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Corporate Board Educational Qualification Diversity and Performance of Quoted Companies in Nigeria: A Methodological Shift

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Abstract

The board of directors plays an important role in the management of organizations resources. Educational qualification of the directors therefore constitutes a major consideration for appointing members of the board as this is important for decision making. This study examined the relationship between board educational qualification diversity and performance of 53 manufacturing companies quoted on the Nigerian Stock Exchange between 2006 and 2015. Descriptive and explanatory research designs were adopted. Secondary data used were sourced from the annual reports of the companies under consideration. The method of analysis was descriptive and inferential statistics. The multiple regression results did not establish any significant relationship between board educational qualification diversity and performance of quoted companies in Nigeria. However, the results show significant relationships between board educational qualification diversity and performance metrics of Tobin's Q and ROA when controlled for board size and firm leverage. This study recommends that relevant stakeholders involved in board composition should always endeavour to consider and harness value enhancing factors in the selection and appointment of the members of corporate board for optimal performance.

Keywords: Directors, diversity, educational qualification, performance

1. Introduction

The board of directors assumes an important task in modern corporations. Board of directors is saddled with the responsibility of monitoring the management on behalf of the shareholders and the board advises the management and has power to make decisions. This power includes setting the firm's strategy and executive compensation, appointing the top management and nominating new directors (Deloitte, 2015). As the directors areas signed the obligation of ensuring that the shareholders' investment is not wasted, shareholders ought to have a serious interest in ensuring that the board is composed of well-educated and experienced directors that will guarantee the safe custody of their investments. The requirements expected of the directors are specifically identified by the companies and the Nigerian corporate governance code (Edem & Noor, 2014).

Corporate organizations being run by educated directors incline to outperform those managed by less-educated executives (KPMG, 2001). Educational qualification of the directors therefore constitutes a major consideration for appointing any member of the board as this is important for decision making. Accordingly, surveys conducted by consultancy firms frequently mention hard and soft personal profile factors of directors to be important for board efficiency. Such factors include experience, know-how, and education, but also integrity, leadership or credibility (KPMG, 2001). Also, Edem et al. (2014) documented the importance of expertise such as financial, industrial or international experience. An Effective and efficient board needs person with requisite experience, intellectual capability, soundness of judgement and honesty (Hilmer, 1998). According to Milliken and Martins (1996), the presence of persons with superior qualifications on corporate boards satisfy the opportunities of board diversity and need for better performance and also equip the board with the capability and skill essential for effective and efficient decision making. In addition, possessing highly qualified executives on the corporate board broadens the base of intelligence (Carver, 2002). Board members with requisite educational qualifications would extend knowledge base and inspire board to put other alternatives into consideration and enrich a more considerate problems solving mechanism (Cox & Blake, 1991) and more importantly, absence of educational consideration in the board members selection process may inhibit discerning views and modernism (Mattis, 2000).

1.1. Statement of the Problem

The board of directors plays an important role in the management of organizations resources. As stated by Beasley (1996) the board of directors is the highest internal control mechanism that has the responsibility to monitor the actions of top management. Thereby, the board of directors oversees the entire entity to ensure that the firm meets the overall corporate objectives (Xie, Davidson & DaDalt, 2003). But the recent happenings in the corporate world have put to question the objectivity and capability of the directors in playing the statutory role of effective resources management. The financial crisis that erupted in the developed and developing countries such as The United States of America, United Kingdom, Australia, Italy, Korea, South Africa and Nigeria since early 2000s is a pointer to the need to continually provide an empirical roadmap on how effective corporate governance can be entrenched in the business environment. In this quest, the board being an important organ of the corporate entities, educational qualification of the directors therefore constitutes a major consideration for appointing any member of the board as this is important for decision making (KPMG, 2001). It is against these backdrops that this study investigated the relationship between board educational qualification diversity and performance of Nigerian firms. This study is remarkably different from previous diversity studies on the basis of methodology. Authors such as Edem et al. (2014); Gladman & Lamb (2012); Sealy & Vinnicombe (2012) and Ujunwa, (2012) have measured the diversity of board members by means of percentages of the specific diversity attributes on the total number of the board members. But this method is characterized by rational inconsistency, because it assumes that a board that is predominantly consisted of only members with a particular diversity characteristic would have achieved the maximum diversity probable. Similarly, Singh (2007), Marimuthu (2008) and Omoye Eriki (2013) employed dummy variables to measure diversity of board members. The inherent shortcoming of this method is the inability to establish the degree of diversity. Taking into cognizance the shortcomings in the methods identified above, Ararat, Aksa & Cetin (2010) proposed a diversity measure derived from the biological sciences. For this study, in line with Ararat et al. (2010) submission, estimation of educational qualification diversity of board members, of the type advocated by Harrison and Klein (2007) was used. Ararat et al. (2010) opined that the composition of different types or sources of information, knowledge or experience among the members of groups can be best represented by the indexes; we subsequently operationalized the extent of diversity in education qualification of board members by calculating a Blau index value (Ararat et al., 2010).

1.2. Rationale and Development of the Hypotheses

Educational qualification of board members and its relationship with firm performance has received less attention from the academia in Nigeria when compared with other diversity measures such as gender. Despite the paucity of empirical research in this field, some authors documented that the educational qualification of board members is of great significance when assessing firm performance. Education is of little importance for assessing the short-term performance of a firm (Murray 1989). However, having a particular background for a peculiar industry could result to an optimal performance. A typical example is the oil industry, where the board is predominantly occupied by engineers (Murray 1989). In contrast, Ararat et al. (2010) found that a board without educational qualification diversity could bring about the collapse of a company. Educational qualification diversity is therefore an important aspect of the board of directors, especially for the big organizations in the modern business settings.

Furthermore, Bantel (1993) found that a better decision-making is an economic benefit of a more educationally diverse board, which is prominent in the banking sector and the financial industry as a whole. Also, Mahadeo, Soobaroyen & Hanuman (2012) opined that prompt and detailed assessments of particular strategic decisions, as well as addressing the probable information asymmetry issues between the board and senior management are identified with educationally diverse board of directors which then impacts positively and significantly on the performance of a company. With the above submissions, the educational background is seen as of major relevance in measuring board diversity and is used in this study as a prospective factor for studying the case of Nigerian board. Consequently, it was hypothesized that:

Ho: There is no significant relationship between board educational qualification diversity and performance of quoted companies in Nigeria.

1.3. Objective of the Study

The objective of this study is to examine how board educational qualification diversity is associated with performance of quoted companies in Nigeria. The specific objectives are:

- To establish the relationship between board educational qualification and growth potentials of quoted companies in Nigeria
- To determine the correlation between board educational qualification diversity and financial based performance of quoted companies in Nigeria

1.4. Research Question

- What is the relationship between board educational qualification diversity and growth potentials of quoted companies in Nigeria?
- What relationship exists between board educational qualification diversity and financial based performance of quoted companies in Nigeria?

1.5. Research Hypotheses

- Ho₁: There is no significant relationship between board educational qualification diversity and growth potentials of quoted companies in Nigeria.
- Ho₂: There is no significant relationship between board educational qualification diversity and financial based performance of quoted companies in Nigeria.

2. Literature Review

2.1. Conceptual Review

2.1.1. Educational Qualification Diversity

Educational qualifications are the degrees, diplomas, certificates, professional titles and so forth that an individual has acquired whether by full-time study, part-time study or private study, whether conferred in the home country or abroad and whether conferred by educational authorities, special examining bodies or professional bodies (OECD, 2003). The acquisition of an educational qualification therefore implies the successful completion of a course of study or training programme. Educational quality is defined by the level of educational qualification acquired by a person. According to Hambrick & Mason (1984) upper-echelon theory stipulates that higher education level is considered a good proxy for higher level of knowledge base and intellectual competence; as such, it is expected that higher educational level leads to better performance.

Empirical studies conducted on educational qualification diversity substantiated the fact that the educational level of upper echelons has positive correlation with firm performance (Bhagat et al. 2010; Chan & Leung 2010; Hambrick, Seung & Chen 1996, Jalbert, Ramesh & Mercedez, 2002). Academic degrees provide director with management expertise and networking, which is very beneficial in the strategic management of the firm (Jeanjean & Stolowy, 2009). Lipton and Herzberg (2006) opined that those qualities are crucial for board members in fulfilling their obligations, such as to oversee the firm and to monitor the performance of senior management.

2.1.2. Board Educational Qualification Diversity

Having the optimal mix of skills, expertise and experience is paramount to ensure that the board as a collective group is equipped to guide the business and strategy of the company (Deloitte, 2015). Since Hambrick et al. (1984) early formulation of upper echelon framework, the amount and the type of formal education has been featured as an important demographic characteristic indicating cognitive orientations (Araratet et al. 2010). The amount of formal education has been linked in the literature with greater cognitive complexity (Finkelstein & Hambrick, 1996). The differences in the boards of corporate organization as regards educational qualification diversity turn out to be more significant as the complication of the economic framework increases (Mahadeo et al., 2011). Professional knowledge and skill of the directors are mostly anticipated in the various sections that make an organization such as human resources department, finance/account department, purchase/supply department and sales/marketing department (Houle, 1990).

2.2. Theoretical Framework

2.2.1. Resource Dependence Theory

The resource dependence theory as propounded by Pfeffer (1972), maintains that the board is an essential link between the firm and the external resources that a firm needs to maximize its performance. According to this theory the board is an important strategic resource for the firm in terms of knowledge, contact with the business world, source of capital, new markets/competitors, so that increased diversification on the board is positive for firm performance (Eklund, Palmberg & Wiberg, 2009). According to Eklund et al. (2009), Pfeffer (1972) in the revised edition of the book, held that resource dependence was originally developed to provide an alternative perspective to economic theories of mergers and board interlocks, and to understand precisely the type of inter-organizational relations that have played such a large role in recent market failures (Pfeffer, 2003).

The motivation of those running the organization was to ensure the organization's survival and to enhance their own autonomy, while also maintaining stability in the organization's exchange relations. These were the drivers behind many of the organization's observed actions. Moreover, when it came to explaining strategy, power often trumped profits, an insight distinctly at odds with the dominant economic approaches of the time. In the same vein, Hillman and Dalziel (2003) proposed an integrated perspective that acknowledges disadvantages in agency theory and that boards operate as resource catalysts for organizations by providing linkages to necessary resources. Hillman et al. (2003) further enunciated the notion of board wealth, which includes human capital (expertise, experience, and reputation) and relational capital. Relational capital is networks and linkages to external constituencies.

According to (Brown, 2007) resource dependency perspectives investigate how board members provide connections to influential funders (private and public), bring technical competencies (financial or legal) to an organization, and how the board provides strategic direction for the organization. Therefore, the board is not only performing monitoring and control functions but they are also adding value by bringing resources.

2.3. Empirical Review

Having the optimal mix of skills, expertise and experience is paramount to ensure that the board as a collective group is equipped to guide the business and strategy of the company (Deloitte, 2015). Since Hambrick et al. (1984) early formulation of upper echelon framework, the amount and the type of formal education has been featured as an important demographic characteristic indicating cognitive orientations (Ararat et al. 2010). The amount of formal education has been linked in the literature with greater cognitive complexity (Finkelstein & Hambrick, 1996). The differences in the boards of corporate organization as regards educational qualification diversity turn out to be more significant as the complication of the economic framework increases (Mahadeo et al., 2011). Professional knowledge and skill of the directors are mostly anticipated in the various sections that make an organization such as human resources department, finance/account department, purchase/supply department and sales/marketing department (Houle, 1990).

Sequel to these positions, Haniffa and Cooke (2002) established a positive correlation between accounting education of board of directors and disclosure of relevant accounting information which however confirms a credible board. Ferris, Jaganna than and Pritchard (2003) examined the professional background of directors and found venture capitalists outperformed consultants, bankers and former executive directors. Smith, Smith & Verner (2006) also found that there is a positive and significant relationship between women qualifications and firm performance. Yermack (2006) presented sensitive reactions between directors' professional qualifications in the field of accounting and finance and share price. All these empirical studies confirmed the positive relationship between directors' qualifications and performance of companies.

2.3.1. Board Educational Qualification Diversity and Firm Performance

Many studies on board diversity focus more on gender diversity while less attention is paid on the educational qualification of board members. Several studies have established positive association between educational qualification of board of directors and firm performance. Simons and Pelled (1999) showed that educational diversity has a positive but not significant effect on both change in profitability and sales growth, while functional background diversity has a negative impact. A culture of open discussion combined with both, educational as well as functional background heterogeneity has a positive effect on firm performance. Camelo, Fernandez-Alles and Hernandez (2010) established a positive association between educational qualification diversity and performance (innovation) in corporate boards. In Contrast, they found an inverse impact of functional diversity on (performance) innovation. Mahadeo et al. (2011) found a positive and significant relationship between board size and educational diversity.

Also, Yermack (2006) found that price of stock responded to director's professional qualification, especially in the area of accounting and finance. Haniffa et al. (2002) investigated the correlation between accounting education and information disclosure and established a positive relationship. Ujunwa (2012) also found that directors with PhD had a positive and significant relationship with company's financial performance in Nigeria after using data from 122 listed companies on the Nigerian Stock Exchange between 1991 and 2008. The study conducted by Edem et al. (2014) on the relationship between board characteristics and company performance after using multiple regression technique found an empirical evidence that board education was positively significant in relation to the performance of the 90 firms quoted on the Nigerian Stock Exchange from 2010 to 2012.

In contrast, Gantenbein and Volonte (2011) investigated how the education and business experience of directors affect firm performance. The sample consists of 1,574 directorships from 224 listed firms in Switzerland. Using OLS and including control variables, the results showed that graduates of minor Swiss universities were negatively related to Tobin's Q and industrial knowledge and Tobin's Q were negatively correlated if the firm had more divisions. Bathula (2008) similarly examined the relationship between the key board characteristics and firm performance in New Zealand. Longitudinal sample of 156 firms from 2004 to 2007 for all the firms listed on New Zealand Stock Exchange was used and Generalized Least Squares was adopted for empirical analyses; the study concluded that board members with PhD level education was negatively related to firm performance.

Phan (2016) documented empirical evidence on the relationship between board of director's education and firm performance on a European dataset over the period 1999-2013, employing a well-developed dynamic panel generalized method of moments (GMM) estimator to alleviate endogeneity issue in corporate governance study. He found no correlation between board of directors' education and firm's return on asset, after accounting for endogeneity issues. However, firms with better educated board of director might appear to have better performance in the short run, but that superiority would likely reverse in the future. Waithaka (2014) examined the influence of board effectiveness on corporate financial performance in the Kenyan banking industry. The study adopted descriptive and explanatory research designs. A sample of 39 banks from a population of 43 banks was studied. The study used descriptive statistics and inferential statistics such as linear regression and correlation for analysis. The findings of the study indicated that technical expertise of most boards was high with 76% of directors being university graduates, 68% of the boards with 4 or more levels of expertise and 68% of directors with more than 15 years' experience. There was a significant relationship between expertise and financial performance; experience in years and financial performance. However, there was no significant relationship between educational qualifications and financial performance.

3. Methodology

This study adopted descriptive and explanatory research design. The population for the purpose of the study was 175 companies quoted on the Nigerian Stock Exchange (NSE) as at the period of the study (2006-2015). Fifty-three (53) manufacturing companies were sampled using purposive sampling technique. Secondary data used were sourced from the annual reports of the companies under consideration. The method of analysis was descriptive and inferential statistics. In testing the hypotheses, the following regression models were specified:

Implicit model

$$\text{Perf} = \beta_0 + \beta_1 \text{BEDUit} + \beta_2 \text{BSIZE} + \beta_3 \text{FLEVit} + \epsilon_{it} \dots \dots \dots (1)$$

Explicit Models

$$\text{Tobin's Q} = \beta_0 + \beta_1 \text{BEDUit} + \beta_2 \text{BSIZE} + \beta_3 \text{FLEVit} + \epsilon_{it} \dots \dots \dots (2)$$

$$\text{ROA} = \beta_0 + \beta_1 \text{BEDUit} + \beta_2 \text{BSIZE} + \beta_3 \text{FLEVit} + \epsilon_{it} \dots \dots \dots (3)$$

Where:

Perf = performance

BEDU = Board educational qualification diversity

BSIZE = Board Size

FLEV = Firm Leverage

Tobin's Q = Tobin's Q

ROA = Return on Assets

$\beta_0 - \beta_3$ = Coefficients of the explanatory and control variables

ϵ_{it} = Residuals

3.1. Variables Definition and Measurement

3.1.1. Independent Variable

Diversity Index for Educational Qualification (BE_{dit}): The Blau (1977) Index was used in measuring board educational qualification diversity and was defined as:

$$D_{it} = 1 - \sum_j P_{i,j,t}^2$$

In the above formula $P_{i,j,t}$ is the proportion of the board members of firm i on date t that belongs to category j ; and k is the number of possible categories, given the board size or nature of the variable measured. We standardized $D_{i,t}$ through division by the theoretical maximum value, given by $((k-1)/k)$, so that for any of the six variables, the minimum value is zero (total homogeneity) and the maximum is 1 (maximum diversity). The variables and parameters for estimating the diversity index are described below:

The members of the board of firm i were classified into 6 categories namely: members considered to have a secondary school leaving certificate (O'Levels), Ordinary National Diploma/National Certificate of Education (OND/NCE), First Degree (HND/BSc/BA/LLB), Post Graduate Diploma (PGD), Master's Degree (MBA/MSc/MA/MPhil/LLM), Doctor of Philosophy/Doctor of Business Administration (PhD/DBA) and Professional Qualifications. For any board, the number of possible categories (k) was six (6). The maximum diversity index was 1 if the directors were equally distributed in the six categories and zero if all fell in one category.

3.1.2. Dependent Variables Measurement

Tobin's Q: Tobin's Q also referred to as q ratio and Kaldor's V is a performance measurement metric that relates the ratio between a physical asset's market value to its replacement value. It was first introduced by Nicholas Kaldor in 1966 in his article "Marginal Productivity and the Macro-Economic Theories of Distribution: Comment on Samuelson and Modigliani". It was later popularized by James Tobin in 1977. Previous studies: Ali Shah, Ali Butt & Molitashan (2011); Denis and McConnel (2002); Lang & Litzenger (1989) justified the use of Tobin's Q as a measure of growth prospects. Accordingly, Tobin's Q above 1 is a necessary condition for a firm to be at a level of investment that optimizes its value and that, a Tobin's Q below 1 characterizes a firm with no growth opportunities.

$$\text{Tobin's Q} = \frac{\text{Market value of firm's equity and debt}}{\text{Book value of assets}} \times 100$$

Return on Assets (ROA): Return on assets is an indicator of how profitable a company is relative to its total assets. It gives an idea as to how efficient management is at using its assets to generate earnings. Babatunde and Olaniran (2009), Sanda, Mikailu and Garba (2005) and Farooque, Ziji, Dunstan and Karim (2007) justified the use of ROA as performance measurement metric.

$$\text{ROA} = \frac{\text{Profit before interest and tax (PBIT)}}{\text{Total Assets}} \times 100$$

3.1.3 Control Variable

3.1.3.1. Board Size

According to Pfeffer, (1972) proposition in resource dependence theory, larger boards have a higher level of performance as they have greater ability to secure critical resources. Furthermore, large boards may be able to create links to other institutions more easily than smaller boards (Pfeffer, 1972). John & Senbat (1998) further posit that board monitoring capacities increase as the number of members on the board increases. To measure this variable therefore, board size was taken as the natural logarithm of the number of board members.

3.1.3.2. Firm Leverage

As the firm moves towards bankruptcy, equity holders face the risk of losing only their shareholdings, passing the burden of such bankruptcy to the debt holders. Taken this into consideration, these outcomes encourage managers working to protect the interest of equity holders to embark on risky, high return project. On the other hand, with increased debt, the attention of boards may be focused on, and distracted by, debt servicing, limit the activities of the firm in investment and Research and Development, and threaten firm performance (Williams & Ho 2003). To measure firm leverage therefore, total debt was divided by total equity.

4. Data Analysis and Presentation of Results

4.1. Descriptive Statistics

The descriptive statistics for the dependent, independent and control variables are shown in table 1. The table is made up of 530 observations from 53 Nigerian quoted companies between 2006 and 2015. Averagely, the companies recorded a profit of 8% on total assets with ROA having a mean value of 7.97, standard deviation of 16.95, minimum and maximum values of -93.58 and 74.12 respectively. The companies equally reported a favourable growth prospect average value of 2.21 of Tobin's Q and standard deviation of 4.09. The corresponding minimum and maximum values for the companies are 0.00 and 41.8 respectively. The companies were highly educationally diverse with an average education qualification diversity of 0.462 with standard deviation of 0.240 and minimum and maximum values of 0.020 and 0.980 respectively.

VARIABLES	(1) N	(2) mean	(3) Sd	(4) min	(5) Max
TobinsQ	530	2.21	4.09	0.00	41.80
ROA	530	7.97	16.95	-93.58	74.12
BEDU	530	0.462	0.240	0.020	0.980
logBSIZE	530	8.63	2.25	3.00	15.00
LEV	530	0.88	2.04	0.00	27.72

Table 1: Descriptive Statistics of Variables
Source: Researchers' Field Desk Report (2018)

4.1.2. Frequency Distribution

Table 4.6 and Figure 4.7 show that the number of those directors with professional qualification was 1,402 (33.24%), PhD was 244 (5.78%) Masters was 2,173(51.52%), PGD was 195 (4.62%) and others without post-graduate qualifications was 204 (4.84%).

Educational Qualification	Frequency	Percentage
Masters	2173	51.52
PGD	195	4.62
PhD	244	5.78
Professional Qualification	1402	33.24
Others	204	4.84
Total	4218	100

Table 2: Frequency Distribution of Educational Qualification Diversity
Source: Author's Computations (2017): Underlying Data Are Obtained From Companies' Annual Reports, Internet and Personnel Departments of the Firms

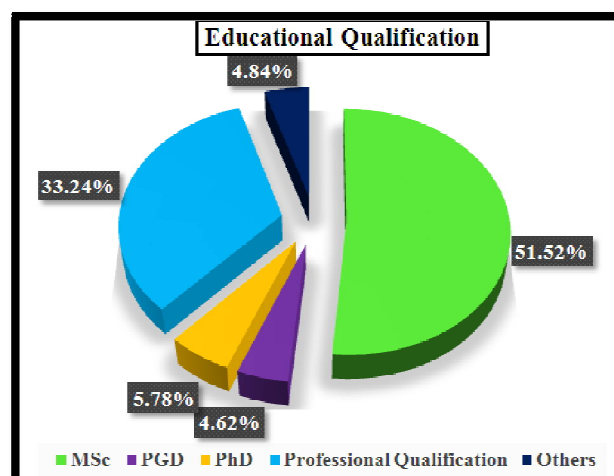


Figure 1

4.2. Correlation Result

Table 3 presents the correlation analysis of the variables under consideration. Tobin's Q is negatively and significantly correlated with ROA ($r = -0.1554$; $p < 0.1$). In the same vein, it shows a negative and significant relationship with board educational qualification ($r = -0.113$; $p < 0.05$) while ROA is positive but not significant with board educational qualification ($r = 0.039$; $p > 10$).

	ROA	TobinsQ	BEDU	logBSIZE	LEV
ROA	1				
Tobin's Q	-0.1554*	1			
BEDU	0.039	-0.113**	1		
logBSIZE	0.2164*	-0.0671	0.167**	1	
LEV	0.454**	0.805**	-0.104**	-0.122**	1

Table 3: Correlation Matrix
 Source: Author's Computation (2018). *** $P < 0.01$, ** $P < 0.05$, * $P < 0.1$

4.3. Regression Analysis

The regression analysis computed for the relationship between board educational qualification diversity and performance indicators of Tobin's Q and return on assets (ROA) are contained in Tables 4 and 5. From the result, L-M statistic tested for the presence of random effects in the underlying pooled OLS model. Panel effects are shown in the results, hence the study used Hausman specification test to choose between fixed and random effects. The Hausman test values of -23.91(0.1989) and 0.143(0.7072) respectively are strong evidence that the null hypotheses cannot be rejected. Thus, the study interpreted the random effect models.

Variables	Coefficients	t- stat	p-value
Constant	0.188	0.12	0.907
BEDU	-0.232	-0.40	0.691
LnBSIZE	0.364	0.50	0.620
LEV	1.609***	58.21	0.000

Table 4: Board Educational Qualification Diversity and Tobin's Q
 R-squared 0.365
 F-test 11658.0***
 Prob (F-statistics) 0.000
 Source: Author's Computation (2018). *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$

$$\text{Tobin's Q} = 0.188 - 0.232\text{BEdu} + 0.364\text{BSize}_{it} + 1.609\text{Lev}_{it} + \epsilon_{it} \text{-----} (1)$$

The regression result shows that a 36.5% variation in Tobin's Q is explained by the explanatory variables (Adjusted R²) while the remaining 63.5% variation in Tobin's Q is accounted for by other variables not captioned in this study. Board educational qualification diversity (BEdu) is negatively and insignificantly related to Tobin's Q ($\beta = -0.232$; $p > 0.1$). This shows that board of directors' educational qualification does not have significant relationship with growth prospects of Nigerian quoted companies. Though, when controlled for board size and leverage, the analysis indicates an F-statistics of 11658 ($P = 0.000$) which means a significant relationship between the explanatory variables and Tobin's Q. The regression coefficient of -0.232 implies that a 1 percent increase in board educational qualification diversity will attract a 0.232% reduction in Tobin's Q but the decrease is not significant. Board size (BSize) has a positive but in significant relationship with Tobin's Q ($\beta = 0.364$ $p > 0.1$) which means that a 1 percent increase in the number of board members will induce a 36.4% increase in Tobin's Q. Leverage has a positively significant correlation with Tobin's Q ($\beta = 1.609$; $p < 0.01$) of Nigerian quoted companies.

The null hypothesis of no significant relationship between board educational qualification diversity and growth potentials of Nigerian quoted companies is therefore not rejected.

Variables	Coefficients	t- stat	p-value
Constant	0.021	0.22	0.827
BEDU	-0.018	-0.42	0.677
LnBSIZE	0.078**	2.02	0.043
LEV	-0.025***	-5.70	0.000

Table 5: Board Educational Qualification Diversity And ROA
 R-Squared 0.038
 F-Test 104.90***
 Prob (F-Statistics) 0.000
 Source: Author's Computation (2018). *** $P < 0.01$, ** $P < 0.05$, * $P < 0.1$

$$\text{ROA} = 0.021 - 0.018\text{BEdu} + 0.078\text{BSize}_{it} - 0.025\text{Lev}_{it} + \epsilon_{it} \text{-----} (2)$$

The result in table 5 indicates that a 3.8% variation in return on asset is explained by the explanatory variables (Adjusted R²) while 96.2% variation is accounted for by other variables not captioned in this study. Board educational

qualification diversity (Bedu), the main variable of interest is negatively and insignificantly related to ROA ($\beta = -0.018$; $p > 0.1$). This means that diversity in corporate board educational qualification diversity does not have significant relationship with financial performance of Nigerian quoted companies. The coefficient of -0.018 means that a 1% increase in educational qualification diversity of Nigerian corporate board will attract 1.8% decline in Return on Assets. However, the result is different when controlled for board size and leverage as the F-statistics of 104.9 ($P = 0.000$) shows a significant relationship between the explanatory variables and ROA. Board size (BSIZE) has a positively significant relationship with ROA ($\beta = 0.078$; $p < 0.1$). The result indicates that a 1% increase in board size (BSize) will cause a 7.8% increase in ROA. More precisely, positive sign of board size (BSize) variable indicates that firms may exploit economies of scale and scope and therefore benefit from a considerable large board size. Also leverage shows a negative but significant relationship with ROA ($\beta = -0.025$; $p < 0.01$). A 1% increase in leverage will induce a 2.5% decrease in ROA. This result supports the notion that debt level has the potential to affect financial performance as a result of finance cost and default risk. In concluding, the null hypotheses of no significant relationship between board educational qualification diversity and financial performance (ROA) of Nigerian quoted companies is therefore not rejected.

The finding of this study aligns with the research conducted by Gantenbein et al. (2011) which shows that graduates of minor Swiss universities are negatively related to Tobin's Q and industrial knowledge and Tobin's Q are negatively correlated if the firm has more divisions. Similarly, Bathula (2008) concluded that board members with PhD level education is negatively related to firm performance. Also, Phan (2016) documents empirical evidence on the relationship between board of director's education and firm performance on a European dataset, he found no correlation between board of directors' education and firm's return on asset. In the same vein, Waithaka (2014) examined the influence of board effectiveness on corporate financial performance in the Kenyan banking industry and found no significant relationship between educational qualifications and financial performance. However, the finding in this study is in contrast with such authors as Camelo et al. (2010) who established a positive association between educational qualification diversity and performance (innovation) in corporate boards. Mahadeo et al. (2011) found a positive and significant relationship between board size and educational diversity. Also, Yermack (2006) found that price of stock responded to director's professional qualification, especially in the area of accounting and finance. Ujunwa (2012) also found that directors with PhD have a positive and significant relationship with company's financial performance in Nigeria after using data from 122 listed companies on the Nigerian Stock Exchange between 1991 and 2008.

5. Conclusion

This study examined the relationship between board educational qualification diversity and performance of 53 manufacturing companies quoted on the Nigerian Stock Exchange between 2006 and 2015. Manufacturing firms were used due to their significant contributions to gross domestic product (GDP), employment and as well as the overall data availability. When analyzed independently, the panel data analysis did not establish any significant relationship between board educational qualification diversity and performance of quoted companies in Nigeria. However, the result shows significant relationships between educational qualification diversity and performance metrics of Tobin's Q and ROA when controlled for board size and firm leverage. As regards the control variables that have the task to capture different firms' characteristics, the results of the conducted analysis indicate a significant controlling effect of board size and leverage on the relationship between educational qualification diversity and business success. The implication of this study is that educational qualification which serves as a sine qua non in the selection and appointment of members of corporate boards in Nigeria is insignificant in assessing the performance of the companies without taking into cognizance other important factors such as board size and leverage.

This study enriches our understanding of board educational qualification and performance in the Nigerian manufacturing industry. It further highlights the importance that some other variables such as board size and leverage may have on business success. From policy perspective, the current study provides course of action in the formulation of adequate business strategies and point to factors that relevant stakeholders must take into consideration in order to attain superior firm performance. This study therefore recommends that relevant stakeholders in board composition should always endeavour to consider and harness value enhancing factors in the selection and appointment of the members of corporate board for optimal performance. Further studies may be directed towards an evaluation based on a broader research sample together with the inclusion of additional diversity and performance measures.

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