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EFFECT OF BOARD DIVERSITY ON FINANCIAL PERFROMANCE OF QUOTED NATURAL RESOURCES FIRMS IN NIGERIA

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ABSTRACT

The objective of this study is to ascertain the effect of Board Diversity on Financial Performance of quoted Natural resources companies in Nigeria. The specific objectives are to ascertain the effect or otherwise of Foreign Directorship and Board Size on Return on Assets, Return on Equity and Tobin's Q of quoted Natural resources companies in Nigeria from 2008-2017. Ex-post facto research design was used for this study. Secondary data were sourced from the publications of Nigeria Stock Exchange. Inferential statistics of the hypotheses were carried out with the aid of E-view 9.0 statistical software using Co-efficient of correlation and Multivariate Panel Least Square Regression analysis. Findings of this study showed Board Diversity has a significant positive effect on Return on Assets and Tobin's Q; a significant negative effect on Returns on Equity at 5% level of significance respectively. It was recommended among others that Natural Resources firms should have a suitable and diverse board size designed so as to guarantee diversity of experience without conceding independence, accountability, compatibility, more knowledge, integrity and enthusiasm of members to attend meetings.

Keywords: Foreign Directorship, Tobin's Q, Board Size, Return on Assets.

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1. Introduction

It is widely accepted that the composition of the corporate board could play a vital role in determining firm performance. Scholars and practitioners as well as policy makers have for the last two decades debated on the role of boards of directors as one of the key pillars of corporate governance. Some scholars have argued that different board of directors' attributes impact organizational performance owing to different orientations. In recent years, board diversity has become an emerging issue within corporate governance practice and research. There has been an increasing focus on studies about board composition such as board size, board diversity and board independence (Ezechukwu & Amahalu, 2017; Erhardt, Werbel, & Shrader, 2003). Several studies tried to relate board diversity with organizational performance. Amahalu, Abiahu, Nweze and Obi (2017) indicate that gender and ethnic diversity in board of director could lead to better corporate governance which leads to the more profitable business.

Some countries already set the rules for board composition. Norway is also the first country in the world implementing this regulation since 2006. Norwegian government has decided a minimum 40 percent of the board members must be women (Smith, Smith, & Verner, 2006). Similar to the Scandinavian countries, Spain, Iceland and France also passed regulation to require a quota for the number of female board member (Adams & Ferreira, 2009; Ahern & Dittmar, 2012). In addition to the study of women on boards, the role of foreign board member is also widely discussed. For example, Choi, Park, and Yoo (2007) examined that foreign investor participation on board enhances firm performance in Korea. Then, Ruigrok, Peck, and Tacheva (2007) indicated foreign directors in Swiss corporations tend to be more independent. Richard (2000) also reports that racial or ethnic diversity in board of director increases value and finally contribute to company performance and competitive advantage. As a matter of fact, most countries in Asia do not have gender quota regulation. However, Asian companies have a significant number of female board members and this number is increasing. Besides, Asia-Pacific economy is emerging and involving huge amount of foreign direct investment. Therefore, foreign board members are demanded by international business environment as representatives of international stakeholders.

The performance of corporate organization has not been impressing in recent times as evidence of massive corporate failure in Nigeria & beyond. The collapse of several institutions was a result of poor corporate governance standard, corruption and lack of transparency. Shareholders lost confidence totally in both public and private companies in the country as a result of weak corporate governance practice in the country. This draws the attention of the public and investors to see the board of directors as the major actor responsible for the failure of corporations, both in developed and developing nations. In fact, board of directors are criticized for being responsible for the dwindling in shareholders' wealth, both in developed and developing economies, particularly, in Nigeria where this study is based. They are seen as the prime factor for the fraud cases that had resulted in the failure of major corporations, such as Enron Corporation, Tyco International, WorldCom, Parmalat, Oceanic bank Plc., Afribank, Bank PHB and Cadbury Plc. in Nigeria. Poor corporate governance may lead to ineffective boards, which eventually may contribute to firm failures. Also, poor boards could in turn lead to a run on the firm unemployment, fraudulent activities, questionable dealings that may result to negative impact on the economy.

Studies have been conducted on the effect of board diversity on the financial performance of the firms using different measures like ROA, ROE, EPS, EVA, ROCE & so on. For example: Okwuchukwu, Ezeudu and Patience (2015) found a significant negative relationship between board size and ROE. However, Garba and Abubakar (2014) did not find any significant relationship between board size and firms'. Abubakar and Mamman (2016), in Board Diversity and Financial Performance (Panel Data Evidence from Quoted Deposit Money Banks in Nigeria) concluded Foreign directorship do not impact significantly on the financial performance of quoted banks in Nigeria that the presence of foreigners' on the board of banks in Nigeria will not add value to their financial performance. Recent poor corporate performance was sequential to spill over effects of the recent global economic crises, hence effective adoption of strategic management and heterogeneous board creates an environment that minimizes group thinking is thereby enhanced greater information processing, creativity and innovative ideas leading to higher quality decision making.

A majority of studies conducted on the effects of board diversity on the financial performance of corporate entities in Nigeria have not paid the required attention to the listed non-financial firms. Most studies that have been conducted have been on financial firms like Banks, Insurance firms and so on. This study extends the period of the previous studies by investigating the effects of board diversity on firm performance of quoted Natural Resources firms in Nigeria using the period 2010-2017. To the best of our knowledge, there is no study in Nigeria that specifically addressed the relationship between board diversity and firms' performance in Quoted Natural Resources firms using evidence from Nigerian Stock Exchange. This is the gap in knowledge that this study intends to fill.

Based on these, the study formulates the following hypothesis in the null form as follows:

H_1: Board Diversity has no significant effect on Return on Asset of quoted natural resources firm in Nigeria.

H_2: Board Diversity has no significant effect on Return on Equity of quoted natural resources firm in Nigeria.

H_3: Board Diversity has no significant effect on Tobin's Q of quoted natural resources firm in Nigeria.

2. Review of Related Literature

2.1 Conceptual Framework

2.1.1 Corporate Governance

Corporate governance is defined and practiced in different ways globally depending upon the relative power of owners, managers and provider of capital. It entails the procedures, customs, laws and policies that affect the way corporations are directed, administered and controlled (Craig, 2005). The composition of corporate boards is of vital importance within corporate governance as it pertains to identifying structures that align the interests of management and stakeholders (Rose, 2007). According to Fama and Jensen (1983) and Hermalin and Weisbach (2003), a firm's board is by far the most important internal control device seeking to control management and deter it from opportunistic behaviour.

Proponents of board diversity claim that diversity at the boardroom improves decision making process and financial performance (Rhode & Peckel, 2010). The concepts of the boards is derived from the attributes or incentives variable that play a significant role in monitoring and controlling managers and can be described as a bridge between company management and shareholders Dalton, Daily, Ellstrand, and Johnson (1998) as cited by Abu, Okpeh and Okpe (2016) explained that the board is the supreme decision making unit in the company, as the board of directors has responsibility to safeguard and maximize shareholders wealth, oversee firm performance, and assess managerial efficiency.

2.1.2 Board Size

According to Kumar and Singh (2010) as cited in Babalola (2014), the primary role of the board of director is that of trusteeship to protect and enhance shareholders' value through strategic supervision. As trustee they will ensure the company has clear goals relating shareholder values and its growth. They should strategic goal and seek accountability for their fulfilment. They will provide direction, and exercise appropriate control to ensure that the company is managed in a manner that fulfils shareholders aspirations and societal expectations. The board must periodically review its own functioning to ensure that it is fulfilling its role. However, in a meta-analysis of 131 different study samples with a combined sample size of 20,620 observations, Dalton, Ellstrand, and Johnson (1998) as cited by Abu, Okpeh and Okpe (2016) documented a positive and significant relation between board size and firm performance.

A smaller board may be less encumbered with bureaucratic problems and may be more functional. Smaller boards may provide better financial reporting oversight. Alternatively, a larger board may be able to draw from a broader range of experience. A larger board is likely to be effective in substantial discussion of major issues and to suffer from free-rider problem among directors in their supervision of management.

Vafeas (1999) as cited by Agbionu, Amahalu, and Egolum (2017) has demonstrated that boards meet more often during periods of turmoil, and that board meeting more often show improved financial performance. A board that meets more often should be able to devote more time to issues such as earning management.

2.1.3 Foreign Directorship

Foreign directors means any person occupying a position on the board of a corporation in an external territory or where a person is not a protected individual of that country or a country outside his/her citizenship by birth. In other words, a foreign director is any person who hold appointment, whose address, as shown in the register of the certificate of incorporation, in which the details of his appointment is recorded in a place, state or country outside Nigeria or external territories. Nigeria is characterized by different ethnicity groups, religious beliefs, language barriers, and political sentiments. Therefore, having foreign directors on the boards could enhance financial performance of the organization because the foreign directors with requisite skills, expertise, experience and related knowledge bring in ideas , which in turn enhances the quality of decision making resulting to improved firm's financial performance (Azmi & Barrett, 2013). More so, a foreign director would like to protect his/her integrity, reputation and professional competence with creativity and innovation to manage the relationship between the boards and stakeholders leading to an improvement in the firm's financial performance (Maran & Indraah, 2009).

More importantly, foreign directors may have different educational and cultural backgrounds, giving them different attitudes to problem-solving as well as valuable knowledge of other markets. Maulis, Wang, and Xie (2012) in their study, unveiled that foreign directors create market value, product innovation, skills acquisition in the areas of finance and technology which improve financial performance of firm. This necessitates investors to make better

decisions regarding increase in their investment with the company. According to Wan Yusoff (2010), foreign directors improve decision making, policies and procedures, and business networking. This means that foreign directors have what it entirely take to move the firm forward in terms of performance. Despite various evidence and literature on accounting and finance supporting the role of foreign directors to have the capability and requisite knowledge necessary to improve a firm's financial performance, the findings from numerous empirical studies are inconclusive. The outcome of some studies having foreign directors on the boards yield positive results, while others is negative.

2.1.4 Financial Performance

Financial performance is related to a firm's ability to generate profit or income. It is often used as a general measure of business results; how well company doing its business activities. It can also be used to compare among companies within an industry. There is a wide range of financial performance measures. However, financial performance is basically divided into three general categories: investor returns, accounting returns and perceptual (Cochran & Wood, 1984; Orlitzky, Schmidt, & Rynes, 2003).

Firstly, investor returns are measured based on shareholders perspectives (Cochran & Wood, 1984). These are market based measures of financial performance, for instance, share prices or share price appreciation. They are related with stock market process, which relies on stock return and risk, to determine stock price and also market value (Orlitzky, Schmidt, & Rynes, 2003).

Secondly, another alternative for measuring financial performance is accounting returns. The examples are earning per share (EPS), price to earnings ratio, return on investment (ROI), return on asset (ROA), and any other traditional accounting ratios. These measures are related to managerial policies: how management allocates funds to different projects. Therefore, they express internal managerial performance and decision making capability, rather than external market response (Orlitzky, Schmidt, & Rynes, 2003).

Lastly, perceptual measure of financial performance is related to survey. The survey aims to obtain respondent estimation of company financial performance, for example, company 'wise

use of assets', 'soundness of financial position', or 'financial achievement compared with competitors' (Conine & Madden 1987; Reimann 1975; Wartick 1988 in Orlitzky, Schmidt, & Rynes, 2003). However, compared to the two measures mentioned earlier, this measure seems to be the most subjective. The following are used to measure the financial performance of companies such as:

i. Return on Asset

Return on assets (ROA) is an indicator of how profitable company is relative to its total asset. ROA gives a manager, investor, or analyst an idea as to how efficient a company's management is at using its asset to generate earnings. Return on asset is displayed as a percentage and it's calculated as: ROA = Net income / Total Assets ROA is most useful in comparing companies in the same industry, as different industries use assets differently. For example the ROA for service oriented firms, such as banks, will be significantly higher than the ROA for capital intensive companies, such as construction or utility companies.

ii. Return on Equity

In corporate finance, the return on equity (ROE) is a measure of the profitability of a business in relation to the book value of shareholder equity, also known as net assets minus liabilities. ROE is a measure of how well a company uses investments to generate earnings growth. This ratio is calculated as net profit after tax divided by the total shareholder's equity. This ratio measures the shareholders rate of return on their investment in the company.

iii. Tobin's Q

The Tobin's Q ratio is a ratio devised by James Tobin of Yale University, Nobel laureate in economics who hypothesized that the combined market value of all companies on the stock market should be equal to their replacement cost. The Q ratio is calculated as the market value of the firm's assets and the replacement value of the firm's assets.

2.1.5 Board Diversity and Return on Asset

Return on Assets (ROA), measures the overall effectiveness of management in generating returns to ordinary shareholders with its available assets. Return on assets (ROA) is positive indicates that of the total assets used to operate to provide profit to the company. In accordance with the concept of signalling theory, ROA can be used as signal information regarding future cash flows. Therefore, the ROA will be significant positive effect on stock returns or firm value. Similarly, Uchida (2006) found that the ROA has positive and significant impact on Tobin's Q. But Imam and Irwansyah (2002) found that the ROA had no significant effect on stock return.

2.1.6 Board Diversity and Return on Equity

ROE, along with return on assets (ROA), is one of the all-time favourites and perhaps most widely used overall measure of corporate financial performance (Amahalu, Egolum, Obi & Iliemena, 2016). This was confirmed by Monteiro (2006) who stated that ROE is perhaps the most important ratio an investor should consider. The fact that ROE represents the end result of structured financial ratio analysis, also called Du Pont analysis. (Stowe, Robinson, Pinto, & McLeavy, 2002; Correia, Flynn, Uliana, & Wormald, 2003; Firer, Ross, Westerfield, & Jordan, 2004) contributes towards its popularity among analysts, financial managers and shareholders alike.

Around 1989 when Reimann (1989) published his work, ROE was used extensively for measuring whether value was being created for shareholders. The reason behind the adoption of ROE as a measure was that it gave more reliable results than earnings per share (EPS. As it is important to consider how investors value the shares of a company. He also considered a number of strategy consulting firms and found that they focus their measurements on the spread between ROE and the cost of equity. If the spread is positive, it indicates that a company has advantageous growth opportunities. Reimann (1989) also identified changes to accounting conventions (policies) as being a problem when using ROE as a performance measure. It was also recognised that financial measures such as ROE may be too short-term and that longer-term measures, perhaps more qualitative, must be adopted as well. He found that ROE still left 66 percent of the variation in share prices unexplained, indicating a large degree of unreliability.

Another problem with the use of ROE, as identified by Finegan (1991) is that it does not consider the timing of cash flows. For that reason the free cash flow model is often cited as a better means to determine whether shareholder value is being created. Finegan (1991) also stated that investors 'go far beyond earnings in evaluating performance'. Therefore the managers of a company cannot rely on earnings figures alone to measure performance, unless they want to wait for investors' reactions to see how they are performing.

2.1.6 Board Diversity and Tobin's Q

One alternative used in assessing the value of the firm is to use Tobin's Q. This ratio was developed by Professor James Tobin (1967). This ratio is a valuable concept because it shows the current estimates of the financial markets on the value of the return on each dollar of incremental investment. If the ratio q above one, indicating that investment in assets generates earnings which provide a higher value than investment spending, this will stimulate new investment. If the ratio is below one-Q, investment in assets is not attractive. So the q-ratio is a more accurate measure of how effective use of management resources in economic power. Research conducted by Copeland, Koller, and Murrin (2002) show how the Q-ratio can be applied to several respective companies. They found that few companies can sustain q ratio greater than one. Economic theory says that the ratio of the larger-q greater than one will draw current resources and new competition until the q-ratio close to one. Often it is difficult to determine whether a high Q ratio reflects management superiority or advantage of its patents. The Tobin's Q has been employed particularly by manufacturing firms to explain a number of diverse corporate phenomena. These have entailed

(a) Cross-sectional differences in investment and diversification decisions,
(b) The relationship between managerial equity ownership and firm value,
(c) The relationship between managerial performance and tender offer gains, investment opportunities and tender offer responses, and
(d) Financing, dividend, and compensating policies.

It is a statistic that might serve as a proxy for the firm's value from an investor's perspective.

2.1.7 Board Diversity and Financial Performance

Among the most significant corporate governance issues faced by modern corporations are those related to diversity, such as gender, age, nationality and independence of directors. Board diversity is defined as variety in the composition of the board (Kang, Cheng, & Gray, 2007). This is divided into observable diversity and less visible diversity (Milliken & Martins, 1996 cited in Kang, Cheng, & Gray, 2007). Observable diversity consists of detectable attributes such as gender, ethnic or nationality and age. Meanwhile, less visible diversity is about background of the directors, for instance, education or previous experience.

a. Board diversity should never be more complex than the reality. If your company operates only in Japan for example, you might not need an American board member.
b. Board diversity only adds value if each board member knows their own identity and the identities the other members along with their strengths and weaknesses.

Henceforth, this research addresses nationality and gender diversity. Both can enable different perspectives given that men and women may approach issues from different point of view and has different behavioral pattern (Mallin, 2010). Moreover, individuals from different ethnic backgrounds may bring additional cultural insights to the board room.

2.2 Theoretical Framework

The agency theory is closely connected with firm performance with regard to the board's monitoring capabilities, associated costs and management pursuing their own interest at the expense of shareholders' interest (Hillman & Dalziel, 2003). According to the agency theory, the board's main responsibility is monitoring (Jensen & Meckling, 1976). In the case of conflicts between managers and shareholders, the board should intervene and resolve. If a manager (agent) acts as a utility maximizer, there are reasons to believe that the manager will not always act in the best interest of the shareholder (principal). To solve this, the board can limit divergences by establishing incentives, monitor its behaviour and replace managers that do not act in the shareholders' interest. The agency view assumes that board members cherish their reputation as expert monitors and will not collude with insiders of the firm to subvert shareholder interest (Carter, Simkins, & Simpson, 2003). A board should consist of enough independent members to effectively perform the monitoring role.

Scholars suggest that greater diversity enhances the ability of the board to control and monitor managers (Adams & Ferreira; 2009; Carter, Simkins, & Simpson, 2003; Erhardt, Werbel, & Shrader, 2003). Therefore it has been argued that the ultimate independent directors on a board are people with a different gender, nationality or cultural background.

2.3 Empirical Review

Edem and Noor (2014) investigated the influence of board characteristics on company performance using Tobin's Q. A sample of 90 quoted companies in the Nigerian Stock Exchange was drawn from the period 2010 to 2012. The results from this study showed that board size had a positive significant influence on company performance. Also, that the women on the board had a negative significant influence on company performance; while, board education is positive and significant. Others, such as, board equity, board age and board independence were found insignificant.

Oba and Fodio (2013) examined boards' gender composition and how it influences firm performance. Return on Asset and Return on Equity were used as a measure for financial performance. The findings of this study showed that presence of female directors and proportion of female directors on a board have a positive significant impact on firm performance.

Augustine, Nwakoby, and Ugbam (2012) conducted a research on corporate board diversity and firm performance in Nigeria and found out using generalized least method that board nationality was positive and significant in predicting the financial performance of Nigerian firms. This implies that foreign board members offer Nigerian firms greater financial flexibility, which in turn provides firms the opportunity to cut down cost of capital by reducing cross-border information gaps and agency costs.

Heyvon (2014) conducted a research on "The Influence of Board Diversity on Financial Performance". More specifically, this research examined the influence of nationality and gender diversity on financial performance as measured by Tobin's Q. The sample consisted of 37 companies of Forbes Asia-Pacific 50 biggest listed companies. Pooled data is employed for the time period of 2008 to 2012. Multiple regression was utilized for data analysis. To address, endogeneity issues the study used instrumental variable and two-stage least square

regression. However, the result of the two-stage least square regression showed no significant difference from the ordinary least square regression; suggesting that endogeneity is not a major problem.

3. Design and Methodology

The research design employed in this study is the *ex-post facto* research design. An ex-post facto research determines the cause-effect relationship among variables. Ex-post facto seeks to find out the factors that are associated with certain occurrence, conditions, events or behaviours by analyzing past events or already existing data for possible casual factors (Kothari & Garg, 2014). The population of the study consisted of the five (5) quoted natural resources firms in Nigeria as at 31st December, 2017. They include; B.O.C. Gases Plc., Aluminium Extrusion Industries Ply, Alumaco Plc., Multiverse Plc., Thomas Wyatt Nigeria Plc. The five (5) quoted natural resource firms represent the sample size for this study. Data were gathered from the published financial statements of the five (5) quoted firms for a ten (10) year period spanning from 2008-2017, using purposive sampling method (that is all the firms that filed their annual financial statements with Nigeria Stock Exchange from 2008-2017 without missing any year was selected for this study). This study made use of secondary data precisely. The data were sourced from publications of the Nigerian stock exchange (NSE), fact books and the annual report and accounts of the quoted natural resources firms.

3.1 Model Specification

The equations below show the regression model specification of independent variables against the dependent variable.

$ROA_{it} = \beta_o + \beta_1 FORD_{it} + \beta_2 BDSZ_{it} + \mu_{it}$ - - **Ho_1**

$ROE_{it} = \beta_o + \beta_1 FORD_{it} + \beta_2 BDSZ_{it} + \mu_{it}$ - - **Ho_2**

$TQ_{it} = \beta_o + \beta_1 FORD_{it} + \beta_2 BDSZ_{it} + \mu_{it}$ - - **Ho_3**

Where:

ROA_{it} = Return on assets of firm í in period t
ROE_{it} = Return on equity of firm í in period t
TQ_{it} = Tobin's Q of firm í in period t
$FORD_{it}$ = Foreign directorship of firm í in period t
$BDSZ_{it}$ = Board size of firm í in period t
μ_{it} = Error term (Stochastic Term) of firm í in period t
β_0 = Constant term (intercept) and β_1- β_2 = Coefficients

Decision Rule

Reject H_o if the P-value of the test is less than α-value (level of significance) at 5%, otherwise accept H_1.

Table 1: Description of variables

Proxy	Variable	Explanation
ROA	Return on assets	This is an indicator or measure of how profitable company is relative to its total asset. Profit after tax/Net Income / Book value of total asset
ROE	Return on equity	This is measured by Net profit as a proportion of Equity Value of the shareholders. Profit after tax/Net Income / Book value of total shareholders fund
TQ	Tobin's Q	This is used as a measurement for financial performance. Market value of Equity + Book value of debt / Book value of total asset
FORD	Foreign directorship	Number of Foreign Directors on board. / Total number of board member
BDSZ	Board size	This is measured as the logarithm of the number of directors on the board for company i in time t.

Source: Authors Compilation, 2018

4. Data Analysis and Results

Table 2: Correlation matrix of variables in Natural Resources Sector

	ROA	ROE	TQ	FORD	BDSZ
ROA	1.000	-0.149	-0.311	0.681	0.190
ROE	-0.149	1.000	-0.262	-0.410	-0.189
TQ	-0.311	-0.262	1.000	-0.299	-0.117
FORD	0.681	-0.410	-0.299	1.000	0.301
BDSZ	0.190	-0.189	-0.117	0.301	1.000

Source: E-Views 9.0, Correlation Output, 2018

The table above shows that there is a positive relationship between FORD (0.681), BDSZ (0.190) and ROA, while FORD and BDSZ negatively correlate with ROE and TQ respectively.

4.1 Test of Hypotheses

4.1.1 Test of Hypothesis One

H_1: Board Diversity has a significant effect on Return on Asset of quoted natural resources firm in Nigeria.

Table 3: Regression output for hypothesis one

Dependent Variable: ROA
Method: Least Squares

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	1.281223	0.499312	3.565979	0.0013
FORD	0.413130	0.661783	2.624268	0.0134
BDSZ	0.945079	0.583442	3.619834	0.0012

R-squared	0.758918	Mean dependent var	1.541661
Adjusted R-squared	0.619706	S.D. dependent var	1.089033
S.E. of regression	1.078250	Akaike info criterion	3.045578
Sum squared resid	55.80587	Schwarz criterion	3.159214
Log likelihood	-74.66223	Hannan-Quinn criter.	3.089002
F-statistic	6.502555	Durbin-Watson stat	1.417294
Prob(F-statistic)	0.002842		

Source: E-Views Regression Output, 2018

The regression output shown above, shows that ROA associates positively with FORD (β_1=0.413130) and BDSZ (β_2=0.945079). The probability values of the slope coefficient show that P(x_1=0.0134<0.05; x_2=0.0012<0.05). This implies that ROA has a positive and statistically significant relationship with FORD and BDSZ at 5% significance level. The coefficient of determination obtained is 0.62 (62%), which is commonly referred to as the adjusted R^2. The cumulative test of hypothesis using adjusted R^2 to draw statistical inference about the explanatory variables employed in this regression equation, shows that 62% of the systematic variations in the dependent variable can be jointly predicted by all the independent variables. 38% was explained by unknown variables that were not included in the model. The value of the Durbin-Watson statistic is 1.417294, which is an indication of the non-existence of serial correlation in the model and that the test distribution is normal. The overall significance of the model (Prob (F-statistic) = 0.002842) is statistically significant at 5%.

Decision:

Since the p-value of the test (0.002842) is less than 0.05, then there exists enough evidence to reject the null hypothesis and conclude that board diversity has a significant positive effect on ROA of quoted natural resources firms in Nigeria at 5% significant level.

4.1.2 Test of Hypothesis Two

H_1: Board Diversity has a significant effect on Return on Equity of quoted natural resources firm in Nigeria.

Table 4: Regression output for hypothesis two

Dependent Variable: ROE
Method: Least Squares

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	2.686983	0.933320	4.878951	0.0000
FORD	-1.109787	1.237015	-2.897149	0.0041
BDSZ	-0.506054	1.090577	-2.654024	0.0123
R-squared	0.820742	Mean dependent var		2.331686
Adjusted R-squared	0.760060	S.D. dependent var		1.995562
S.E. of regression	2.015479	Akaike info criterion		4.296613
Sum squared resid	194.9834	Schwarz criterion		4.410250
Log likelihood	-106.5636	Hannan-Quinn criter.		4.340037
F-statistic	9.508353	Durbin-Watson stat		1.487083
Prob(F-statistic)	0.000087			

Source: E-Views Regression Output, 2018

The regression output shown above, shows that ROE negatively correlates with FORD ($\beta_{1=}$-1.109787) and BDSZ ($\beta_{2=}$-0.506054). The probability values of the slope coefficient show that P(x_1=0.0041<0.05; x_2=0.0123<0.05). This implies that ROE has a negative and statistically significant relationship with FORD and BDSZ at 5% significance level. The coefficient of determination obtained is 0.76 (76%), which is commonly referred to as the adjusted R^2. The cumulative test of hypothesis using adjusted R^2 to draw statistical inference about the explanatory variables employed in this regression equation, shows that 76% of the systematic variations in the dependent variable can be jointly predicted by all the independent variables, while 24% was explained by unknown variables that were not included in the model. The value of the Durbin-Watson statistic is 1.487083, which is an indication of the non-existence of serial correlation in the model and that the test distribution is normal. The overall significance of the model; Prob(F-statistic) = 0.000087 is statistically significant at 5%.

Decision:

Since the p-value of the test (0.000087) is less than 0.05, then there exists enough evidence to reject the null hypothesis and conclude that board diversity has a significant negative effect on ROE of quoted natural resources firms in Nigeria at 5% significant level.

4.1.3 Test of Hypothesis Three

H_1: Board Diversity has a significant effect on Tobin's Q of quoted natural resources firm in Nigeria.

Table 5: Regression output for hypothesis three

Dependent Variable: TQ
Method: Least Squares

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	2.138055	0.941244	2.271521	0.0276
FORD	2.705561	1.247516	2.168758	0.0351
BDSZ	0.152466	1.099835	2.158626	0.0363
R-squared	0.689534	Mean dependent var		0.710741
Adjusted R-squared	0.651598	S.D. dependent var		2.087149
S.E. of regression	2.032589	Akaike info criterion		4.313520
Sum squared resid	198.3081	Schwarz criterion		4.427157
Log likelihood	-106.9948	Hannan-Quinn criter.		4.356944
F-statistic	4.360141	Durbin-Watson stat		1.167632
Prob(F-statistic)	0.005275			

Source: E-Views Regression Output, 2018

The regression output shown above, shows that TQ correlates positively with FORD ($\beta_{1=}$ 2.705561) and BDSZ ($\beta_{2=}$ 0.152466). The probability values of the slope coefficient show that P(x_1=0.0351<0.05; x_2=0.0363<0.05). This implies that TQ has a positive and statistically significant relationship with FORD and BDSZ at 5% significance level. The coefficient of determination obtained is 0.65 (65%), which is commonly referred to as the adjusted R^2. The cumulative test of hypothesis using adjusted R^2 to draw statistical inference about the explanatory variables employed in this regression equation, shows that 65% of the systematic variations in the dependent variable can be jointly predicted by all the independent variables, while 35% was explained by unknown variables that were not included in the model. The value of the Durbin-Watson statistic is 1.167632, which is an indication of the non-existence of serial correlation in the model and that the test distribution is normal. The overall significance of the model; Prob(F-statistic) = 0.005275 is statistically significant at 5%.

Decision:

Since the p-value of the test (0.005275) is less than 0.05, then there exists enough evidence to reject the null hypothesis and conclude that board diversity has a significant positive effect on TQ of quoted natural resources firms in Nigeria at 5% significant level.

4.2 Summary of Findings

The findings of the study are as follows:

1. Board Diversity has a significant positive effect on Return on Assets of quoted natural resources firms in Nigeria at 5% level of significance.

2. Board Diversity has a significant negative effect on Return on Equity of quoted natural resources firms in Nigeria at 5% level of significance.

3. Board Diversity has a significant positive effect on Tobin's Q of quoted natural resources firms in Nigeria at 5% level of significance.

5. Conclusion and Recommendations

This study examined the effect of board diversity on financial performance of quoted natural resources firms in Nigeria. Using a pooled sample composed of the five (5) quoted natural resource companies from 2008 to 2017, using *ex post facto* research to test whether financial performance measures (return on assets, return on equity and Tobin's Q) are correlated with proxies of board diversity, which are; foreign directorship and board size. Empirical findings revealed that the two measures of board diversity have a significant positive effect on ROA and TQ, but a significant negative effect on return on equity at 5% level of significance respectively. On the premise of these study findings, the subsequent recommendations are being made;

1. Natural resource firms should have a suitable and diverse board size designed so as to guarantee diversity of experience without conceding independence, accountability, compatibility, more knowledge, integrity and enthusiasm of members to attend meetings.
2. Natural resources firms focusing on improving return on equity should reduce the board size and have more board members experienced in natural resources activities.
3. The number of non-executive and independent directors needs to be selected with a lot care since they affect financial performance of organisations. The board needs to consist of well-educated and experienced professionals since they are actively involved in modelling the decisions of financial institutions.

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