of voluntary disclosure of the sample of 181 Australian top 500 companies for the year 2001, using the correlation technique. The study finds a positive and significant correlation between the proportion of independent directors and total voluntary disclosures of the companies, while the structure of the board is found not to influence the voluntary disclosure of financial and non-financial information. This result indicates that boards composed largely of independent directors voluntarily disclose more forward-looking quantitative and strategic information.

Brammer and Pavelin (2008) study the relationship between the proportion of non-executive directors and the quality of voluntary environmental disclosures of the sample of 447 firms representing 64% of the FTSE All-Share index for a two-year period from 1999 to 2000. The study finds a negative but significant correlation, meaning that the higher the proportion of non-executive directors, the higher the tendency of not disclosing environmental information. In the same vein, Arshad, Darus, and Taylor (2008) examine the effects of board composition and mimetic behavior on the extent and credibility of corporate voluntary disclosure. The study is based on the annual reports of 155 Malaysian listed companies, at the end of 2002, during which these companies faced new corporate governance regulation. The study found an insignificant relationship between independent non-executive directors and the volume of voluntary disclosures, among other findings. It provides evidence that under the influence of dominant owners on board, management voluntary disclosure decisions are driven by incentives to confirm when their company is structured to meet expectations of good corporate governance. Such incentive seems to override incentives to disclose valuable information to outside investors.

Villiers, Naiker, and Van-Staden (2011) examine the relationship between corporate environmental performance and board characteristics of the sample of 1,216 companies from the KLD database from the USA from 2003 to 2004. The study finds a direct correlation between independent directors as well as board size with environmental performance. This implies that companies with a higher number of independent directors and a larger board turned to have higher environmental performance.

Akhtaruddin and Rouf (2012) examine the relationship between corporate governance, cultural factors, and voluntary disclosure by the listed companies in Bangladesh. The corporate governance factors examined are the proportion of independent non-executive directors, board leadership structure, management ownership, board size, and audit committee size. The extent of voluntary disclosure level is measured using 68 items of information. Data are taken from annual reports of the companies listed on the Dhaka Stock Exchange in Bangladesh for the year 2006. The result shows a positive association between board size, board leadership structure, audit committee size and voluntary disclosure. However, the study found no evidence to support the contention that independent directors are associated with increased disclosure, consistent with previous studies. Higher education of the CEO and CFO is positively related to the level of voluntary disclosure. The

result also indicates that the extent of voluntary disclosures is negatively associated with higher management ownership.

Nandi and Ghosh (2013) investigate the association between firm characteristics, corporate governance attributes and the level of corporate disclosure of listed firms in India from 2000/2001 to 2009/2010. The study is based on the sample of 60 firms listed in the Bombay Stock Exchange (BSE)/National Stock Exchange (NSE) during the study period and the Standard and Poor (2008) model for measuring the level of corporate disclosure is adopted. The multiple regression model is used for analysis and the study found a positive relationship between board size, the ratio of audit committee members to total board members, family control, CEO duality, firm size, profitability, liquidity and the extent of corporate disclosure. However, the degree of corporate disclosure is negatively related to board composition, leverage, and age of the firm.

Ghabayen, Mohamad, and Ahmad (2016) examine the relationship between board characteristics and the level of corporate social responsibility disclosure (CSRD) in the Jordanian banking sector, using the sample of 147 banks/years during a period of 10 years from 2004 to 2013. A checklist consisting of 100 items is developed to measure the disclosure level and the result indicates a relatively low level of disclosure in Jordanian banks. Multiple regression analysis is employed to examine the developed hypotheses. The results indicated that the larger board size and a higher level of the disclosure are correlated. However, low level of disclosure is associated with a higher proportion of independent directors and institutional directors. In addition, the female director is found to negatively affect the level of disclosure. This study has filled some of the previous studies' gaps; the study is conducted in a new business environment. Besides, previous CSRD's studies have not considered some of the board characteristics such as institutional directors. Thus this study investigates their impacts on the level of CSRD. In addition, this study provides some guidelines for future works. Furthermore, the findings of this study might be interested in several groups of shareholders and stakeholders such as government, regulators, potential investors, and CSR agencies.

Rouf (2016) investigates the relationship between board diversity and corporate voluntary disclosures of the sample of 106 listed non-financial companies in Dhaka Stock Exchanges (DSE) from the period 2007-2011. Using the ordinary least squares regression technique and an unweighted relative disclosure index for measuring voluntary disclosure, the empirical results indicate that the percentage of female directors (PFD), board leadership structure (BLS) and total assets (TA) are positively associated with corporate voluntary disclosure. However, the study found the extent of corporate voluntary disclosure to be negatively associated with the percentage of equity owned by the insiders to all equity of the firms' higher management ownership.

Hurghis (2017) investigates the relationship between integrated reporting and board features of 7 North American firms, 5 South American firms, 49 firms in Europe, 11 African firms, 13 firms from Asia, and 4 Australasia firms for a four-year period from 2012 to 2015 using the integrated reporting framework (IR Framework). The study finds a direct but weak correlation between board size and the disclosure index for integrated reporting, meaning that the bigger the size of the board, the more the discloses the content elements of the IR framework. On the contrary, the percentage of independent non-executive directors, CEO gender, CEO duality and CEO change during the year exhibit no correlation with the disclosure index, which shows that rising IR does not depend on the presence of independent non-executive directors, CEO gender, CEO duality and CEO change during the year.

These studies report mixed findings in the relationship between board attributes and corporate voluntary and/or integrated disclosures at different times and locations. For instance, Cheng and Courtenay (2006), Lim et al. (2007), and Brammer and Pavelin (2008) report an insignificant relationship between board size and voluntary disclosures, while that between independent non-executive directors and voluntary disclosures are seen to be significant. On the contrary, Hurghis (2017) found a direct but weak correlation between board

size and integrated reporting disclosure index with that of independent non-executive directors is reported as insignificant. Amidst these mixed findings, the work of Hurghis (2017) is most related to the current study. However, his study establishes a link between integrated disclosures and board features but covers the period from 2012 to 2015, which is earlier than the IIRC IR framework, which was issued in 2013. In addition, Hurghis (2017) fails to incorporate board diligence as a proxy for board features. Thus, the current study fills this gap by extending the study to cover up to 2017, commencing in 2013 immediately after the IR framework was released as well as the inclusion of board diligence measured in terms of the number of meetings held by the board during the period to determine consistency or otherwise with previous studies. In addition, the choice of the oil and gas industry in Nigeria in pertinent because no previous study of this nature has been done on the industry.

Design/Methodology

The study adopts an ex-post facto research design. Thus, descriptive statistics, correlation, and multiple regression techniques are used for data analysis. The population of the study comprises the 12 Oil and Gas firms listed on the floor of the Nigerian Stock Exchange as at 31st December 2017 (see Appendix A). The study uses a purposive sampling technique with the intention of selecting all Oil and Gas firms that engage in environmental pollution and degradation activities that is the exploration and production of petroleum products as well as the manufacturing of by-products such as lubricants and greases, which requires them to engage in integrated reporting. Therefore, RAK Unity Petroleum Company Plc is eliminated Anino International Plc is eliminated on the basis of unavailability of trend reports. Consequently, the sample size of 10 listed Oil and Gas firms in Nigeria is selected, which includes 11 Plc, Conoil Plc, Capital Oil Plc, Eterna Plc, Forte Oil Plc, Japaul Oil and Maritime Services Plc, MRS Oil Nigeria Plc, Oando Plc, Seplat Petroleum Development Company Plc and Total Nigeria Plc. Data is obtained from the annual reports and accounts of the sampled firms for a 5-year period from 2013 to 2017. This is because the IR Framework, which is the basis for the determination of Disclosure Index of the firms was introduced in 2013 by the IIRC.

The dependent variable (integrated reporting) is measured, via content elements of the IR framework, using the disclosure score (IRDSCORE). The IRDSCORE is determined as follows:

$$\text{IRDSCORE} = \sum_{(i=1)}^{m} d_i \Big/ \sum_{(i=1)}^{n} d_i \text{ ---(1)}$$

Where: d_i = 1 if the item in the framework is disclosed;

   d_i = 0 if the item is not disclosed;

   m = number of disclosed items; and

   n = maximum number of analyzed items.

The independent variable (board attributes) is measured in terms of the independence (measured by the proportion of non-executive to total number of directors) [BINDEP], diligence (measured in terms of number of meetings held by the board during the period) [BDILIG], and size (proxied by the natural logarithm of the total number of members on the board) [BSIZE] of the board. In addition, the tangibility of the firms (proxied by the proportion of non-current assets to total assets) [FTANG], is included as control variables to take care of individual firm differences. The regression model for the study is stated as:

$$Y_{it} = \alpha + \beta_0 X_{it} + \varepsilon_{it} \text{ ---(1)}$$
where: Y_{it} = Dependent variable of firm ì for time period t;

   = f (IRDSCORE).

α = Constant/Intercept.

β_0 = Coefficient of Independent/Explanatory variables.

X_{it} = Explanatory variables of firm ì for time period t;

= f (BINDEP, BDILIG, BSIZE, FTANG).

ε_{it} = Error term of firm ì for time period t.

$$IRDSCORE_{it} = \beta_0 + \beta_1 BINDEP_{it} + \beta_2 BDILIG_{it} + \beta_3 BSIZE_{it} + \beta_4 FTANG_{it} + \varepsilon_{it} \text{-----------------------------(2)}$$

The data normality test, heteroscedasticity test, and the multicollinearity test are conducted to ascertain the fitness of the data on the model. Moreover, the a priori expectation of the study is stated as $\beta1 > 0$; $\beta2 > 0$; $\beta3 > 0$; and $\beta4 > 0$.

Results and Discussion

This section presents and discusses the results of the study. It begins with descriptive statistics, followed by correlation coefficients and diagnostic tests. In addition, the result of the regression analysis between IRDSCORE and BINDEP, BDILIG, BSIZE, and FTANG have been presented and discussed, which forms the basis on which the null hypotheses formulated are tested.

Descriptive Statistics

The result of the descriptive statistics of the variables of the study is presented in Table 1. It presents a summary of the descriptive statistics of the variables of the study. Particularly, the mean, standard deviation, minimum and maximum values of all the variables are provided. In addition, the skewness of the variables is displayed.

Table 1: Descriptive Statistics

Variables	Mean	Standard Deviation	Minimum	Maximum	Skewness	Observations
IRDSCORE	0.5905091	0.1122242	0.3636364	0.88	0.3670606	50
BINDEP	0.640145	0.1174063	0.4	0.8181818	-0.316909	50
BDILIG	4.74	1.046081	3.0	8.0	1.075193	50
BSIZE	8.34	2.27327	4.0	12.0	-0.2584	50
FTANG	0.4192488	0.2341942	0.0596997	0.9719344	0.3748708	50

Source: STATA 13.0 Output, 2018.

Table 1 reveals that IRDSCORE ranged from 36.4% to 88% with a mean of 59.1% and a standard deviation of 11.2%. This implies that the sampled oil and gas firms disclose, on the average, 59.1% of integrated issues as indicated on the IR framework and the data deviates from both sides of the mean by 7.4%. Moreover, IRDSCORE is positively skewed at 36.7%, meaning that most of the data for IRDSCORE during the study period fall on the right-hand side of the normal curve. The data for BINDEP of the sampled oil and gas firms has an average of 64%, meaning that the proportion of non-executive directors of the firms is more as compared with executive directors. On the other hand, BINDEP deviates from both sides of the mean at the rate of 11.7%, has the minimum and maximum values of 40% and 81.8% respectively, resulting to a 41.8% range of the data. Similarly, BINDEP is negatively skewed at 31.7%, indicating that most of the data values for BINDEP fall on the left-hand side of the normal curve. In addition, the data for BDILIG reports the average of 4.74 implying that the board of directors of the sampled firms held an average of about 5 meetings

annually. Data for BDILIG deviates from both sides of its average by about 1 meeting. The minimum and maximum values of BDILID are about 3 and 8 meetings respectively, yielding the range of 5 meetings. Moreover, data for BDILIG is positively skewed at the coefficient of about 1.08, indicating that most of the data fall on the right-hand side of the normal distribution curve.

In addition, data for BSIZE reports an average of 8.34, which means that the size of the board of directors of the sampled firms averages about 8 members. BSIZE also shows that the deviation of a number of members from both sides of the average number is about 2 members. BSIZE has a range of 8 members, resulting from the minimum and maximum values of 4 and 12 members respectively. However, BSIZE is negatively skewed at the coefficient of about -0.26, meaning that most of the data for BSIZE fall on the left-hand side of the normal distribution curve. Similarly, FTANG reports the mean of about 41.9% and the standard deviation of about 23.4%. This indicates that data for FTANG of the sampled listed oil and gas companies deviate from both sides of the mean by 23.4%. The data for FTANG has the minimum and maximum values at 5.97% and 97.2% respectively, resulting in a range of 91.23%. This indicates that the sampled firms are invariably tangible. However, FTANG has a positive skewness coefficient of about 0.375, which shows that most of the data for FTANG fall on the right-hand side of the normal distribution curve.

From the foregoing, it can be deduced that the range of data for both the dependent and independent variables are wide, indicating the extent of individual firm differences. This justifies the inclusion of firm tangibility in the model. In addition, the standard deviation indicates that the data for integrated disclosures and board attributes are not widespread across their mean since all standard deviations are less than the acceptable level of 2. This implies the similarity in the kinds of integrated disclosures reported by the sampled listed oil and gas firms.

Transformation of Data

Prior to the descriptive statistics, the measurements of the variables of the study were in diverse units of measurement cutting across percentages, number of meetings, and the number of members on the board. This requires a transformation of data to ensure uniformity in measurement. Thus, the natural logarithm is applied to all variables to facilitate regression analysis, resulting in a transformed model stated as follows:

$$Lg.IRDSCORE_{it} = \beta_0 + \beta_1 Lg.BINDEP_{it} + \beta_2 Lg.BDILIG_{it} + \beta_3 Lg.BSIZE_{it} + \beta_4 Lg.FTANG_{it} + \epsilon_{it} \text{------------(3)}$$

Correlation Coefficients

Table 2: Correlation Matrix

Variables	IRDSCORE	BINDEP	BDILIG	BSIZE	FTANG
IRDSCORE	1.0000				
p-value					
BINDEP	0.0639	1.0000			
p-value	0.6592				
BDILIG	0.1391	*0.3796*	1.0000		
p-value	0.3355	*0.0065*			
BSIZE	0.1972	0.1660	*0.4987*	1.0000	
p-value	0.1698	0.2493	*0.0002*		
FTANG	*0.2958*	-0.3917	-0.4616	-0.4040	1.0000
p-value	*0.0370*	*0.0049*	*0.0007*	*0.0036*	

Source: STATA 13.0 Output, 2018.

This section contains the result of the Pearson pairwise correlation between integrated disclosures proxied by the disclosure index (IRDSCORE) and board attributes, measured in terms of board independence (BINDEP), board diligence (BDILIG), and board size (BSIZE) with firm tangibility (FTANG) as control the variable. The correlation coefficients and levels of significance are presented in Table 2.

Table 2 shows that there is a positive correlation between IRDSCORE and BINDEP, BDILIG, and BSIZE of the sampled listed oil and gas companies in Nigeria at the correlation coefficients of 0.0639, 0.1391, and 0.1972, which are insignificant at 65.92%, 33.55% and 16.98% levels of significance respectively. Moreover, IRDSCORE and FTANG have a positive and significant correlation at the coefficient of 0.2958 and 3.70% level of significance. This implies that the degree of integrated disclosure has a direct relationship with board attributes.

Diagnostic Tests

The study conducts the Shapiro-Wilk test for data normality and the variance inflation factor (VIF) to check for multicollinearity among explanatory variables of the study. The results of diagnostic tests are presented in Table 3.

Table 3: Result of Diagnostic Tests

Variables	Data Normality Test					Variance Inflation Factor	
	Obs.	W	V	Z	P-Value	VIF	1/VIF
IRDSCORE	50	0.98861	0.536	-1.331	0.9084		
BINDEP	50	0.92946	3.318	2.558	0.0053	1.27	0.789227
BDILIG	50	0.9517	2.271	1.75	0.0401	1.6	0.625093
BSIZE	50	0.93183	3.206	2.485	0.0065	1.42	0.706586
FTANG	50	0.95057	2.325	1.799	0.036	1.45	0.689114
						Mean VIF = 1.43	

Source: STATA 13.0 Output, 2018.

Test for Data Normality

The Shapiro-Wilk test is conducted to test the null hypothesis that data for the study is abnormally distributed at a 5% level of significance. The decision rule is that the z-statistic with a significant p-value shows abnormality while insignificant p-values indicate normality of data. Table 3 shows the z-statistic in respect of IRDSCORE, BINDEP, BDILIG, BSIZE, and FTANG at the coefficients of -1.331, 2.558, 1.750, 2.485, and 1.799 respectively. The result shows a 0.53%, 4.01%, 0.65%, and 3.60% levels of significance respectively in respect of data for the explanatory variables, which indicates that data for all measures of board attributes are abnormally distributed. This implies that there are high variations in board independence, board diligence, the board size, as well as tangibility of listed Oil and Gas firms in Nigeria. These abnormalities require a more generalized and robust approach to determining the relationship between integrated disclosures and the composition of the board. However, data for IRDSCORE shows a 90.84% level of significance, indicating normality of data.

Test for Multicollinearity

In addition, the variance inflation factor (VIF) is conducted to test the multicollinearity among explanatory variables. The decision rule is that the VIF should not be greater than 5 and the tolerance level should not be less than 10%. Table 3 reports the VIF in respect of BINDEP, BDILIG, BSIZE, and FTANG as 1.27, 1.60, 1.42, and 1.45 with the tolerance levels of about 78.9%, 62.5%, 70.7%, and 68.9% respectively. Moreover, the

mean VIF is reported as 1.43. Since the VIFs of the explanatory variables are less than 5 and their tolerance levels are greater than 10%, the study accepts that there is the absence of perfect multicollinearity among the explanatory variables of the study.

Regression Result

Moreover, the study further conducts the post regression heteroscedasticity test to test the null hypothesis that there is an absence of heteroscedasticity among variables of the study at a 5% level of significance. As a result of the abnormality of data for BINDEP, BDILIG, BSIZE, and FTANG, which suggests that the generalized least square (GLS) is more appropriate in establishing the relationship between the dependent and independent variables, the Hausman specification test is conducted to determine the suitability between fixed and random regression. Given that the outcome of the specification test suggests the random effect, the Breusch and Pagan Langragian multiplier test for the random effect is conducted to choose between the random effect and robust ordinary least squares (OLS) regression analysis. The decision rule is to adopt GLS random effect regression if the random effect test is significant; while an insignificant random effect means the robust OLS regression is adopted. The results of the heteroscedasticity, Hausman specification and random effect tests as well as the random effect regression for the fitted values of IRDSCORE is presented in Table 4, in which the reports the coefficients of the explanatory variables in the model, their levels of significance, R^2, as well as the Wald Chi2 and its p-value.

Table 4: Result of Regression for Fitted Values of IRDSCORE

Variables	Coefficient	Z	P-Value
IRDSCORE	1.235307	30.52	0.0000
BINDEP	0.1976437	2.88	0.0040
BDILIG	0.1925499	1.68	0.1040
BSIZE	0.0932056	2.65	0.0080
FTANG	0.183438	4.03	0.0000
Hettest Chi^2	0.06		0.8077
Hausman Specification Chi^2	0.71		0.9498
Random Effect Chi^2	16.21		0.0000
R^2: Within	0.1992		
Between	0.2789		
Overall	0.2436		
Wald Chi^2	302.77		0.0000

Source: STATA 13.0 Output, 2018.

Based on the result in Table 4, the model of the study is represented as $IRDSCORE_{it}$ = 1.235307 + 0.1976437$BINDEP_{i, t}$ + 0.1925499$BDILIG_{i, t}$ + 0.0932056$BSIZE_{i, t}$ + 0.183438$FTANG_{i, t}$ + ε_{it}. This shows that BINDEP, BDILIG, BSIZE, and FTANG have a positive effect on IRDSCORE respectively, which agrees with the a priori expectation of the study. Moreover, the result shows that the coefficients of BINDEP, BSIZE, and FTANG are significant at less than 5% level of significance as explained by the p-values of 0.004, 0.008 and 0.000 respectively. However, the coefficients of BDILIG is insignificant at 5% level of significance at the p-value of 0.104. Logically, these findings imply that the more independent and diligent the board of directors of the sampled firms are and the higher the size of the boards, the higher the volume of integrated disclosures. In addition, as the tangibility of the firms improves, the higher the volume of integrated disclosures. The overall result shows that the explanatory variables explain 24.36% of variations in the dependent variable (IRDSCORE) as evidenced by the R2 overall of 0.2436, while the remaining 75.64% is explained by other factors not included in the model of the study.

Hypotheses Analysis

This section presents how the formulated hypotheses are tested. It is based on the regression result presented in Table 4.

Ho$_1$:   Board independence has no significant effect on the quality of integrated reporting of listed Oil and Gas firms in Nigeria.

The regression result presented in Table 4 shows that BINDEP explains about 19.76% of variations in IRDSCORE at 0.4% level of significance. This shows that BINDEP is significantly and positively associated with the quality of integrated disclosure (IRDSCORE) at 5% level of significance. This indicates that board independence influences the quality of the integrated disclosure of listed oil and gas firms in Nigeria. Consequently, the study rejects the null hypothesis and accepts the alternative hypothesis (Ha$_1$) that board independence has a significant effect on the quality of the integrated disclosures of listed oil and gas companies in Nigeria. This finding is in agreement with that of Brammer and Pavelin (2008) who also found a significant relationship between the proportion of non-executive directors and corporate voluntary disclosures. Moreover, this finding contradicts that of Hurghis (2017), who found that the presence of non-executive directors on the board does not influence the extent to which firms issued integrated report is in accordance with the IIR framework.

Ho$_2$:   Board diligence has no significant effect on the quality of integrated reporting of listed Oil and Gas firms in Nigeria.

Based on the result shown in Table 4, BDILIG has an insignificant and positive relationship with the quality of integrated disclosures (IRDSCORE) at 5% level of significance given the p-value of 0.104 (10.4%). This implies that board diligence affects the quality of integrated disclosures of listed oil and gas firms in Nigeria insignificantly but positively. Thus, this result provides evidence for the study to reject the alternative hypothesis and accept the null hypothesis (Ho$_2$) that board diligence has no significant effect on the quality of integrated reporting of listed oil and gas firms in Nigeria.

Ho$_3$:   Board size has no significant effect on the quality of integrated reporting of listed Oil and Gas firms in Nigeria.

Table 4 shows that BSIZE significantly and positively affects the quality of integrated disclosure (IRDSCORE) at 5% level of significance shown by the p-value of 0.008. This indicates that board size influences the quality of the integrated disclosure of listed oil and gas firms in Nigeria. Consequently, the study rejects the null hypothesis and accepts the alternative hypothesis (Ha$_3$) that board size has a significant effect on the quality of the integrated disclosure of listed oil and gas companies in Nigeria. This finding is in agreement with that of Hurghis (2017), who also found a direct but weak correlation between board size and the disclosure index for integrated reporting.

Conclusion and Recommendations

This study examines the relationship between board attributes (independence, diligence, and size) and the quality of integrated disclosures of listed oil and gas firms in Nigeria, based on the IIRC integrated reporting framework. Based on the regression result, the study found that board independence and board size have a significant and positive effect on the quality of integrated disclosures of the sampled firms; while board diligence has an insignificant and positive effect on the extent of integrated disclosures of the firms using the IIRC integrated reporting framework. These findings agree with the a priori expectation of the study. Sequel to these findings, integrated reporting should not be a voluntary disclosure due to its remarkable role in developing integrated thinking, improving the quality of information disclosed to shareholders, thus leading

to a more efficient and productive allocation of capital. In addition, integrated reporting is intended to become the norm in corporate reporting.

On the basis of the findings, the study concludes that the composition of the board of directors of listed oil and gas firms in Nigeria to comprise the optimum mix of members have a significant effect on the quality of integrated disclosures of the firms. This is because the general principle of corporate governance requires that there should be an optimum balance of individuals on the board with a suitable range of skills, experience, and expertise. The optimum mix would ensure power-balance to avoid power-dominance of a selected few board members, which make the board to have checks and balances and to work towards protecting the interests of all stakeholders.

Based on the conclusion drawn, the study recommends that the shareholders who are responsible for the appointment of members of the board of directors should always consider the information needs of all stakeholders and appoint the right and qualified persons that would drive corporate reporting to be more integrative, considering the fact that integrated reporting is still a voluntary disclosure in Nigeria. This is because it is becoming increasingly important for companies to integrate financial statements, management commentary, governance issues, environmental concerns and remuneration matters in their business strategies and reporting. Consequently, it is important for the board of directors of listed oil and gas firms in Nigeria to ensure that corporate activities in these areas are adequately communicated to all stakeholders. By so doing, the information asymmetry between the management of listed oil and gas firms and their stakeholders would be curtailed. In addition, regulatory agencies such as the Securities and Exchange Commission, the Financial Reporting Council of Nigeria, and other relevant agencies should strengthen and enforce mandatory disclosure guidelines in the direction of corporate integrated reports, especially in the development of their corporate governance codes for firms. These measures would compel the boards of directors to improve their corporate disclosure role to stakeholders.

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APPENDIX A
POPULATION OF THE STUDY

S/N	Firm	Year of Listing	Nature of Business
1	11 Plc (Mobil Nigeria Plc)	1991	Marketing of Petroleum Products; Manufacturing of Automotive/Industrial Lubricants and Petroleum Jelly.
2	Anino International Plc	1990	Manufacturing of Pins, Staples, and Paper Clips, Nails and Commercial Electroplating.
3	Capital Oil Plc	1989	Marketing of Petroleum Products.
4	Conoil Plc	1989	Marketing of Refined Petroleum Products; Manufacturing and Marketing of Lubricants.
5	Eterna Plc	1998	Manufacturing and Marketing of Lubricating Oils and Petro-Chemicals; Sale of Fuels.
6	Forte Oil Plc	1978	Exploration, Production, and Marketing of Petroleum Products.
7	Japaul Oil and Maritime Services Plc	2005	Rendering of Maritime Services; Oil and Gas Services; Dredging; Quarry; Transportation, Engineering, and Construction.
8	MRS Oil Nigeria Plc	1978	Marketing and Distribution of Refined Petroleum Products; Blending of Lubricants; and Manufacture of Greases.
9	Oando Plc	1992	Exploration, Production, and Refining of Petroleum Products; Energy Services; Gas and Power; and Marketing, Supply, and Trading of Petroleum Products.
10	Rak Unity Pet. Company Plc	1987	Marketing of Petroleum Products.
11	Seplat Pet. Dev. Company Plc	2014	Exploration and Production of Petroleum Products.
12	Total Nigeria Plc	1978	Exploration and Production of Petroleum Products; Marketing of Petroleum Products.

Source: http://nse.com.ng/issuers/listed-securities/listed-companies, 2018.