

A COMPARATIVE STUDY OF BOARD COGNITIVE DIVERSITY AND SUSTAINABILITY REPORTING IN BANKING AND OIL AND GAS SECTORS IN NIGERIA

Osarobo, Emmanuel Ezomoh and Gina Olufemi

Department of Accounting, Wellspring University, Benin city, Nigeria.

Email: osaroboezomoh@gmail.com; atugina18@gmail.com

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Abstract: This study ascertained the effect of corporate board cognitive diversity on sustainability reporting by banking and oil sectors in Nigeria. Gender and professional diversity were used to proxy independent variables. *Ex Post Facto* research design was adopted for the study. Data were extracted from the annual reports and accounts of the selected banks and oil & gas companies in Nigeria. The data were analyzed with descriptive statistic and the hypotheses were tested with multiple regression analysis via e-view 9.0. The result revealed that gender diversity is positive and statistically significant on sustainability reporting for banking sector; while it is positive and non-statistically significant on sustainability reporting for oil sector in Nigeria. Also, professional membership diversity is negative and statistically significant on sustainability reporting for banking sector; while it is negative and non-statistically significant on sustainability reporting for oil sector in Nigeria. The study recommended the Oil firms should welcome board members with diverse professional membership backgrounds should be highly welcomed to the board, because they have the technical skills to pilot the affairs of the board effectively or efficiently.

Keywords: Gender diversity, Professional diversity and Sustainability reporting.

1. INTRODUCTION

Given the diversity of knowledge, facts, and availability that is needed to understand and govern nowadays complex businesses, it is unrealistic to expect an individual director to be informed and informed about all phases of business, Scholars have therefore suggested for board diversity as one of the ways to enhance corporate governance (Leung, 2015). A few students refer to board range as a demographic phenomenon entailing age, gender, and ethnicity, at the same time as others check with board diversity as a structural phenomenon comprising CEO duality, board independence, and director ownership (Hoang *et al.*, 2016). This diversity involves; gender diversity which is the mix of male and female directors in an organization. Many Nigerians claim to support equal rights for women and men. But national cultural viewpoint on this issue has often lead to sexual stereotypes (Lincoln & Adedoyin, 2012). Another diversity recognized by the study is educational/professional diversity. It is a cognitive aspect of the directors on the board of an organization. It is the

responsibility of a company's board of directors to "oversee the actions and decisions" of management (Rupley *et al.*, 2012). Their responsibilities span from making key financial and strategic decisions, such as approving changes in capital structure/mergers and acquisitions, to the difficult task of choosing the company's top executive leadership (Ferreira, 2011).

Sustainability Reporting (SR) is an emerging voluntary reporting initiative across the globe in recent times. The idea was brought into the limelight following the 1987 Brundtland Report in bridging the gap between environmental and human development concerns (Bebington, & Larrinaga, 2014; Bebington, & Unerman, 2017). The concept was further popularized in academic literature and business environment following the United Nation's (UN) adoption of the Organization for Economic and Community Development's (OECD) eleven (11) Millennium Development Goals (MDGs) which was transformed into Seventeen (17) Sustainable Development Goals (SDGs) in 2015 (Bebington, & Unerman, 2017; UN SDG, 2015).

The SDGs aim female participation in top leadership positions (Şener & Karaye, 2014). Nigeria is a highly patriarchal society with men dominating, thus women are mostly under-represented in managerial role, because of the socio-cultural traditions which inhibit them (Lincoln & Adedoyin, 2012). Ujunwa *et al.* (2012) shows that board nationality and ethnicity were positive in predicting firm performance among listed firms in Nigeria.

In literature, board cognitive diversity or attributes includes educational level, educational background, and functional experience, and tenure (Dedunu & Anuradha, 2020). Scholars have investigated the impact of board cognitive diversity on company overall performance and have determined inconsistent proof. for example, at the nexus among board instructional stage diversity and economic overall performance, Bin Khidmat *et al.* (2020) found a positive association, Tejerina-Gaite, and Fernández-Temprano (2020) found a negative relationship, Likewise, the nexus between board educational level diversity and market performance, Ngo *et al.* (2019) found a positive relationship, Khan (2018) and found a negative association, while Bin Khidmat *et al.* (2020) and Hassan and Marimuthu (2017) found no association. Secondly, there is a dearth in the literature on the impact of board educational background diversity, professional membership diversity on firm performance (Kent Baker *et al.*, 2020). Thirdly, to the best of the researchers' knowledge, no study in Nigeria has critically conducted a comparative study of this nature for difference sectors in Nigeria. The study therefore sought to conduct a comparative effect of board cognitive diversity on sustainability reporting in Banking and Oil & Gas Sectors in Nigeria.

The main objective of this study is to examine the comparative effect of board cognitive diversity on sustainability reporting in Banking and Oil & Gas Sectors in Nigeria. Specifically, the study sought to:

1. Determine the effect of Gender diversity on sustainability reporting in Nigerian banking and Oil & Gas sectors.
2. Ascertain the effect of Professional membership diversity on sustainability reporting in Nigerian banking and Oil & Gas sectors.

2.0 REVIEW OF RELATED STUDIES

2.1 Conceptual Review

2.1.1 Board Cognitive Diversity

The concept of 'board diversity' has emerged as the most prominent issue in corporate governance literature in recent times (Rhode & Packel, 2014; Ibrahim & Hanefah, 2016). Ayuso and Argandona (2009) defined board diversity as the heterogeneity amongst directors on the board with unique attributes or dimensions. The dimensions of a diverse board can be grouped into observable difference (like race, ethnic background, nationality, gender and age) and less discernible diversity (educational level, educational background, functional and occupational background, industry experience and organizational membership) (Kang, Chen & Gray, 2007). The importance of diversity in the boardroom cannot be overemphasized, as it fosters better decisions and brings about innovation in an organization (Aifuwa & Embele, 2019). Kyaw, Olugbode and Petracci (2017) stated that a more diverse board could attract more resources into an organisation. Rathnayaka (2018) argued that a diverse board would improve the quality of a firm's strategic decision. Furthermore, Arora and Sharma (2016) argued that diversity in the boardroom would improve a firm's performance and reputation, as also its global existence. Drawing inspiration from the above arguments, this study envisages that board diversity will positively affect sustainability reporting in firms.

Different scholars from different disciplines have defined the concept of cognitive diversity. Reynolds and Lewis (2017) as the variation in perspectives or information processing styles of individuals, which could be influenced by personality, socio-economic background, experience, functional background, and educational background.

The decision-making function of the board highly necessitated the need for cognitive diversity among her members. In line with the Upper Echelon theory, a cognitive diverse board would improve the performance of a firm. In spite of the theoretical predictions and assertions, there is still an argument as to whether or not cognitive diversity affects the performance of firms. In line with the traditional Agency theory, researchers have argued that cognitive diversity would positively affect the performance of an organization (Ngo *et al.*, 2019).

2.1.2 Gender Diversity

Board gender diversity is an area in corporate governance (CG) that has been regarded as having a positive impact on environmental disclosure quality. It is believed that the presence of women on the board plays a vital role in developing a platform for the organization to listen to societal needs (Majumder, Akter, & Li, 2017).

Gender diversity has become one of critical components for effective corporate governance practices in view that it provides equitable and fair business judgement as well as improving the firm's performance (Vafaei *et al.*, 2015). In fact, gender diversity is one of the strategic priorities upheld by Securities Commission to heighten the effectiveness of corporate governance practice among public listed companies in Malaysia (Securities Commission, 2018). The Authority had made its commitment to encourage more public listed companies to increase the participation of women directors at board level, ideally at thirty percent (30%) composition. The

advantage derived from women participation, as part of diversity elements, could not be denied. Many scholars have agreed that gender-based differences are able to offer different viewpoints on leadership styles whereby male leaders tend to be perspective-focused while female leaders usually have soft spot of being emphatic and gentle (Cucari *et al.*, 2017 and Onyinye, *et al.* 2018).

Gender diversity is the ratio of the number of women to men on the board of corporations. Board gender diversity has captured the attention of policy makers, companies, media and academic scholars in many countries over its effect on boardroom dynamics and firm's outcomes (Al-Jaifi, 2020). Women and men have traditionally, culturally and socially different backgrounds. In fact, studies suggest that different genders respond to different norms, attitudes, beliefs, and perspectives (Sundarasan *et al.*, 2016). Women and men appear to differ in values when it comes to environmental responsibility. In this context, having gender diversity in the boards will bring some balanced decision because women think differently from men. In addition, women are more sensitive with environmental issues, more generous towards communities and pay more attention to stakeholders especially such as communities, employees and the environment.

2.1.3 Professional Bodies Membership Diversity

Professional bodies and institutions are established for regulatory purposes. Their role is to decide, maintain, and regulate the ethics of practice and conduct of professionals in their respective professions. In Nigeria, there are diverse professional bodies. Professions bodies like the Institute of Chartered Accountant of Nigeria (ICAN), Association of National Accountants of Nigeria (ANAN), Chartered Institute of Taxation of Nigeria (CITN) (for the accounting profession), Council for the Regulation of Engineering in Nigeria (COREN) (for engineering profession), Chartered Institute of Bankers of Nigeria (CIBN) (for banking profession), Medical and Delta Council of Nigeria (MDCON) (for medical profession), and a host of others. A board with members having diverse professional qualification would bring value to the board and could improve the firm's performance.

Authors argued that cognitively diverse groups tend to be more beneficial in creative and innovative tasks rather than the normal routine tasks. More recently, the studies of Umukoro *et al.* (2019) and Iyafekhe *et al.* (2020) documented that a highly-diversified board in terms of the board educational level showed a constructive influence on firm sustainability performance and disclosure. They opined that should board members' perceptions differ significantly, it could spark friction and incompatibility of ideas in the team or board. Also, Dahlin *et al.* (2005); Knight, and Weber and Camerer (2003) posit that diversity in the education of board members would make the coordination and accomplishment of the task to be ineffective and less efficient if members expectation and beliefs are incongruent. To provide an empirical basis to these arguments, our study examined the impact of board members' education level and background diversity on sustainability reporting.

On a contrary, Ngo, Pham and Luu (2019) believed that no degree could totally and systematically substitute for the board members' skills and experience or background knowledge. In their opinion, educational degrees are merely a part of a board's knowledge and expertise. Aifuwa *et al.* (2020) further argued that ELD would not lead to improved market performance for the firms. While Ibadin (2021) posits that a wide gap exists between the

education level of board members acquired locally and those from foreign institutions. Accordingly, a postgraduate degree acquired over the shores of Africa is far detailed and better than the ones acquired in the African locality.

2.1.4 Sustainability Reporting

Aifuwa (2020) and Aifuwa, Saidu, Enehizena and Osazevbaru (2019) stated that sustainability reporting is a blend of two concepts: “sustainability” and “reporting”. Sustainability, as described by means of Brundtland (1987), is assembly the wishes of the contemporary technology without compromising the capability of the subsequent generations to satisfy their very own desires. Reporting means disclosing an organization’s information fully or partially to stakeholders (Aifuwa, 2020). Therefore, sustainability reporting is disclosing organizational information about its daily economic, social and environmental activities as it affects the society and stakeholders where it operates.

Sustainability Reporting (SR) is a trending difficulty in accounting and control sciences literature. it's far a procedure wherein groups expose statistics on the economic, environmental, and social effect at the society and surroundings as a result of their daily enterprise activities. [Global Reporting Initiative (GRI), 2019] The record emphasizes the need for firms and enterprise businesses across the globe to be socially and environmentally accountable. In terms of ways corporations and groups respond to human rights protection, fair treatment of group of workers or people, and a huge reduction of environmental risks was a result in their each day sports. the recognition of sustainability reporting by stakeholders of companies is because of corporations and corporations’ neglect of social and environmental duty. this is evident inside the instances of British Petroleum (BP) oil spillage in the Gulf of Mexico, Chernobyl nuclear power plant explosion in Russia, and Lonmin Markana Mining company’s maltreatment of its workers in South Africa and a number of others (Ismail & Latiff, 2019; Castro & Diaz, 2015).

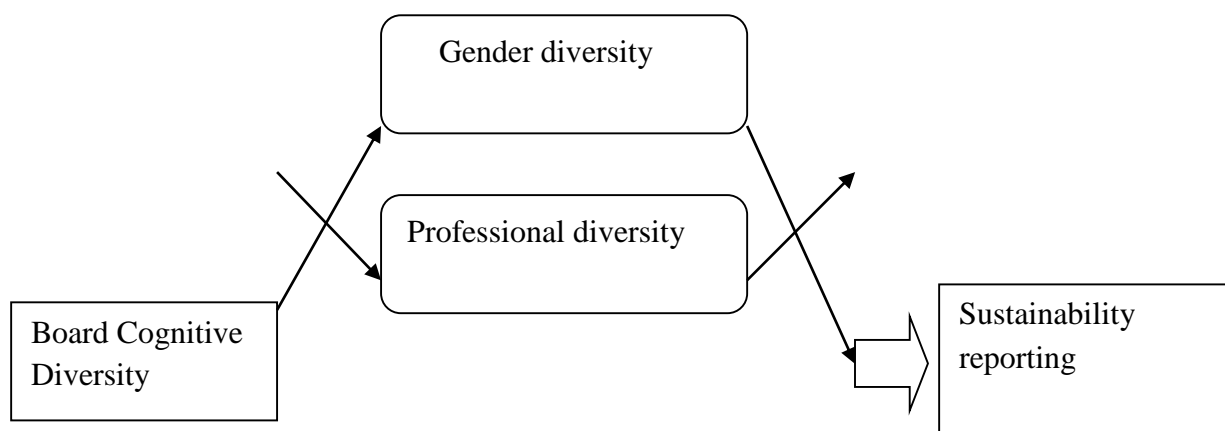


Figure 2.1 Conceptualization Model of the relationship between board cognitive diversity and sustainability reporting

Source: Researcher's Conceptualization Model, 2024

Empirical Studies

Donkor, Trireksani and Djajadikerta (2023) assess whether CEO power and firm environmental sensitivity matter to board diversity (i.e., board cultural (BCD) and board gender (BGD) diversity) and corporate sustainability performance nexus. Australian S&P/ASX3000s firm data for a period of ten years (2011–2020) were used in the study's analysis. Even though board range definitely influences ESG overall performance, the presence of powerful CEOs and when companies perform in environmentally sensitive industries weaken the board range and sustainability performance nexus. Furthermore, the observe discovered that even though board variety is crucial, the impact of BGD has a more statistical power on sustainability than BCD, putting forward the present cognizance on BGD.

Orumwense and Osa-Izeko (2023) examined the influence of board diversity on environmental sustainability disclosure in oil and gas companies in Nigeria. Ex-post facto research approach was used in this study to explore the cause-and-effect relationship between the dependent and independent variables. The study constructed from eight oil and gas businesses in the Nigerian exchange organization. Secondary data from 2011-2020 became used and panel multiple regression evaluation become used to research the records. consequences revealed board independence (BIND) confirmed fantastic relationship with environmental sustainability disclosure, however became insignificant to environmental sustainability disclosure, board size (BSZ) showed bad dating with environmental sustainability disclosure, but was significant to environmental sustainability disclosure, while board gender diversity (BGD) showed negative relationship with environmental sustainability disclosure, but was insignificant to environmental sustainability disclosure, board nationality (BNAT) showed negative effect on environmental sustainability disclosure, but was also insignificant to environmental sustainability disclosure.

Hasan, Hussainey and Aly (2022) examined the determinants of sustainability reporting decisions in Pakistan as empirical evidence from firms in Pakistan, using logistic regression model, the study indicated that AC autonomy has a poor widespread have an effect on on sustainability reporting of quoted corporations in Pakistan. However, considering the period, country, economic, legal, and regulatory variations, and different and more reliable results could have been obtained especially in Nigeria as an emerging market. Salvation, Nyor, Agbi, Joshua, Adzor,

Mustapha, Danazumi (2022) examined the effect of diversity-of-board on environmental reporting of listed manufacturing companies in Nigeria, and further explores the moderating effect of audit committee. The have a look at has a population of 61 listed production corporations and a sample length of 36 corporations which become arrived at the use of stratified sampling criteria. via content evaluation, secondary data became collected from the annual report of the sampled agencies from the period 2002 to 2019. Using descriptive statistics and linear multiple regression, findings from this study revealed that before moderation, diversity-of-board has no significant effect on environmental reporting ($t = -1.80, P < 0.001$). However, the study found that audit committee significantly moderates the effect of diversity-of-board on environmental reporting ($t = -3.67, P < 0.001$).

Prudencio *et al.* (2021) measured the effect of diversity in the board of directors and top management team on

corporate social responsibility of 194 listed on Brazilian stock exchange. Using descriptive and regression analysis, the results indicated that the age heterogeneity among board members has a negative influence on CSR practices. Thus, leaning on these empirical pieces of evidence, this study also envisages likewise.

Musa and Aifuwa, (2020) used nationality, age and educational level to proxy board diversity and its effect on sustainability reporting of listed industrial goods firms on the Nigerian Exchange from the period 2014-2018. Using regression analysis, the study found no evidence on the nexus between nationality diversity and sustainability reporting. Moalla, Salhi and Jarboui (2020) studied factors influencing the environmental reporting quality of listed companies in France. A sample of 120 quoted firms was employed and the data were tested with regression statistics. The study observed that AC traits comprising of AC independence, audit, economic expertise, and AC financial knowledge have a statistical positive effect on the environmental reporting best of indexed agencies in France. Chukwu and Nkak (2020) investigated how the attributes of corporate boards are associated with the quality of environmental disclosures. The study analyzed the data of eleven firms in the consumer goods sector, over a period of ten years (2010 to 2018), using descriptive statistics and regression analysis. The study found out that board length had a substantial high quality effect on environmental disclosure, and board diversity had a similar impact on environmental disclosure first-class. However, board independence had a mere impact on environmental disclosure satisfactory, elevating questions on the relevance of unbiased directors at the board. Musa, Gold and Aifuwa (2020) investigated the influence of a diverse board on the extent of sustainability reporting in listed industrial goods firms on the Nigerian Stock Exchange from the period 2014-2018. Their study failed to validate the theoretical framework - Stakeholder- Dependency Theory used in the study, as results from the panel least squares regression revealed that age diversity in the boardroom negatively and significantly affects the extent of sustainability reporting. Furthermore, we found no evidence on the nexus between nationality diversity and sustainability reporting; and education level diversity and sustainability reporting. The study concluded that diversity in boardroom influences the extent of sustainability reporting in Nigeria. Mahmood, Kouser and Masud (2019) studied an emerging economy perspective on corporate sustainability reporting – main actors’ views on the current state of affairs in Pakistan. Data were collected from primary sources through interviews of twenty (20) individuals and organizations in Pakistan. Indeed, legitimacy theory, stakeholders’ theory, institutional theory, signaling, and political cost theory were simultaneously used to anchor the study variables. The results obtained from the semi-structured interview show that audit financial expertise has a significant positive influence on corporate sustainability reporting among quoted firms in Pakistan. The findings cannot be generalized bearing in mind the sample used in the study. Another major flaw identified from the study was the research approach and paradigm being qualitative and constructivism, respectively. Onyali and Okafor (2019) explored the influence of foreign directors on sustainability reporting of 21 listed consumer goods firms in Nigeria from 2011 to 2017. The study found a significant influence of foreign directors on the economic, social, and governance disclosure. The domain of the study is restricted to listed consumer goods firms only. It also focused on economic, social and governance

disclosure without studying ER which is the focus of this research. Eriabie and Odia (2016) focused on industrial goods firms and found a positive but insignificant relationship between audit committee and corporate social and environmental disclosures. More research is needed to examine other manufacturing industries which this study sorts to.

Odoemelum and Okafor (2018) investigated the environmental disclosure of 86 non-financial firms listed in Nigeria for the period 2015. The study analyzed only one-year annual report data using longitudinal data. The result show that audit committee independence was insignificant to environmental disclosure.

Most of the related studies were conducted in the oil and gas companies, consumer goods firms, and industrial goods, none of these studies embarked on comparative analysis using two or more different sectors, thereby create a sectorial gap. In addition, the study also established a scope gap, which buttresses the fact that there is a limited study on board cognitive diversity and sustainability reporting in Nigeria.

3. METHODOLOGY

3.1 Research Design

Due to the nature of the study, *Ex Post Facto* and time series research design was adopted. The study analyzed the audited accounts of commercial banks and network establishments. This involves use of financial accounts of these organizations under assessment from the 2015 to 2022 to generate the financial analysis that discriminated the most in prediction of the performance of these two sectors.

3.2 Population of the Study

The accessible population for the study consists of two sectors in Nigerian public companies, namely; banking and Oil & Gas sectors in Nigeria. The listed banks consist of 21 banks and twelve (12) Oil & Gas companies in Nigeria.

3.3 Sample Size and Sampling Techniques

The researcher used Convenient Sampling to selects six companies each from the two sectors; banking sector and Oil & Gas sector in order to give the two sectors equal representative in the study. These selected companies were shown in table 3.1 below;

Table 3.1: Selected Population of Banking and Oil & Gas companies

S/N	Banking	Oil & Gas
1	Access bank	Arдова Plc (Forte Oil)
2	Guarantee Trust Bank Plc	Conoil
3.	Sterling bank	Eternaoil
4	FCMB	Japaul Gold & Ventures Plc
5	Fidelity banks	Mrs(Texaco Chevron)
6	First bank	Oando

3.4 Source of Data Collection

Data were collected from only secondary sources. This data obtained from the Annual report and accounts of the corporate organizations under assessment. The data extracted were those of the discriminating variables that include: gender diversity, professional diversity, and sustainability reporting index.

3.5 Model Specification

This study adapted the model of Salvation *et al* (2023).

The model used is as follows:

$$ER_{it} = \alpha_0 + \beta_1 DoB_{it} + \beta_2 FS_{it} + \beta_3 FA_{it} + \beta_4 ROA_{it} + \epsilon_{it} \quad (1)$$

$$ER_{it} = \alpha_0 + \beta_1 DoB_{it} + \beta_2 AC_{it} + \beta_3 (AC_{it} * DoB_{it}) + \beta_4 FS_{it} + \beta_5 FA_{it} + \beta_6 ROA_{it} + \epsilon_{it} \quad (2)$$

Where:

ER= Environmental reporting

DoB = Diversity-of-Board

AC= Audit Committee:

FS = Firm size

FA = Firm age

PF=Profitability

t = time period 2002-2019

α_0 = Constant term,

ϵ_{it} = Error term,

$\beta_1 - \beta_5$ = Coefficient of the variables.

Thus, in order to ascertain the effect of board diversity on environmental disclosure of the public companies listed on the NGX, the study modified the econometric model as specified thus;

$$SSR_{it} = \alpha + \beta_1 GND_{it} + \beta_2 PFD_{it} + \beta_3 RGD_{it} + \beta_4 FSZ_{it} + \epsilon_{it} \dots \dots \dots ii$$

Where;

SSR = Sustainability reporting.

GND = Gender diversity

PFD= Professional diversity

RGD = Religion diversity.

FSZ = Firm size measured as natural log of total asset.

B_1 to β_3 = the coefficient of the parameter estimate.

E = the error term or residual.

I = ith firm for cross-section

t = time period (2015-2022)

1.6 Operationalization of the Variables

Table 3.2: Operationalization of Variables

Variables	Notation	Measurements	Sources (used by)
Dependent variable:			
Sustainability reporting	SSR	Kinder Lydenberg Domini (KLD) rating index Scores the firms earns in disclosure i.e. 3 monetary, 2 quantitative, 1 general and 0 for non- disclosure.	Adeniyi & Adebayo (2018); Ofoegbu & Megbulu (2016) Said <i>et al.</i> (2013), Bowrin (2013), Kolsi (2017), Dobbs and Staden (2016), Hossain <i>et al.</i> (2017)
Independent variables:			
Gender diversity	GND	The ratio of the number of women to men on the board of corporations.	(Carter <i>et al.</i> , 2003); (Al-Jaifi, 2020).
Professional diversity	PFD	Number of professional members in the board	Zarah, (2000); Salvation (2022)
Firm size	FZS	This was proxied using the total assets of the firm.	(Habbash, 2016); (Khan, 2010),

Source: Author's Compilation, 2024.

3.7 Method of Data Analysis

The data were analyze comparatively via both descriptive and inferential analyse. The descriptive statistics was first conducted in order to gain understanding of the sample characteristics as regards the selected variables. Inferential statistical analysis was carried out with the aid of E-Views 9.0 statistical software. These include the following:

Coefficient of Correlation: which is a good measure of courting between two variables, tells us about the energy of relationship and the path of relationship as properly;

Panel Least Square (PLS) regression analysis: was used to expect the cost of a variable based totally at the cost of the alternative variables;

Decision Rule

The decision for the hypotheses is to accept the alternative hypotheses if the p-value of the test statistic is less or equal than the alpha and to reject the alternative hypotheses if the p-value of the test statistic is greater than alpha at 5% significance level.

4. DATA ANALYSIS AND RESULTS

4.1.1: Data Analysis

Table 4.1 Descriptive Statistics

	SSRB	SSRO	GNDB	GNDO	PFDB	PFDO	FSZB	FSZO
Mean	4.000000	5.000000	5.500000	1.250000	5.000000	3.625000	7.21E+09	1.17E+08
Median	4.000000	5.000000	5.500000	1.000000	5.000000	4.000000	6.05E+09	1.31E+08
Maximum	5.000000	6.000000	7.000000	2.000000	6.000000	4.000000	1.50E+10	1.47E+08
Minimum	3.000000	4.000000	4.000000	1.000000	4.000000	3.000000	2.59E+09	62442701
Std. Dev.	1.010582	1.010582	1.129865	0.437595	0.714590	0.489246	4.12E+09	32352899
Skewness	0.000000	8.31E-18	0.000000	1.154701	0.000000	-0.516398	0.688185	-0.967633
Kurtosis	1.000000	1.000000	1.640000	2.333333	2.000000	1.266667	2.187128	2.184658
Jarque-Bera	8.000000	8.000000	3.699200	11.55556	2.000000	8.142222	5.110314	8.820071
Probability	0.018316	0.018316	0.157300	0.003096	0.367879	0.017058	0.077680	0.012155
Sum	192.0000	240.0000	264.0000	60.00000	240.0000	174.0000	3.46E+11	5.64E+09
Sum Sq. Dev.	48.00000	48.00000	60.00000	9.000000	24.00000	11.25000	7.97E+20	4.92E+16
Observations	48	48	48	48	48	48	48	48

Source: Author' Computation (2024)

From Table 4.1, it could be observed that the mean values of the sustainability reporting (SSR) stood at 4.000 and 5.000 for the banks oil company's samples respectively. Considering the results, it then meant that the average SSR of the banks sample (4.00) was less than oil & gas companies' sample (5.000) respectively. Furthermore, the mean value of gender (GND) for bank and oil & gas were; 5.500 and 1.250 respectively showing that bank was using more of women than the oil & gas companies. The mean values of account professional (PFD) showed that bank has more accounting professional than oil & gas company (5.500 and 3.625) respectively. The mean values of firm size (FSZ) showed that bank has more size than oil & gas company (7.210 and 1.170) respectively. On the Jarque–Bera test of goodness-of-fit, the result suggested that only the data on firm liquidity in the Nigerian sample followed a normal distribution. However, the departure from normality of the other variables did not pose any major problem in the panel data since the Central Limit Theorem revealed that the violation of the normality assumption posed no major problem in panel data analysis, especially with large firm-year observations (Ghasem & Zahediasl, 2012).

Table 4.2: Pearson Correlation Matrix (Banking sector)

	SSRB	GNDB	PFDB	FSZB
SSRB	1			
GNDB	0.89443	1		
PFDB	0.00000	0.31623	1	

FSZB 0.84051 0.86011 0.47192 1

Table 4.2.1: Pearson Correlation Matrix (Oil sector)

	SSRO	GND0	PFDO	FSZO
SSRO	1			
GND0	-0.57735	1		
PFDO	0.77460	-0.74536	1	
FSZO	-0.63526	0.24837	-0.46210	1

Source: E-View output, 2024

The Pearson Correlation Matrix in table 4.2 shows the existence of a positive relationship between SSR, GND, PFD, and FSZ at a coefficient value of 0.894, 0.000 and 0.841 for banking sector. On the other hand, the coefficient factors of -0.577, -0.635 is an indication that GND and FSZ negatively correlates with the sustainability reporting in oil sector while PFD (0.775) is positively related to sustainability in Oil sector.

4.3 Comparative Hypotheses testing in banking sector and Oil sector

Table 4.2: Regression analysis between, SSR, GND, PFD and FSZ (for Banks)

Dependent Variable: SSRB

Method: Panel Least Squares

Date: 07/02/24 Time: 09:33

Sample: 2015 2022

Periods included: 8

Cross-sections included: 6

Total panel (balanced) observations: 48

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	-7.000000	1.35E-12	-5.19E+12	0.0000
GND0	-3.46E-13	6.75E-14	-5.119840	0.0000
PFDB	5.46E-13	8.69E-14	6.279601	0.0000
FSZB	-1.30E-22	2.20E-23	-5.915843	0.0000
R-squared	1.000000	Mean dependent var	4.000000	
Adjusted R-squared	1.000000	S.D. dependent var	1.010582	
S.E. of regression	1.45E-13	Akaike info criterion	-56.19408	
Sum squared resid	8.98E-25	Schwarz criterion	-55.99916	
Log likelihood	1353.658	Hannan-Quinn criter.	-56.12042	
F-statistic	5.74E+26	Durbin-Watson stat	3.323997	
Prob(F-statistic)	0.000000			

Table 4.3: Regression analysis between, SSR, GND, PFD and FSZ (for Oil & Gas companies)

Dependent Variable: SSRO

Method: Panel Least Squares

Date: 07/02/24 Time: 19:22

Sample: 2015 2022

Periods included: 8

Cross-sections included: 6

Total panel (balanced) observations: 48

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	2.445124	1.483513	1.648198	0.1064
GND0	-0.180786	0.289682	-0.624084	0.5358
PFDO	1.133779	0.283010	4.006144	0.0002
FSZO	-1.13E-08	2.95E-09	-3.840788	0.0004
R-squared	0.700434	Mean dependent var	5.000000	
Adjusted R-squared	0.680009	S.D. dependent var	1.010582	
S.E. of regression	0.571664	Akaike info criterion	1.799123	
Sum squared resid	14.37917	Schwarz criterion	1.955057	
Log likelihood	-39.17896	Hannan-Quinn criter.	1.858051	
F-statistic	34.29304	Durbin-Watson stat	1.497786	
Prob(F-statistic)	0.000000			

The regression analysis results show the model's explanatory power and overall fit. The R-squared value, representing the proportion of variance in sustainability reporting explained by the board cognitive diversity for banking sector is 1.00, while oil sector is 0.68. This suggests that approximately 100% of the variability in sustainability reporting in banks and 68% in oil companies can be accounted for by the gender and professional membership diversity.

The F-statistic, with a value of 5.74 and 34.29 for bank and Oil Company respectively, tests the overall significance of the model. The associated prob(F-statistic of 0.000 and 0.000 respectively) indicates that the model's overall fit is statistically significant at the significance level of 0.05 in banking sector and oil sector. The Durbin-Watson statistic, measuring the presence of autocorrelation in the residuals, is 3.324 and 1.498 respectively, suggesting a potential lack of independence among the residuals. The regression analysis reveals the coefficients and p-values associated with the effect of cognitive diversity on sustainability reporting between the two sectors in Nigeria.

H₀₁: Gender diversity has no significant effect on sustainability reporting in Nigerian banking and Oil & Gas sectors.

From the analysis income tax coefficient values of -3.46, -0.18 for both banking sector and oil sector respectively and their probabilities values are 0.000 and 0.536 for both sectors respectively. Thus using our decisions stand, which is 5% significance level, we conclude that the female director is positive but non-significant in banking sector; while it is negative and non-significant in oil sector.

H₀₂: Professional membership diversity has no significant effect on sustainability reporting in Nigerian banking and Oil & Gas sectors.

From the regression models values of both sectors, there are negative and positive coefficient values of accounting professionals given as: 5.46 and 1.134 for bank and oil company respectively; and their probabilities values are as well: 0.000 and 0.002 respectively. Applying the study decision point of 5% significance level, we reject the null hypothesis for banking sector and oil & gas, and accept the alternate hypothesis that professional membership has positive and statistically significant in banking sector; while professional membership has positive and significant on sustainability reporting in oil & gas sector.

Comparative Findings of the Study: banking and oil sectors in Nigeria

The model had already found that there is a long-run relationship between the series in the model hence, the application for the period between 2015 and 2022 applicable in all the variables and in addition:

H₀₁: Gender diversity is negative and statistically significant on sustainability reporting for banking sector; while it is negative and non-statistically significant on sustainability reporting for oil sector in Nigeria.

H₀₂: Professional membership diversity is positive and statistically significant on sustainability reporting for banking sector; while it is positive and non-statistically significant on sustainability reporting for oil sector in Nigeria.

However, the overall results shows that board cognitive diversity is statistically significant on sustainability reporting in banking sector ($\text{prob}(F\text{-statistic} = 0.000 < 0.05)$), while board cognitive diversity is not statistically significant on sustainability reporting in oil sector, hence ($\text{prob}(F\text{-statistic} = 0.00 < 0.05)$),

5. SUMMARY OF FINDINGS, CONCLUSION AND RECOMMENDATIONS

5.1 Summary of Findings,

Based on the analysis, the study drawn the following findings; the study found that gender diversity is negative and statistically significant on sustainability reporting for banking sector; while it is negative and non-statistically significant on sustainability reporting for oil sector in Nigeria. Also that professional membership diversity is positive and statistically significant on sustainability reporting for banking sector; while it is positive and non-statistically significant on sustainability reporting for oil sector in Nigeria.

5.2 Conclusion

This study ascertained the effect of corporate board cognitive diversity on sustainability reporting by banking and oil sectors in Nigeria. Gender and professional diversity were used to proxy independent variables; such diversity could be reflected, in number of female directors, the number of accounting professionals of the directors which determines their values, and presence or absence of non-executive directors. Data were extracted from the annual reports and accounts of the selected banks and oil & gas companies in Nigeria. The data were analysis with descriptive statistic and the hypotheses were tested with multiple regression analysis via e-view 9.0.

The result revealed that gender diversity is positive and statistically significant on sustainability reporting for banking sector; while it is negative and non-statistically significant on sustainability reporting for oil sector in Nigeria. Also, professional membership diversity is negative and statistically significant on sustainability reporting for banking sector; while it is positive and non-statistically significant on sustainability reporting for oil sector in Nigeria.

However, the overall results shows that board cognitive diversity is statistically significant on sustainability reporting in banking sector ($\text{prob}(F\text{-statistic} = 0.017 < 0.05)$), while board cognitive diversity is not statistically significant on sustainability reporting in oil sector, hence($\text{prob}(F\text{-statistic} = 0.150 > 0.05)$),

5.3 Recommendations

The study makes the following recommendations:

1. The two sectors should encourage more representation of female board directors because they have advanced knowledge and expertise to improve firms' performance.
2. Oil firms should welcome board members with diverse professional membership backgrounds should be highly welcomed to the board, because they have the technical skills to pilot the affairs of the board effectively or efficiently

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