BOARD DIVERSITY AND CORPORATE FINANCIAL PERFORMANCE: THE MODERATING EFFECT OF FIRM LIFE CYCLE

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ABSTRACT

The main objective of this study is to examine the relationship between board diversity and corporate financial performance, given the stages of a firm's lifecycle for non-financial companies in Nigeria. The study covered a period of five (5) years (2011–2015). Six (6) models were specified and analyzed using descriptive statistics, histogram normality test, correlation analysis, hauseman specification test, and panel regression analysis using the random effect estimator with the aid of E-views 9.0. The data used in the study was obtained from the annual reports and accounts of ninety (90) non-financial firms quoted Nigerian Stock Exchange. From the empirical analysis, the study revealed that foreign diversity has a significant positive relationship with corporate financial performance while gender diversity and educational diversity have no significant relationship with corporate financial performance of non-financial companies in Nigeria. In addition, when the variables of board diversity interacted with the five stages (introduction, growth, mature, shakeout and decline) of the firm's lifecycle, gender diversity and foreign diversity have significant negative relationship with corporate financial performance at the introduction stage of the firm and a significant positive relationship with corporate financial performance at the mature stage of the firm. However, when educational diversity was interacted with the stages of the firm's lifecycle, there was no significant relationship with all five stages of the firm's lifecycle. The study therefore recommends that when companies are diversifying their corporate boards, with the sole aim of improving on their performance, they ensure that the number of women on the board be increased at the mature stage of a firm's lifecycle because they will assure shareholders of an imminent significant change even in a state of recession. Also, the board should increase the number of foreign directors at the mature stage of the firm because they will help the firm reduce its cost of capital by encouraging greater financial flexibility.

Keywords: Board diversity, corporate financial performance, lifecycle

INTRODUCTION

The primary objective of the firm in extant finance literature is to maximize the wealth of shareholders. For basic firms, wealth accretion is indicated by the difference between net worth of the business between two time periods. For listed firms, wealth accretion is measured by the increase in price of the listed shares of the company. For managers of such entity to increase the wealth of shareholders, the performance of the firm as perceived by the market must drive the shares of the firm. The execution of projects or investment with positive net present value by the management ordinarily should translate into increase in wealth of shareholders. This however assumes that managers act in the best interest of shareholders in their decision making with respect to the choice of investment and how those investments are managed. The firm is a collection of diverse interest, each looking to maximize their interest. Managers act as agents of the shareholders/principal of the firm. Shareholders are interested in increasing their wealth from their investments in the firm. Managers are basically interested in managerial compensation, sometimes beyond what can legitimately be provided within the firm. The divergence of the interest of managers from that of owners/shareholders leads to agency conflict. This conflict arises because managers have custodial and decision making rights, whereas the owners have proprietary rights.

In order to mitigate the agency conflict a corporate governance framework was put in place to specify the distribution of rights and responsibilities among the participants in the corporation and spell out the rules and procedures for making decisions within the firm (OECD, 2004). Corporate governance is about the effective, transparent and accountable governance of affairs of an organization by its management and board (Ogbechie & Koufopoulous, 2010). Extant literatures have documented the impact of corporate governance on firm performance. However literature presents mixed evidence of the relationship of different corporate governance mechanisms and firm performance.

Several factors of corporate governance that have been identified in recent corporate failures (Osajie, 2014; Otaru, 2016; Vera-Cruz, 2017). Bank failures in Nigeria are traceable to poor corporate governance (Teingo, 2016). A major corporate governance mechanism is the board of directors, with the strategic function of ensuring that all other aspect of the corporation work to attain the fundamental objective of the firm. The effectiveness of the board has been indicated in the performance of the firm in extant literature. A key aspect of board is the diversity of the board. Several studies (such as, Izedonmi and Tafamel, 2013; Oba and Fodio, 2013) adduce empirical evidence of the positive effect of board diversity on firm performance. However, other studies provide evidence of the negative effect of board diversity on firm performance (Smith, Smith, & Verner, 2006; Randoy, Thomsen & Oxelheim, 2006). A different empiric on board diversity and firm performance document mixed evidence (Marimuthu & Kolndaisamy, 2009; Ujunwa, Okoyeuzu, & Nwakoby, 2012).

The contradictory empirical evidence indicates the inconclusiveness of result, demanding more investigation. In this nexus this study hypothesizes the effect of firm life cycle on the relationship between firm performance and board diversity. The primary logic for this is that as the firms evolve from one phase to another, its economic behavior and character change. Consequently the firm's character evolves as the firm moves one phase of its life to another. The managerial skill set needed to incubate and birth a company is different from the skill needed to nurture the firm to maturity. Thus, a founding CEO with entrepreneurial initiatives is able to set up a company in its infancy, but as the firm grows a different skill set is

necessary to contend with competition. In this nexus board diversity evolves to align with the managerial needs of the firm at a particular phase of its life. This study introduces the life cycle variable in the board diversity and firm performance relationship to address the contradictory results of extant literature. The study focuses on the diversity of the board and investigates it relationship with firm's performance conditional on the life cycle of the firm.

Following this introduction the remainder of this paper is organized as follows. The next section reviews the literature on board gender diversity and firm performance. It also looked at the dynamics of the board across the various lifecycle stages. Section 3 notes the sample data and model specification. Section four presents the results on the relationship between board diversity and firm performance conditional on life cycle of the firm. The final section concludes with a summary.

REVIEW OF LITERATURE

Board Diversity

The term diversity refers to all matters of differences in the business environment like a variance in social characteristics (such as religion, race, gender, ethnicity, nationality and class) (Jose, Prado, Isabel, & Garcia, 2010; Marimuthu, 2008), difference in the organisational group (such as educational or functional tenure and experience) and dissimilarity in distinct features like eccentric behaviors, morals, intellectual ways and choices (Ely, Foldy, & Scully, 2003). According to Macfarlane, Sinhuber, and Khan (2010), diversity is simply a business that is assertive, reflects a commitment to find the best available skill and ensures that decisions are informed by inputs from people with varying backgrounds, experiences and perspectives which make these the ultimate key ingredients for success (Brammer, Millington, & Pavelin, 2007; Kiran, 2014).

In corporate governance, the makeup/composition of board of directors is known as the diversity of the board (Kang, Cheng, & Gray, 2007). This mixture is divided into two categories such as demographic diversity such as age, gender, ethnicity and race (Bergen & Massey, 2005; Carson, Mosley, & Boyar, 2004; Certo, Lester, & Dalton, 2006; Cheng, Chan, & Leung, 2010; Erchardt, Werbel, & Shrader, 2003; Evans & Carson, 2005; Kiran, 2014; Roberson & Park, 2007) and cognitive diversity such as education, knowledge, values, affection, perception and personality features (Cuomo, Mapelli, Paolino, & Simonella, 2009; Peterson & Philpot, 2007; Timmerman, 2000).

The adverse effect of corporate failures as documented in literature has been blamed on weak corporate governance and is still been felt in most companies today (SEC, 2004; Garba & Abubakar, 2014). Various countries, both internationally and nationally, took the initiative to ensure good governance by diversifying the board (Garba & Abubakar, 2014). Reacting to this initiative, in the year 2011, the Corporate Affairs Commission (CAC) joined hands with Securities and Exchange Commission (SEC) to produce a code of Corporate Governance (CCG) for businesses established in Nigeria. The CCG (2011) states that:

> *The board should be of sufficient size relative to the scale and*
> *complexity of the company's operations and composed in a way as to*
> *ensure diversity of experience without compromising independence,*

computability, integrity and availability of members to attend meetings. (p.4)

Despite the growing attention given to the issue of poor corporate governance, literature only shows slow and incremental progress towards achieving more balanced boards in terms of diversity. Understanding how diversity affects the overall performance of the organisations is of great importance.

Board Gender Diversity and Corporate Financial Performance

The concept of board diversity encompasses gender diversity (Milliken and Martins, 1996) which is defined as a board that has a minimum of one female director. This is one of the measures employed (Adams & Ferreira, 2009; Campbell & Mınguez-Vera; 2008; Dutta & Bose, 2006). Previously, gender diversity on a social basis was reflected as a problem of image. It has progressively advanced as a value-driver in administrative strategy and corporate governance (Mishra & Mohanty, 2014). With the presence of women on the board, the norm of having only male members has been changed and the room for greater diversity opened leading to corporate reputation and great respect in the society (Krishnan & Parson, 2008; Ujunwa et al., 2009). Several studies have a positive opinion on gender diversity claiming that the diversity of the board involving more women would bring about better board governance, top management control and improved firm performance (Adams & Ferreira, 2009; Ararat, Aksu, & Certin, 2010; Bjarnadottir, 2013; Certer et al., 2003; Dezso & Ross, 2012; Ellwood & Gracia-Lacalle, 2015; Ernst & Young, 2015; Garba & Abubarkar, 2014; Izedonmi & Tafamel 2013; Larkin, Bernardi, & Boscos, 2012; Lukerath-Rovers, 2013; Marin, Ugedo, Soler, Vera, & Perez, 2015; Nguyen, Locke, & Reddy, 2015; Oba & Fodio, 2013; Plessis, O'Sullivan, & Rentschler, 2014; Sharfique, Idress, & Youusaf, 2014; Sun, Zhu, & Ye, 2015). However, other studies (Abdullah & Ismail, 2013; Al-Mamun, Yasser, Entebang, Nathan, & Rahman, 2013; Bohren & Strom, 2007; Ding & Charoenwong, 2004; Gallego, Garcia, & Rodriguez, 2010; Jhunjhunwala & Mishra, 2012; Kiran, 2014; Stigring & Lyxell, 2011; Ujunwa et al., 2012; Wachudi & Mboya, 2009) have documented evidence of negative association with performance while (Carter et al., 2010; Ding & Charoenwong, 2004; Letting, Aosa, & Machuki, 2012; Marimuthu & Kolandaisamy, 2009; Prihatiningtias, 2012; Randoy et al., 2006; Rose, 2007) established no significant relationship between the presence of women directors on the board and firms' performance.

Board Educational diversity and Corporate Financial Performance

Prior literature on educational diversity of directors is limited. Studies placed more emphasis on specific skills such as accounting and political background (Christensen, Kent, & Stewart, 2010; Gray & Nowland, 2015; Gray, Harymawan, & Nowland, 2016) than on other areas. Some studies (Carpenter & Westphal, 2001; Carver, 2002; Hunt, 2000; Ljungquist, 2007; Westphal & Milton, 2000; Yermack, 2006) showed a positive relationship between competence or capability and a firm's performance. On the contrary, some studies (Bathula, 2008; Burke & Mattis, 2000; Jhunjhunwala & Mishra, 2012; Letting, Aosa, & Machuki, 2012) are of the opinion that board members with a higher educational qualification had a negative influence on a firm's performance.

Board Foreign diversity and Corporate Financial Performance

Ujunwa et al. (2012) defined the nationality of a board as the proportion of foreign board members to the overall size of the board in an organisation. Generally, the possible benefit of a foreign board membership has got undivided attention in corporate governance studies (Marimuthu & Kolandaisamy, 2009). Some studies (Choi, Park, & Yoo, 2007; Garba & Abubarkar, 2014; Oxelheim & Randoy, 2003; Ruigrok et al., 2007; Ujunwa et al., 2014) agreed that there was a connection between nationality diversity and the performance of a firm. On the other hand, studies like Hassan, Samian, & Silong (2006); Jhunjhunwala & Mishra (2012); Kilduff, Angelmar, & Mehra (2000); Randoy, Thomsen, & Oxelheim (2006); Rose (2007) revealed a negative influence of board nationality on firms' performance.

The Dynamics of Board Diversity across the Stages of a Firm's Lifecycle

Looking at the pattern of the cash flow (that is, operating, investment and financing activities) as well as the resourcing differences across the firm's life cycle stages, it is possible that an explanation on the connection between board diversity and these stages can be established. Management Science researchers have used different terminologies to show the five (5) separate firm's life cycle stages. They include: introduction, growth, mature, shake-out and decline stages. Dickinson (2011) and Miller and Friesen (1984) stated that it could be in the form of birth, growth, maturity, revival and decline. The different stages are categorized by variances in strategy, environment, decision-making style and structure (Hassan, Al-Hadi, Taylor, & Richardson, 2016). Dickinson (2011) tried to capture the differences in resource availability and firms' performance by combining the changing patterns of cash flows with the differences noticed in the activities of the business (that is, operating, investing and financing) to develop the phases of the cycle. It was seen that the performance of a firm, its cash flow pattern, development, the allocation of wealth and risk showed a scientific discrepancy all through the different stages of the firm's life.

One approach used to separate the different stages of the lifecycle of the firm is the cash flow pattern (Thanatawee, 2011). In the works of Dickinson (2011), lifecycle stages of the firm were separated using models that denote positive and negative signs of cash flow (such as operating, investing, and financing activities). This section below shows a description of the cash flow characteristics represented at each stage of the life cycle.

Operating Activities

There is a negative sign for cash flows at the introduction stage. This stage is characterized with uncertainty when it has to do with the free flow of income and its cost, an increased amount of office speculations on the topic of investments, venturing into risky opportunities of investment, and product innovation (Ingley & Van der Walt, 2001; Drobetz et al., 2015; Hasan, Hossain, Cheung, & Habib, 2015; Hassan et al., 2016). It is known for a fact that firms come into the market with inadequate facts about prospective expenses and returns at this stage (Jovanovic & MacDonald, 1994). The growth stage of a firm registers the highest amount of profit margins. In this stage we have a positive sign for cash flows. It is characterized by large investments, growth in income, the free flow of cash needed for progressive tasks and the constant choosing of debt instead of equity financing (Hassan et al., 2016; Inyiama & Nwankwo, 2016). Dickinson (2011) claimed that in the growth stage, leverage was maximized at the time when a number of geographical segments and businesses grew. Also, the firm tends to

be more open to the public, more observant and has a better control of resources coming from external sources (Filatotchev et al., 2006). From previous studies, it was revealed that a firm at the growth stage tends to have a larger amount of intangible assets and working capital (for example, research and development costs, copyrights and patents) that reduces as they progress into maturity as well as the decline stage (Young & Huang, 2004). The effectiveness of the firm gets to its highest point at the maturity stage because the information gotten for operations has increased, and this gives a positive cash flow sign. The cash flow at the shake-out stage could possibly be positive and negative. Lastly, at the decline stage if the growth rate reduces then the prices also reduce and then consequently the cash flows we get form operational activities gives a negative sign (Oskouei & Zadeh, 2015).

Investing activities

The introduction stage of the firm shows a negative cash flow sign because the firm is progressing towards building talent and capacity. Also, according to managerial optimism making early investments at this stage could possibly build obstacles for competitor's entering into the market (Spence, 1981). At the growth and maturity stage the cash flow signs are both negative because at the growth stage a lot of investments are taking place and more funds are being put in it. It is expedient at this stage that management should understand the environment they work or operate in better than any other environment and possibly have a greater number of the resources available to them whenever they need it because they have room for more opportunities and extra skills to judiciously utilize the available resources in analyzing and implementing board functions and actions (Gabrielsson & Kirpalani, 2004). For the maturity stage, though the firm reduces its investment in comparison to the growth stage, they still continue to invest in order to maintain capital and this maintenance cost could increase over time. This will lead to a negative investing cash flow (Jovanovic, 1982). The maturity stage of the lifecycle of a firm is branded by a reduction in the level of investment and innovation (Aharony, Falk, & Yehuda, 2006; Chiang et al., 2011), a reduction in the growth of sales and more persistent net income (Black, 1998). At the shake-out stage it is possible to have a positive and negative cash flow sign and a positive cash flow sign at the decline stage because a firm liquidates its assets in order to service existing debt and support operations. The firms would then make an effort to transform their less useful assets into cash, hence converting these resources to tasks that could bring more profit (Gort & Klepper, 1982). However, in cases where the firms are unable to revive their activities through major reforms (such as merging and project accomplishment) or unable to venture into a different market, entering the decline phase will be forthcoming giving rise to a negative cash flow. In all, a firm at the decline stage is more likely to exhibit an increased cost of capital, reduced financing opportunities, lesser credit ranking and an increased wiliness of managers to take risks (Jensen & Mecking, 1976; Richardson, Lanis, & Taylor, 2015).

Financing Activities

We have a positive cash flow sign at the introductory stage because Barclay and Smith (2005) points out that the expectation of less liquidity in the future will lead to

underinvestment in positive net present value projects as the firm grows. Therefore, financing cashflow are expected to be positive for at least firms at the introduction stage because they access credit for expansion. Also at the growth stage of a firm, the cash flow sign remains positive because the activities seen at the introduction stage are likely to continue at this stage. However, mature firms as the name implies have exhausted their positive net present value investment opportunities and so have less investment opportunities in the future except in a situation where they go back to the growth stage. But this lack of opportunity reduces the need for the firm to borrow anymore funds. On the contrary, mature firms over invest in their main or needless business at a lower returns. With this, they tend to repay borrowed funds, service debt and share the reserves amongst the owners because they have exhausted their positive net present value investment opportunities or over invested in suboptimal projects that will diminish their overall profitability. Assuming the lack of investment opportunities prevail over the problem of over investment, the firm would have to pay debt or repurchase equity which will give us a negative cash flow sign at the maturity stage. At the decline stage, the firm's cash flow sign could be either positive or negative depending on the net impact of its loans to be paid are renegotiated or new preferred equity instruments are issued. At this stage managers are compelled to go into risky and unhealthy ventures, all in a bid to save the life of the business (Habib & Hasan, 2015), with the investors at the receiving end of the failed venture (Jensen & Mecking, 1976). The firm tends to struggle to remain in business and also to finance major structural changes by relying completely on external debts (Akhtar 2012; Edwards, Schwab, & Shevlin, 2016). The shakeout stage which is a non-equilibrium phase of negative net market entry by firms is characterized by either all positive; or all negative; or positive operating and investing cash flows are combined with negative financing cash flows.

In the light of the above, to ascertain a better connection with the economic theory, Dickinson (2011), Hassan et al. (2016), and Oskouei and Zadeh (2015) stated that the cash flow pattern be used to assess the life cycle stages of a firm because it made use of all financial information contained in the financial statement and was a strong tool that had applications in analysis, forecasting, valuation, and a good control variable for future research.

DATA AND ESTIMATION

Data

The population of this study comprised one-hundred and thirty-two (132) non-financial companies listed on the Nigerian Stock Exchange (NSE) for the period 2011 to 2015. We chose this sector because, according to Mehran, Morrison, and Shapiro (2011), there were two main logics governing the financial and non-financial sectors. The first was that the financial firms had many more stakeholders than non-financial firms and the second was that businesses in the financial sector were opaque, complex and could shift rather quickly. The complexity of the financial sector poses challenges in implementing formal regulations (Mehran, Morrison, &Shapiro, 2011). Due to the differences in regulations between the financial and non-financial firms, we chose to use the non-financial firms. In total our sample size was ninety-nine (99) non-financial listed firms for each financial year, from 2011 to 2015. Nine (9) of these firm's data were not available as at the time of data collection. These firms did not have information on key explanatory variables of this study, and therefore, they dropped out. As a result, the final sample comprised 426 firm-year observations of 90 firms.

Table 3.1: Operationalization of variables

Variables	Definitions	Measurement	Used by	Apriori signs
Dependent variable				
CFP	Corporate Financial Performance	ROA = net income divided by total assets	Marimuthu (2008), Garba & Abubarkar (2014).	
Independent variables				
GENDIV	Gender diversity	The percentage of female directors divided by total board size	Garba & Abubarkar (2014), Ujunwa et al. (2012), Vo & Phan (2013).	+
FORDIV	Foreign diversity	The percentage of foreign directors divided by the total board size	Marimuthu & Kolandaisamy (2009), Ujunwa et al. (2012).	+
EDUDIV	Educational diversity	The percentage of directors with a PhD divided by the total board size	Bathula (2008), Modified Vo & Phan (2013).	+
Interactive variable				
FLC	Firm life cycle	A vector of dummy variables which capture the different stages in a firm's life cycle using the cash flow pattern	Dickinson (2011), Hasan et al. (2016), Balogh (2016), Yan (2010).	
Firm cash flow proxy measure				
INTRO	Introduction stage	1 if only cash flow from financing activities is positive and 0 otherwise.	Dickinson (2011), Hasan et al. (2016)	
GROWTH	Growth stage	1 if only cash flow from investing activities is negative and 0 otherwise.		
MATUR	Mature stage	1 if only cash flow from operating activities is positive and 0 otherwise.		
SHAKE	Shake-out stage	1 if cash flow from all activities are negative and 0 otherwise.		
DECLIN	Decline stage	1 if only cash flow from investing activities is positive and 0 otherwise.		
Control variables				
LEV	Leverage	Total debt divided by total Assets	Bansal & Sharma (2016), Vo & Phan (2013).	-
FIRSIZ	Firm size	Measured by natural log of total assets.	Roberson & Park (2007), Erchardt et al. (2003), Vo & Phan (2013).	+
FIRAGE	Firm age	The number of years the firm has been in existence	Inyiama & Nwankwo, (2016), Bansal & Sharma (2016).	+

BODIND	Board Independence	The number of non-executive directors divided by the board size	Ghabayen (2012), Liu (2008), Veklenko (2016).	+

Source: Researcher's compilation, 2017.

Model Specification

CFP = f (GENDIV, NATDIV, EDUDIV)…………………………………………………...........(1)

Hence, the econometric models drawn from the above functional equations for each hypothesis are stated below:

$$CFP_{it} = \delta_0 + \delta_1 GENDIV_{it} + 2_1 FORDIV_{it} + \delta_3 EDUDIV_{it} + \delta_{24} FIRSIZ_{it} + \delta_5 IRAGE_{it} + \delta_{\backslash 7} LEV_{it} + \delta_8 BODIND_{it} + \varepsilon_{it} \ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots (2)$$

Further, the models to be estimated for each hypothesis to enable us to test the interactive effects of the firm's lifecycle stages and board diversity on corporate financial performance are presented below in their econometric form:

$$CFP_{it} = \delta_0 + \delta_{1-5} GENDIV*FLC_{it} + \lambda_{1-5} FORDIV*FLC_{it} + \pi_{1-5} EDUDIV*FLC_{it} + \delta_6 FIRSIZ_{it} + \delta_7 FIRAGE_{it} + \delta_8 LEV_{it} + \delta_9 BODIND_{it} +$$

$$\varepsilon_{it} \ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots (3)$$

Where:

CFP = Corporate financial performance;

GENDIV = Gender diversity; FORDIV = Foreign diversity; EDUDIV = Educational diversity

GENDIV*FLC = Interaction of gender diversity with lifecycle stages; FORDIV*FLC = Interaction of foreign diversity with lifecycle stages; EDUDIV*FLC = Interaction of educational diversity with life cycle stages; FLC = Firm lifecycle (An indication that a firm is at the introduction, growth, maturity shakeout and decline stages)

FIRSIZ = Firm size FIRAGE = Firm age LEV = Leverage BODIND = Board independence.

PRESENTATION AND DISCUSSION OF REGRESSION RESULTS

Descriptive Statistics

This subsection provides the descriptive statistics which gives us a better understanding of the data obtained for this study.

INSERT TABLE 1 HERE

From Table.1, the mean value of 0.028 and median value for return on asset (ROA) was 0.038 for the five (5) year period. It showed that the sampled firms yielded low returns (but positive) as indicated by the ROA. The minimum value (-1.196) showed that in a particular year, some companies actually made a loss. It meant that managers of these companies did not manage the company's assets efficiently with regards to the conversion of those assets to income because a lower return on assets indicated inefficiency. That could, to an extent, account for the high rate of corporate failures in Nigeria. The mean ROA value of our estimates is lower than that of Carter et al. (2010), with 3.90 and Ujunwa et al. (2012) with 1.768, but higher than the -0.02 of Bathula (2008) and comparable with Johl et al. (2015) with 0.02.

Gender diversity (GENDIV) had a mean value of 0.087 and a median value of 0.083. It indicated that women were greatly underrepresented in management positions and on the board of directors of non-financial companies in Nigeria. In other words, on the average, female

directors rarely participated in the decision making process that improved board governance, top management control and firm performance. It went further to show that majority of the board were male dominated at 92% while 8% were women. However, a minimum of 0 and maximum of 40% showed that there were some boards without any female director while some had up to 40% because the board size was relatively small.

Foreign diversity (FORDIV) had a mean value of 0.177 and a median value of 0.1, indicating that on the average, approximately 18% of the board members of non-financial companies were foreign directors. The results showed that the average number of foreign directors on the boards was approximately 2 foreigners per board with a minimum of 0 and a maximum of 8 foreign directors. It indicated that some non-financial firms had no foreign director on their boards while some had about 8 foreign directors per board. But the impact of this variable on corporate financial performance could only be verified from the regression results. The mean value for our estimate was comparable with that of Ujunwa et al. (2012) that is, 0.17.

Educational diversity (EDUDIV) had a mean value of 0.033 and a median value of 0, indicating that on the average, 3% of the board members had a PhD degree while 97% did not. It showed that the highest number of directors on the boards of non-financial companies in Nigeria with a PhD degree was about 42%. The mean value of 3% showing the percentage of directors on the board with a PhD in Nigeria appeared to be much lower than that of firms in New Zealand (Bathula, 2008) (mean, 0.37 that is, 37%).

In the case of our control variables, the mean value for firm size (FIRSIZ) was 7.055 and a median value of 6.969, suggesting the presence of young and growing firms in our sample. The maximum value of firm size stood at 9.046 and the minimum value at 5.351. The difference between the maximum and the minimum values (3.694) further reiterated that our sample of 90 non-financial companies was not dominated by small companies or capital intensity firms.

The mean value for firm age (FIRAGE) was 24.073 with a median value of 25.5. It indicated that the mean age of non-financial firms in Nigeria was approximately 24years with a minimum age of 2year. The average age of non- financial firms in Nigeria appeared to be older than firms in New Zealand with a mean age of 18.04 (that is, 18years) (Bathula, 2008).

In terms of leverage (LEV), the sampled firms had an average debt ratio with a mean of about 0.604 to total asset and a median of 0.593 respectively. It ranged between 0.063 and 2.861 of total asset.

Board independence (BODIND) had a mean value of 0.639 and a median value of 0.67, indicating that on the average, over 64% of the directors on the board of non-financial firms in Nigeria were non-executive directors. It implied that the boards of non-financial firms in Nigeria were dominated by non-executive directors. The minimum value for independent directors in a board was 0.170 and the maximum 0.930. A small percentage of members on the board were executive members.

The Jarque-Bera (JB) values and its associated probability values suggested a standard normal distribution of the variables with a mean probability value of 0.00.

Correlation Matrix

The Tables 2 and 3 reported the correlation matrix for the dependent variable which was corporate financial performance (CFP) as it related to the independent variables gender

diversity (GENDIV), foreign diversity (FORDIV), educational diversity (EDUDIV) and control variables- firm size (FIRSIZE), firm age (FIRAGE), leverage (LEV) and board independence (BODIND).

Table 2 below indicated that there existed strong correlations between the dependent and independent variables. The Table showed the correlation coefficients of the dependent and independent variables before its interaction with the firm's lifecycle. We were primarily interested in the correlation between gender diversity (GENDIV), foreign diversity (FORDIV), educational diversity (EDUDIV) and the control variables- firm size (FIRSIZ), firm age (FIRAGE), leverage (LEV), and board independence (BODIND) on corporate financial performance (CFP) measured by return on asset (ROA) for non-financial firms in Nigeria.

INSERT TABLE 2 HERE

As observed, ROA was positively correlated with GENDIV (0.084), FORDIV (0.061), EDUDIV (0.540), FIRSIZ (0.555, FIRAGE (0.244) and negatively correlated with LEV (-0.471) AND BODIND (-0.019). However, the results showed a strong relationship with corporate financial performance.

Table 3 below showed the coefficient of correlation of the variables with respect to the stages of a firm's lifecycle at 1%, 5%, and 10%level for two-tailed test. We were primarily interested in the correlation between gender diversity (GENDIV), foreign diversity (FORDIV), educational diversity (EDUDIV) and the control variables- firm size (FIRSIZ), firm age (FIRAGE), leverage (LEV), and board independence (BODIND) on corporate financial performance (CFP) measured by return on asset (ROA) for non-financial firms in Nigeria at the five stages (introduction, growth, maturity, shake-out and decline) of the firm's lifecycle (refer to appendix 1).

INSERT TABLE 3 HERE

As observed, we found that the corporate financial performance proxy (ROA), explanatory and control variables were highly correlated at 1% (p<0.01) with the various life cycle stages. When the p-value of the coefficient was statistically significant at 1% (p<0.01), ROA was negatively correlated with the introduction (-0.152) stage and positively correlated with the mature (0.119) stage. Further, the results showed that the explanatory variable- gender diversity was negatively correlated with growth (-0.097) stage at 5% (p<0.05) and positively correlated with mature (0.089) stage at 10% (p<0.10). It also showed that foreign diversity was positively correlated with the mature (0.131) stage and negatively correlated with shake-out (-0.143) stage at 1%. Educational diversity was also negatively correlated with the shake-out (-0.080) stage at 10%.

In addition, when the p-value of the coefficient were significant at 1% (p<0.01), the control variables- firm size was negatively correlated with the shake-out (-0.118) stage. Firm age was negatively correlated with growth (-0.118) stage at 1% and positively correlated with mature (0.088) and shake-out (0.089) stages at 10%. When it came to leverage, it was positively correlated with the shake-out (0.105) stage at 5% (Refer to appendix 1).

Overall, the results showed a strong relationship with corporate financial performance, thus giving us a strong background for our hypotheses and measures.

Panel Regression Results

This section shows the empirical results of the regression models of board diversity and corporate financial performance before its interaction with the firm's life cycle. The secondary data for our sampled companies were analysed using the panel least square estimation technique. Based on the nature of our panel data, two basic specifications were allowed: the Fixed Effect Model and Random Effect Model. Before presenting the results from the panel data analysis, we carried out the Hausman's test (refer to appendix 2) in order to determine whether the Fixed or Random effect model was more appropriate. The Hausman specification test was presented in

INSERT TABLE 4 HERE

The regression results of the relationship between board diversity and corporate financial performance before its interaction with the life cycle was presented in Table 5 using both the fixed and random effect model (refer to appendix 3). The result of the Hauseman test rejected the equality of coefficients in the fixed effect model from the Chi-squared value of 12.682 with a probability value of 0.080, which was greater than the p-value of 0.05. Following from the results we accept the random effect model as most suitable for our study.

INSERT TABLE 5 HERE

The results from the random effect model presented in Table 5 above reported an adjusted R^2 value of 0.439, which signified that 44% systematic variation in the dependent variable (corporate financial performance) was accounted for by the explanatory variables (gender diversity, foreign diversity, educational diversity) and control variables (firm size, firm age, leverage, and board independence). The F-statistics of 48.492 and the associated probability value of 0.000 showed a significant linear relationship between the variables. From the three explanatory variables gender diversity was significantly and positively associated with corporate financial performance, with a coefficient of 0.166 and p-values of 0.004, while foreign diversity is significantly and positively associated with corporate financial performance, with a coefficient of 0.055 and a p-value of 0.098. Firm size and firm age had a significant positive relationship at $p<0.05$ and $p<0.01$ respectively, while leverage had a negative significant relationship ($p<0.01$). In addition, the results showed that educational diversity, with coefficient of 0.005 and p-value of 0.875 and board independence with a coefficient of -0.045 and p-values of 0.25 had an insignificant relationship with corporate financial performance.

INSERT TABLE 6 HERE

The Table 6 above showed our regression results using the Dickinson's (2011) model of the different lifecycle stages. Specifically, we grouped the firm's lifecycle into five stages: introduction, growth, maturity, shake-out and decline, with five dummy variables which we used for each group.

From the above, the adjusted coefficient of determination (adjusted R^2) from the regression results of 426 firm-years observation, showed on the average that about 43% systematic variation of the dependent variable was jointly explained by board diversity variables- gender diversity (GENDIV), foreign diversity (FORDIV), educational diversity (EDUDIV) and control variables- firm size (FIRSIZ), firm age (FIRAGE), leverage (LEV) and board independence (BODIND). The low R^2 was due to the absence of some board characteristics variables that were related to corporate financial performance but had not been included in this study. The probability value of the f-statistics was 0.000 indicating that the model was statistically significant and valid (refer to appendix 4). With respect to GENDIV interacting with FLC at the introduction phase had, coefficient of 0.382 and p-values of 0.049, which implies a positive and significant interaction of gender diversity-firm life cycle at this stage. For the interaction of FORDIV and life cycle, at the growth stage the coefficient was (-0.86) and p-value (-0.067) at the growth stage, showing that firm performance was negative variant of FORDIV at the growth stage. At the maturity stage performance is a positive variant of FORDIV, with coefficient of 0.058 and p-value (0.055). Educational diversity (EDUDIV) interaction is not significant at any stage of the firm life cycle.

DISCUSSION OF FINDINGS

We found a significant positive relationship between gender diversity and corporate financial performance. This implied that there was a significant relationship between gender diversity and corporate financial performance for non-financial firms in Nigeria. These findings provided evidence that a greater proportion of women on the board had a positive impact on a firm's performance, especially for non-financial firms with strong shareholders' rights. These findings were consistent with our expectations and with many other studies that examined the effect of gender diversity on firms' performance (Carter et al., 2010; Ding & Charoenwong, 2004; Marimuthu & Kolandaisamy, 2009; Prihatiningtias, 2012) but contradicted the findings of Al-Mamun et al. (2013), Bohren & Strom (2007), Gallego et al. (2010) and Wachudi & Mboya (2009) who established a negative relationship between the percentage of women on the board and firm value.

With respect to foreign diversity, we found support for the view that foreign diversity led to a superior firms' performance. This goes to show that foreign diversity is positively and significantly associated with corporate financial performance of non-financial companies in Nigeria. Hence, non-financial firms with more foreign directors tend to have an increase in credibility and performance due to their directors' wealth of experience and disclosure of valuable information. These findings are consistent with extant literature, which found foreign diversity to be positively related with firms' performance (Choi et al., 2007; Garba & Abubarkar, 2014; Jhunjahunwala & Mishra, 2012; Ruigrok et al., 2007; Ujunwa et al., 2014). However, these findings are contrary to those of Hassan et al. (2006) who found a negative relationship between board nationality and firms' performance and Rose (2007) who established no relationship with firms' performance.

With regards to educational diversity, we found no significant relationship with corporate financial performance. It implied that there was no significant relationship with corporate financial performance of non-financial companies in Nigeria. Contrary to conventional perception, it showed that PhD qualified board members having in-depth

analytical skills for research did not add any value to corporate financial performance. Possibly, what is needed is not just a higher level of academic qualification but specific skills such as Accounting, Finance (Gray & Nowland, 2015) and even political background (Gray et al., 2016). These findings were consistent with the study of Bathula (2008) and contrary to the works of Carver (2002) and Ljungqvist (2007) who found a positive relationship between competence and performance and other researchers like Bathula (2008), Jhunjhunwala & Mishra (2012) and Letting et al. (2012) who noted that board members with higher educational qualifications could have a negative impact on performance. .

Gender diversity-firm lifecycle interaction, had a positive and significant relationship with corporate financial performance at the introduction stage of a firm's lifecycle. These positive findings at the introduction stage provided evidence to the resource dependency perspective that diversity was beneficial to firms. Companies at their introduction stage are characterised by their uncertainty in free flow of income and its cost; concern for investments; making risky investments and product innovation. The reason for this positive impact at this stage is that the leadership style of women is more effective under a new business environment (Eagle & Mosakowski, 2000). Schubert et al. (1999) said that women were more conservative, risk averse and had a better understanding of the consumer's behaviour as well as the needs and prospects of the company in achieving its goals. These findings were consistent with extant literature, which found women on boards to be positively associated with firms' performance (Ellwood & Gracia-Lacalle, 2015; Nguyen et al., 2015; Oba & Fodio, 2013; Sun, Zhu, & Ye, 2015) but contrary to the works of Ujunwa et al. (2012).

From the results of foreign diversity-firm lifecycle interaction, we found negative and positive significant relationships between foreign diversity and corporate financial performance at the growth and mature stages of a firm's lifecycle for non-financial firms in Nigeria. The growth stage was characterised by large investments and the constant choice of debt financing. Thus, the reason for the negative relationship at this stage was that most investors were not willing to take the risk of investing huge sums in growing companies which were involved in large investments. Such risks were high due to the increase in managements' insecurity and investment cost (Filatotchev et al., 2006). This is consistent with the works of Hassan et al. (2006) and Jhunjhuwala and Mishra (2012) but contrary to the works of Garba and Abubarkar (2014) who found a positive relationship and Rose (2007) who found no relationship between board nationality and performance.

However, the positive significant relationship showed the presence of more foreigners at the mature stage of the firm. The reason for this was that businesses at this stage tended to be more organised and stable. They have a reduced investment cost and management insecurity which can help increase shareholders' wealth (De Angelo et al., 2006). This supports the agency theory that a more diverse board can be more innovative because it would help reduce agency costs and pay more attention to managers with selfish interest (Goodstein, Gautam, & Boeker, 1994). This is consistent with extant literature, which found that foreign directors on boards were positively associated with firms' performance (Choi et al., 2007; Darmadi, 2011; Garba & Abubarkar, 2014; Oxelheim & Randoy, 2003; Ruigrok et al., 2007; Ujunwa et al., 2014) and contrary to the findings of Randoy et al. (2006) who established a negative relationship.

Educational diversity-firm lifecycle interaction was found to have no significant relationship with corporate financial performance at the five stages (introduction, growth, mature, shake-out and decline) of non-financial firms in Nigeria thus contradicting the hypothesis that educational diversity would benefit the firm at a specific stage of its lifecycle. It implied that board members with a PhD qualification did not add value to corporate financial performance but there may be other specific skills that could improve performance (Yermack, 2006). This is consistent with the study of Bathula (2008) and contrary to the findings of Hunt (2000) and Westphal and Milton (2000) who reported that board members with higher educational qualification would bring about innovative ideas to develop better policies that could address strategic issues.

CONCLUSION

This study examines the relationship between board diversity and corporate financial performance, given the stages of a firm's lifecycle for non-financial companies in Nigerian. The salient finding is that there is no convincing evidence for any overall or cross-sectional link between board diversity and corporate financial performance. This opinion suggested that our focus should be on the board of directors and the examination of the role directors play given the diversity/variation of the board. A more in-depth analysis was undertaken by examining the diversity of the board members taking into account the firm's lifecycle stage.

This study provides evidence that gender and foreign diversity are significantly and positively related with corporate financial performance but educational diversity has no significant relationship with corporate financial performance. We found that gender diversity and foreign diversity were significant and positively associated with corporate financial performance at the introduction and mature stages of a firm's lifecycle respectively, but foreign diversity was significant and negatively associated with corporate financial performance at the growth stage. We also observed that educational diversity had no significant association with corporate financial performance at the five stages of a firm's lifecycle which implied that diversity on the basis of educational (PhD) qualification was not related to corporate financial performance and the presence of directors on the board with a PhD degree was not castigated by the business community since its effect was not significant on performance.

This study, therefore, concludes that overall, the findings indicate that board diversity is significantly positive with corporate financial performance as shown from the f-statistics (0.000). Also, since board diversity has an important implication for corporate financial performance, one can have a deeper understanding of such relationships by ascertaining the specific stage in a firm's lifecycle on which corporate financial performance may be dependent.

Finally, this study examined the relationship between board diversity and corporate financial performance (measured by return on assets), given the company's stages in its corporate lifecycle for non-financial companies in Nigeria. We suggest that researchers interested in this topic could use the market based performance measures (such as return on investment (ROI), economic value added (EVA) and Tobin's Q) for corporate financial performance or a composite of the accounting based measures to have a better proxy for performance.

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APPENDICES:

Table 1: Descriptive Statistics

	ROA	GENDIV	FORDIV	EDUDIV	FIRSIZ	FIRAGE	LEV	BODIND
Mean	0.028476	0.086517	0.176995	0.032673	7.054911	24.07277	0.603817	0.63939
Median	0.037845	0.083333	0.1	0	6.968679	25.5	0.59284	0.67
Maximum	0.539594	0.4	0.833333	0.428571	9.045692	51	2.861373	0.93
Minimum	-1.19633	0	0	0	5.351303	2	0.06345	0.17
Std. Dev.	0.130804	0.096303	0.212791	0.069894	0.754232	13.26178	0.257511	0.145987
Skewness	-3.16926	0.884444	0.909463	2.48235	0.238587	-0.24422	2.147242	-0.38178
Kurtosis	31.04482	3.065513	2.752956	10.16066	2.644689	1.63257	17.25249	2.679536
Jarque-Bera	14673.72	55.61527	59.80908	1347.639	6.282444	37.42472	3932.975	12.17166
Probability	0.000000	0.000000	0.000000	0.000000	0.043230	0.000000	0.000000	0.002275
Sum	12.13057	36.85632	75.39989	13.9187	3005.392	10255	257.2262	272.38
Sum Sq. Dev.	7.271606	3.941595	19.24407	2.076177	241.7683	74746.74	28.18253	9.057641
Observations	426	426	426	426	426	426	426	426

Table 2: Correlation Matrix Result of the dependent and independent variables

*Return on asset (ROA); Gender diversity (GENDDIV); Nationality diversity (NATDIV); Educational diversity (EDUDIV); Firm size (FIRSIZE); Firm age (FIRAGE); Leverage (LEV); Board independence (BODIND). Note: The coefficient and t values are presented with the probability values. *statistical significance at the 10% level (two-tailed test); **statistical significance at 5% level (two-tailed test); ***statistical significance at 1% level (two-tailed test).*

Table 3: Summary of the Correlation Matrix when interacted with the firm's life cycle

Variable	Introduction	Growth	Mature	Shake-out	Decline
ROA	-0.152184*** 3.170587 (0.0016)	0.017131 0.352806 (0.7244)	0.119314*** 2.474508 (0.0137)	-0.059052 -1.218074 (0.2239)	-0.020014 -0.4121191 (0.6804)
GENDIV	-0.013287 -0.273621 (0.7845)	-0.097251** -2.012058 (0.0448)	0.089896* 1.858598 (0.0638)	0.006343 0.130603 (0.8962)	-0.052378 -1.080004 (0.2808)
FORDIV	-0.076767 -1.585417 (0.1136)	0.016368 0.337077 (0.7362)	0.131422*** 2.729828 (0.0066)	-0.143736*** -2.990755 (0.0029)	0.034568 0.712225 (0.4767)
EDUDIV	-0.053752 -1.108424 (0.2683)	0.022514 0.463714 (0.6431)	0.059064 1.218328 (0.2238)	-0.080567 -1.664388 (0.0968)*	0.049465 1.019790 (0.3084)
FIRSIZE	0.019818	0.049131	0.072684	-0.118427***	-0.064612

	0.408161 (0.6834)	1.012891 (0.3117)	1.500625 (0.1342)	-2.455851 (0.0145)	-1.333220 (0.1832)	*Return on asset (ROA); Gender diversit*
FIRAGE	-0.070436 -1.453973 (0.1467)	-0.192564*** -4.040762 (0.0001)	0.088648* 1.832584 (0.0676)	0.089531* 1.850993 (0.0649)	0.039207 0.807940 (0.4196)	
LEV	0.068161 1.406788 (0.1602)	-0.032752 -0.674758 (0.5002)	-0.069490 -1.434352 (0.1522)	0.105441** 2.183333 (0.0296)	-0.077274 -1.595950 (0.1112)	
BODIND	-0.076206 -1.573752 (0.1163)	-0.059559 -1.228572 (0.2199)	0.006194 0.127535 (0.8986)	0.090374 1.868551 (0.8962)	0.006358 0.130928 (0.8959)	

*y (GENDDIV); Nationality diversity (NATDIV); Educational diversity (EDUDIV); Firm size (FIRSIZE); Firm age (FIRAGE); Leverage (LEV); Board independence (BODIND). Note: The coefficient and t-values are presented with the probability values in parenthesis. *statistical significance at the 10% level (two-tailed test); **statistical significance at 5% level (two-tailed test); ***statistical significance at 1% level (two-tailed test).*

Table 4: Hausman specification test

Correlated Random Effects - Hausman Test
Equation: Untitled
Test cross-section random effects

Test Summary	Chi-Sq. Statistic	Chi-Sq. d.f.	Prob.
Cross-section random	12.682516	7	0.0802

Table 5: Results from the panel regression using fixed and random effect models.

	Fixed Effect Model	Random Effect Model
C	0.050615 0.701591 (0.4834)	0.033541 0.588587 (0.5565)
GENDIV	0.133756** 2.000922 (0.0462)	0.165700*** 2.886552 (0.0041)
FORDIV	0.087730** 2.008847 (0.0454)	0.054989* 1.655750 (0.0985)
EDUDIV	0.019322 0.419549 (0.6751)	0.005140 0.157104 (0.8752)
FIRSIZ	0.012296 1.274281 (0.2035)	0.015437** 2.114781 (0.0350)
FIRAGE	0.001825*** 3.193559 (0.0015)	0.001926*** 4.179537 (0.0000)
LEV	-0.242076*** -10.69867 (0.0000)	-0.256680*** -12.61117 (0.0000)

BODIND	-0.052371	-0.044770
	-1.126391	-1.158353
	(0.2608)	(0.2474)
R-Squared	0.795342	0.448738
Adjusted R-Squared	0.735443	0.439484
F-Statistics	13.27788	48.49234
Probability(F-Statistics)	0.000000	0.000000
Durbin Watson Statistics	2.471687	1.942654
Hausman Test		0.0802
Observations	426	426

Gender diversity (GENDDIV); Nationality diversity (NATDIV); Educational diversity (EDUDIV); Firm size (FIRSIZE); Firm age (FIRAGE); Leverage (LEV); Board independence (BODIND). Note: The coefficient and t-values are presented with the probability values in parenthesis. *statistical significance at the 10% level (two-tailed test); **statistical significance at 5% level (two-tailed test); ***statistical significance at 1% level (two-tailed test).

Table 6: A summary of the regression analysis showing the outcome of the interaction of the firm's lifecycle stages with the independent variables on the dependent variable.

Variables	Introduction	Growth	Mature	Shake-out	Decline
GENDDIV*FLC	0.382205**	0.110001	0.096606	0.105662	-0.532630
	1.972516	0.758066	1.588265	1.230276	-1.395902
	(0.0492)	(0.4488)	(0.1130)	(0.2193)	(0.1635)
FORDIV*FLC	-0.046588	-0.085862*	0.057799*	0.053279	0.016309
	-0.067003	-1.836156	1.922126	1.045811	0.202985
	(0.4873)	(-0.0670)	(0.0553)	(0.2963)	(0.8392)
EDUDIC*FLC	0.022254	0.194343	-0.001921	-0.001652	0.217418
	0.075026	1.087412	-0.145447	-0.108062	0.545221
	(0.9402)	(0.2775)	(0.8844)	(0.9140)	(0.5859)
FIRSIZ	0.015891***	0.015835***	0.016652***	0.016060***	0.015906***
	10.22547	10.15953	6.087893	9.442686	10.26394
	(0.0000)	(0.0000)	(0.0000)	(0.0000)	(0.0000)
FIRAGE	0.002298***	0.002363***	0.001941***	0.002239***	0.002244***
	5.269441	5.382617	4.310105	5.134683	5.168365
	(0.0000)	(0.0000)	(0.0000)	(0.0000)	(0.0000)
LEV	-0.260704***	-0.259397***	-0.253559***	-0.259463***	-0.258322***
	-12.62602	-12.55204	-12.39768	-12.65374	-12.51046
	(0.0000)	(0.0000)	(0.0000)	(0.0000)	(0.0000)
BODIND	-0.037707	-0.042031	-0.042335	-0.043780	-0.045957
	-0.961444	-1.074094	-1.091534	-1.127647	-1.173952
	(0.3369)	(-0.2834)	(0.2757)	(0.2601)	(0.2411)
R^2	0.441063	0.437860	0.445283	0.440616	0.437902
Adjusted R^2	0.431680	0.428424	0.435972	0.431226	0.428466
Prob(F-statistic)	0.000000	0.000000	0.000000	0.000000	0.000000

Gender diversity with the lifecycle stages (GENDDIV*FLC); Nationality diversity with the lifecycle stages (NATDIV*FLC); Educational diversity with the lifecycle stages (EDUDIV*FLC); Firm size (FIRSIZE); Firm age (FIRAGE); Leverage (LEV); Board independence (BODIND). Note: The coefficient and t-values are presented with the probability values in parenthesis.*statistical significance at the 10%level (two-tailed test); **statistical significance at 5% level (two-tailed test); ***statistical significance at 1% level (two-tailed test).