



Capital Structure and Firm Financial Performance: Moderating Effect of Board Financial Literacy in Nigerian Listed Non-Financial Companies

Udisifan Michael Tanko^{1*}, Akeem Adetunji Siyanbola², Paul Matudi Bako³,
Olalere Victor Dotun⁴

^{1,2,3}Department of Accounting Federal University Wukari, Taraba State, Nigeria

⁴Department of Accounting Kwararafa University Wukari, Taraba State, Nigeria

*Corresponding Author: umichaeltanko@gmail.com

Abstract

Objective – This study examined the moderating effect of board financial literacy on the relationship between capital structure and firm financial performance of listed non-financial companies in Nigeria.

Design/methodology – Capital structure was measured by long term debts to total assets, short term debts to total assets equity to total debt ratio and board financial literacy was measured by ratio of board members that have professional and academic qualification in accounting, finance and economics. Meanwhile financial performance was measured by return on assets. Secondary data was extracted from the sampled firms annual report and accounts and analyzed using Panel Least Square.

Results – This study revealed a positive and significant relationship between long term debt and ROA. It also shows that board financial literacy moderate capital structure significantly and increase firm performance. The study recommended that the management of Nigerian listed non-financial firms should optimize the capital structure in order to increase the financial performance. They can do that through ensuring that their capital structure is optimal by using more of current debts and non-current debt than equity. The Board of Directors of Nigerian listed company should be concerned about the level of long term debt, short term debt and include members that are financially literate who will contribute in financing decision of firm in order make optimal capital structure for better financial performance. This is because the findings of this study revealed a positive significant moderating relationship between long term debt, short term debt and financial performance.

Keywords: Capital Structure, Firm Performance, Moderating Effect Of Board Financial Literacy

1. Introduction

Financial performance is a measure of how well an enterprise used its assets and other resources from its business in order to generate revenues. Capital structure of corporate entities may have a link with firm performance (Zeitun & Tian, 2007). Capital structure can be considered as mixture of debt and equity that financed business, how a firm structure its capital will affect performance either positively or negatively. Performance can be measured using either Return on investment (ROI), Residual Income (RI), Earning per share (EPS), Dividend Yield, return on assets (ROA), Return on equity (ROE) (Barbosa & Louri, 2005). These measures portray how efficient managers utilize their available resources to generate earnings. Effective performance is the overriding objective of every profit-making-organisation, it is the aim of every manager to see that this objective is realized (Tanko & Saman, 2019). In order to achieve this goal firm used optimised capital structure. The survival of any firm is largely dependent on its performance which the mixture of its capital contribute massively to enhance the performance. Furthermore, most company carryout activities with the goal of making profit and having reasonable performance. Firms' performance is of

concerned to management, supplier, government, shareholders, creditors, among others.

Capital structure is one of the most incomprehensible matters in finance literature (Barine, 2012). Capital structure is the mixture of both debt and equity used by any organisation to finance its business for the purpose of generating profit or rendering service to consumers without expecting anything in return. In addition, short-term debt is as well part of the capital structure. Debt is one of the sources that companies can raise capital in the capital market. Firm sometime preferred debt to equity in order take advantage of tax, if firm finances its business with debt the interest on debt is exempted from tax while debtholders pays taxes on their interest income. Debt is most available to be access and with low interest rate while equity is quite expensive than debt.

Equity is the entitlement or contribution on future earnings of firm as part of owner funds. Firms ratio of short-term debt and long-term debt is put into cognizance when determining capital structure. When predictors analyse capital structure, they are referring to a firm's ratio of debt- to – equity, which more insightful on how perilous a company is (Hovakimian, Opler, & Titman, 2001). The lower the interest rate on long term debt the more a firm will choose it, but higher leverage increase the risk of financial risk. High level of debt can cause firm's to be less attractive to potential investors and other stakeholders as the probability of financial distress increases (Flannery & Rangan, 2006). This can occur when company ROA is not higher than interest on loan, this will greatly reduce company ROE and profitability. According to Barine (2012), the implication is that the firm will face challenges in rising capitals on positive terms, lenders will demand higher interest rate, and suppliers will carry out business with firm on rigorous terms and competitors' ferociousness will feat the firm's perceived financial feebleness. This indicates that capital structure is one of the determinants that affects the performance of most corporate bodies.

The separation of owners from controlling of firms have created agency problems where by managers incline to exploit their own interest at the decrement of the firm value and the interest of the owners. In order to remedy this problem, it important for firm to include members that are financial literate to render financial advice and discover any fraudulent act that occurred through capital structures which will adversely affect the performance of firm. On this study, we examine how financial literate board member will influence financing decision.

Nigeria non-financial industry has been vibrant for long period of time which contribute significantly to Nigeria economy. The sector was largely dominated by national and multinational corporations. The sector is one of the important sector in the economy according to recent report of Nigeria Bureau of Statistics (NBS) this sector is made up agriculture sector which accounts for over 22.12%, trade accounted for 15.61% to the total nominal GDP followed by manufacturing companies, 11.64, information and communication 10.68 and 8.85% from mining and quarrying. Firms need to take some sound decision with regards to access to finance. Companies frequently carry out certain business activities in order to get resources and further utilise these resources effectively (Stadler, Helfat, & Verona, 2013). To be able to carry out these activities efficiently and effectively, firms may depend on some capabilities of the management and board members such as financial literate members, which may assist companies to turn resources into diversity of uses such as formation, extension and adjustment of resources (Adomako, Danso, & Ofori Damoah, 2015).

From the above mentioned, it is therefore imperative to comprehend how firm choice of capital affects their performance. It is obvious that internal factors and external factors could be very vital in explaining the performance of firms in an economy. In Nigeria, investors, shareholders and other stakeholders pay more attention to have an insight on how capital structure affect firm performance as well what role Board of Director play to have an outstanding performance. Furthermore, this study would be considering how financial literacy of board members help to make better decision on capital structure and how this choice contribute to firms' performance. In

addition, wrong choice of capital in a firm has the capacity to cause insolvency and have an adverse effect on firm performance the capital is not properly employed.

A lot of studies have been conducted on the subject matter however, these studies are from the developed economies. Furthermore, in Nigeria based on the researchers best of knowledge only Liuraman and Dabari (2020) considered the moderating effect of board quality on the relationship between capital structure and firm performance. However, their study covered from 2015 to 2019 and they used 12 industrial goods firms in Nigeria. Most findings end in 2016 but this study is extended to 2018. It is based on this that this study examines the moderating effect of board financial literacy on the relationship between capital structure and performance of listed non-financial companies in Nigeria. The remaining part of the paper includes literature review, methodology, results and discussions finally conclusions and recommendations.

2. Literature Review

Long Term Debt and Firm Performance

Long term debt represents the percentage of firm's assets financed with loans which last for more than one accounting year. This comprises mortgages and long-term leases (Akinyomi, 2013). A high ratio is an indication that a business has greater business risk to face since the entity must pay both principal and interest at the end of the agreed period. Creditors may be unwilling to give finance to a company with a great debt position. Capital structure is absolutely concerned with long term debt used in firm Nirajini & Priya (2013) opined that capital structure refers to the means which firms financed their business through combination of long-term external capital and short-term external capital.

There are several studies which tries to find empirical evidence on the effect of capital structure on firm performance they used long term debt as proxies for capital structure. In the study of Uremadu & Onyekachi (2018) they documented negative relationship between long-term debt and firm performance. Similarly, Nenu, Vintila, & Gherghina (2018) studies the effect of capital structure on risk and firm performance of firms listed on the floor of Bucharest stock exchange. The study posits a negative relationship between long term debt and ROA as well as ROE. Their finding is in line with Birru (2016) who investigated the impact of capital structure on financial performance of banks in Ethiopia. The study revealed that long term loan significantly and negatively associated with Return on Assets (ROA). This indicates that increase on firm loan will decrease firm financial performance since interest will be deducted from profit before tax and interest. Similarly, Avci (2016) who find out that non-current debt has negative and significant relationship with ROA and ROE. Foo, Abdul-Jamal, Abdul Karim, & Ulum (2015) ascertained the effect of capital structure on corporate performance in Malaysia. The study used 29 listed oil and gas companies in Malaysia. The study employed multiple regression; the study finds that long term debt has negative significant effect on ROE. However, Ganiyu, Adelopo, Rodionova, & Samuel (2019) recently provided empirical evidence contrary to the above findings. They explore the impact of capital structure and firm performance in Nigerian non-financial sector. The study documented that long-term debt positively affect firm performance. In same vein, Ajibola, Wisdom and Qudus (2018) found that long-term debt and firm performance are positively related within the period of the study. Domnick (2018) in his study examined the influence of capital structure on firm's financial performance of industries in German listed firms. The study found positive relationship between long term debt and firm performance.

Based on the above argument the study tested the hypothesis below;

H1: Long term debt does not have significant impact on firm performance.

Short Term Debt and Firm Performance

This represents the proportion of entities assets financed with loans and other obligation that last for period below one year. This is ascertained by dividing current liabilities by total asset. It portrays the ratio of the assets that are financed by short term debt. Short term debt is debt due for repayment of both principal and interest within or less than 12 months (Akinyomi, 2013). It includes creditors and accruals (Akinyomi, 2013). However, most short debts are used for day to day running of firm activity. A lower debt ratio usually implies a more stable business with the probability of running on perpetuity because a company with lower current ratio also has short term debt. Amara & Bilal (2014) asserts that short term debt is an effective ratio for the measurement of capital structure. Firms source for short term debt in order to meet up with working capital demands that will enhance company performance.

To ascertain if short term debt influence firm performance, many studies have been conducted. However, these studies are scanty in developing economy like Nigeria. Ajibola, Wisdom, & Qudus (2018) study included long term debt and short-term debt as independent variables. The study presented that short-term debt and ROE has positive and insignificant relationship. However, the result further shows that short term debt ratio has a negative relationship with ROA. This implies that rise in STD will result in decline in ROA, and a unit reduction in STD will result to increase in ROA. Similarly, Avci (2016) study revealed that short-term debt has negative and significant relationship with ROA and ROE. Foo et al., (2015) also documented that short-term debt has negative significant effect on ROE. Consistency with this finding, is a study on Malaysian listed firms by Salim & Yadav (2012)

One of the recent studies carried out in Nigeria by Ganiyu et al., (2019) out that short term loan is positive and statistically significant with ROE. The positive relationship between short term loan and ROE indicates that short term debt has been effectively used as a means to mitigate managerial cash flow waste and reduce the opportunistic behaviours of shareholders-managers through short term debt repayment obligations. This indicates that since short term debt is to be repaid within one year, management cannot use it for their interest without the shareholders being aware of their opportunistic behaviours.

The above literature review provide background for the following hypothesis to be tested.

H2: Short term debt does not have significant impact on firm performance.

Equity to debt and Firm Performance

Equity is different from long-term debt and short-term debt it includes paid-up share capital, premium, reserves and retained earnings (Ugbulu & Emeni, 2012). Equity to debt is the ratio of total of paid-up share capital, premium, reserves and surplus in case of public sector or retained earnings against total debt. It indicates how an entity financed its business by either debt or equity. This is measured by dividing total equity by total debt. Kurfi (2003) opined that equity to debt measures how much suppliers, lenders, creditors and other obligors have committed their resources to the company against what owners of company have committed. Magpayo (2011) observed that as a result of the payment of interest and repayment of principal amount of the debt, a large part of the firm's cash flow would decrease.

Equity may influence firm performance, since shareholders may not be entitled to dividends if company does not make profit in a particular accounting period. Company may as well decide to plug back the profit in the business in order to improve firm performance. Moreover, pecking order theory of Myers & Majluf (1984) states that there is a correlation between capital structure and firm performance. They assert that firm performance can improve if the optimal mix of capital is utilized. The theory believed that firm performance can be affected positively if the right capital structure is put in place by hierarchy. They believed that financing with internal fund is more appropriate

instead of financing with external fund will increase firm performance. However, it also preferred debt to equity once internal fund is completely dwindling due to the tax benefits, low transaction cost and other advantages.

Studies provided inconsistent result which are both positive and negative relationship between equity and firm performance. Studies like Basit & Arwan (2017) evaluate the relationship between capital structure and firm performance of Malaysia listed industrial product company. Their study revealed that through multiple regression used in analysis the secondary data debt to equity has negative impact on ROA, ROE and Earnings Per Share (EPS). This indicates that debt to equity reduced firm performance. However, the study provides that total equity ratio increases ROA whereas total equity ratio reduces ROE and EPS. Contrary to this findings Avci (2016) study indicates positive and significant relationship between equity and ROA and ROE. Chadha and Sharma (2015) carried their study on listed companies in India. The study finds out that debt to equity has negative effects on both ROA and ROE. They opined that higher debt results in low return to equity shareholders.

In Nigeria context recently, Uremadu & Onyekachi (2018) argued that debt equity reduces firm performance. Since their study provide negative relationship between debt to equity and ROA. Thus, Eniola, Adewunmi, & Adewunmi (2017) investigate the impact of capital structure on profitability in Nigeria. The study used quoted deposit money banks in Nigeria. The study employed secondary data and Pearson correlation was utilised to analyse the data. The study documented positive and significant relationship between equity and firm profitability. Similarly, Akeem, Edwin, Kiyanjui, & Kayode (2014) examined the effects of capital structure on firm's performance; empirical study of manufacturing companies in Nigeria. The study used 10 manufacturing companies, it also employed secondary data from 2003 to 2012. The study used multiple regression to analyse the data. The study revealed positive relationship between equity and ROE in the same vein it provides positive relationship between equity and ROA. However, this can be possible if firm paid more dividend. In addition, their finding is consistent with the findings of Myers & Majluf (1984) pecking order theory, Myers (1984) trade-off theory, and the traditionalist theory. The rationale for the agreement between the findings and the theories is that the theories acknowledged imperfect market present in the real world. These imperfections comprise of insolvency cost, agency costs, gains from leverage through induced tax shields and information asymmetries.

The argument presented above generates the below hypothesis in this study.

H3: Equity to debt does not have significant impact on firm performance.

Board Financial Literacy and Firm Performance

Studies have shifted focus from board independence which is one of the measures for quality of board attribute to board financial literacy, which is mostly considered as board quality as well. Board quality signifies the excellence of the board members in terms of their professional qualification, academic qualifications, industry experience, financial literacy among others Board financial literacy is the inclusion of persons who has educational qualification, professional qualification in field of finance and related field as member of Board of Director (BOD). Considering board financial literacy in term of capital structure decision may improve financial performance because of board knowledge and experience in finance and other financial related issues. According to Reformed USAID (2009) a financially educated SME manager and owner are those that can identify what are the suitable financing decisions for the business at the different growth stages, identifies where to get the best services and products and collaborates with self-assurance with the suppliers.

Studies have shown the relationship between board financial literacy and firm performance. These studies include (Kahveci & Wolfs, 2019; Peters, Miller, & Kusyk, 2010). Agrawal & Chadha (2005), in their study, they concluded that any company that

have an independent director with academic qualification in accounting or finance have a higher tendency to improve company performance compared to other firms without director with accounting or finance academic qualification. Similarly, Haniffa & Cooke (2002), study assert that board members with financial education have the knowledge to improve firm performance. Erin, Arumona, & Omotayo (2019) studied board financial education and firm performance of Nigerian healthcare sector. The study used fixed effect multiple regression to analyse the data. The study documented that board member with first degree, post graduate qualification and professional qualification in finance and other related field improved firm performance. Akhtar & Liu (2018) explore the relationship between Small and Medium scale Enterprises (SMEs) managers and financial literacy; they investigate if financial literacy really matters in Pakistan. The study applied structural equation modelling approaches. The study revealed that firm owners-manager's financial attitude, financial knowledge and financial awareness increase firm performance. They further stated that financial awareness and financial knowledge of SME managers are evidently not the only requirement that will increase SMEs performance, hitherto entrepreneur tactics in making decisions and association to financial attitude increased performance. Pereira & Filipe (2018) examined the how quality of board members' training will affect financial performance of Portuguese banks. The study employed a sample of 276 board members. Return on average assets (ROAA) and return on average equity (ROAE) were the measures for financial performance. Three indexes were used as proxies for board members' educational qualifications, this includes Educational index, for all academic qualifications gained in areas of business or economics; Educational index, for all qualifications obtained from prestigious domestic business schools; and Educational index for all qualifications obtained in prestigious foreign business schools. The study revealed a positive relationship between all the educational indexes with firm performance.

H4: Board financial literacy does not have significant effect on firm performance.

Moderating effect of Board Financial Literacy on Capital structure and Firm Performance

According to Liu (2006), board is the crucial part of corporate governance that has the clout to influence management planning. Board of Director (BOD) is an important indicator of internal corporate governance mechanism that has the power to direct the performance of any firms. Board financial literacy can have positive or negative influence on firm performance measures, this rely on financial know how of the Board of Directors (BOD) in terms of capital structure which will influence firm performance positively. According to Lusardi (2012), financial literacy includes knowledge and intellectual skills with a set of required attitudes, conducts and external enabling factors. Financial literacy also encompasses knowledge and experiences on accounting, finance, taxation, economic and other related fields. These skills include their ability to make decision on how to source for funds, payment of debt among others. The achievement of these skills is crucial for companies in developing economies to enhance firm performance.

Based on the knowledge of the researchers only few studies have been carried out with regard to how board financial literacy moderate the relationship between capital structure and firm performance. However, none of these studies used financial literacy as moderator except (Adomako et al., 2015; Liuraman & Dabari, 2020). Adomako et al., (2015) study centres on SMEs in Ghana. Adomako et al., (2015) studied the moderating effect of financial literacy on the relationship between finance and firm growth in Ghana, they used primary data. Their findings show that financial literacy positively moderate finance which lead to growth of firm. Liuraman & Dabari (2020) evaluate the moderating role of board quality on capital structure and financial performance of listed industrial goods companies in Nigeria from 2015 to 2019. The study used 12 firms. Pooled regression was used to analysed the secondary data

generated from company annual report. The study documented a positive moderating effect of board experience on debt to equity, current ratio, debt to assets and firm performance. However, the measurement of the variables of there is difference from this study. Okiro, Aduda, & Omoro (2015) examined the effect of corporate governance and capital structure on performance of firms listed at the East African. The study revealed that there is a positive significant moderating effect of capital structure on the relationship between corporate governance and firm performance. Recently, Iqbal & Javed (2017) confirmed that the corporate governance positively influenced the interaction between capital structure and financial performance. Ahmed (2017) investigate the impact of capital structure and firm performance; moderating role of business strategy and competitive intensity in Pakistan. The findings of moderation analysis showed that cost leadership strategy positively moderate the relationship between capital structure and firm performance.

From the above assertion the study tests the following hypothesis

H5: There is no significant moderating effect of board financial literacy on the relationship between capital structure and firm performance.

Theoretical Framework

The Modigliani and Miller theory is a theory propounded by Modigliani and Miller in 1958. They assert that there are some assumptions where firm will not be affected by its capital structure. They state that, the decision about a company's capital structure is irrelevant to the value of the firm. The assumption of the theory implies that companies operating in the world of perfectly efficient market do not pay any taxes and in an efficient market with homogenous expectations there no asymmetric information, transaction cost, and absence of bankruptcy costs. However, in real world context there are taxes, transaction costs, bankruptcy costs, differences in borrowing costs, information asymmetries and effect of debt on earnings. The M&M capital-structure irrelevance proposition assumes no taxes and no bankruptcy cost. It is important to note that the weighted average cost of capital (WACC) will remain constant with changes in the company's capital structure. In addition, since there are no benefits accrued to company by any increase in debt, the capital structure will not influence a company's performance and the capital structure is therefore irrelevant to a company's stock price. The theory believed that firm value can be increased when firms effectively use their assets and it is assumed irrelevant if the assets originate from internal capital or external capital (Chen & Chen, 2011).

Thus, Modigliani and Miller's Trade off theory of leverage believed that there are advantages attached to leverage in capital structure when the optimum capital structure is gotten. The Trade-off is idea that a company considered to choose how much of debt finance and how much of equity finance by balancing the costs and benefits of both source of finance. Trade-off theory identifies tax benefit from debt finances in the sense that interest paid on debt is tax free. They suggested under the trade-off theory that firm should employ more of debt in order to take advantage of tax shield, which will increase value. Under the M&M capital structure irrelevance theory assumes no taxes, that is tax shield is not considered, unlike the trade-off theory of leverage, where taxes, and tax benefit of interest payment are recognized.

Another pertinent theory of capital structure is the pecking order theory propounded by (Myers & Majluf, 1984). This theory states that firm has order of preference for capital structure for the purpose of avoiding information asymmetry between managers of the firm and potentials investors and other stakeholders. The theory assert that companies prefer internal financing such as retained earnings to short term debt, long term debt, equity among other source of external source of finance. The theory is of opinion that the capital structures of firms are optimum and they move in the direction of the firm target. The theory also opined that when debt is properly used in capital structure, company will have the challenges of tax benefit and

insolvency cost. The trade-off theory recommends that the firm with high growth potential should reduce borrowing as it is possible to lose value in case of financial distress. This theory asserts that financing of business comes from three channel, internal sources, debt and equity. Entities will first choose internal financing, and use debt as a “last resort”. It believed that when internal source is depleted debt will be the next option, where debt will not serve the purpose equity will be issued. This theory advocates that industries should follow a pecking order of financing when available and debt is preferred over equity if external finance is to be use.

Myers & Majluf (1984) argued that equity is less preferred source of raising capital because managers assume to know the condition and information of the firm than potential investors, shareholders and other stakeholders. In order to issue equity share, investors believe the entity is overrated and managers are taking advantage of this over-valuation. For this reason, investors would place less value on the new equity released. The Pecking order theory notes that information managers have more understanding of the opportunities, risk and value of their business than investors with asymmetry. Similarly, the choice of internal and external sources of financing is shaped by knowledge asymmetry, the choice between debt and equity problems. Companies tend to issue the safer stock first when funding a venture, followed by any convertible bonds that are hybrid securities and equity is often seen as the last resort.

Traditional theory of capital structure was recommended by Solomon (1963) and it is also treated as an intermediate or the middle approach as it lies between the net income approach and net operating income approach (Ahmed, 2017). The traditional theory of capital structure assumes that debt capital is low-cost than equity consequently, firm can increase its value through borrowing to a reasonable level. The Traditional Theory of the capital structure argued that a company performance increases to a certain level of debt finance, after which it inclines to stay unchanged and at certain point begins to decline as companies increase their level of borrowing. The theory asserts that both firm value and cost of obtaining capital depend on financing choice and option available to a firm. According to Ahmed (2017), firm can achieve best capital structure by efficient use of portion of debt capital as it reduces the total cost of finance and increase the firm performance. However, optimal capital structure of firm may be giving rise to through the combination of equity and debt financing. The traditional approach of capital structure opined that best capital structure helps to maximize the performance of firm and diminish the cost of finance of a firm. The theory asserts that the performance of the firm cannot be the same at difference levels of capital structure.

Agency theory was proposed by (Jensen & Meckling, 1976). The agency theory can also be considered as capital structure theory among other theories. The theory elucidates on the relationship between the owner(s) of a firm and the manager(s) in any decision making which will enhance the performance of a firm. The theory deals with the agency’s problem that may result from conflict of interests either between the shareholders and managers or between the debt holders and stockholders. The agency theory also helps the relationship between principal and agent in terms of decision-making process, with respect to blends of capital structure of firm. According to Jensen & Meckling (1976) the agency’s problem between principal and agent is multi-faceted and it is very vital in making decision about the optimal capital structure in a firm that will enhance firm performance. Agency problem arises when managers indulge themselves in opportunistic behaviours that will serve their interest and increase their wealth than wealth of the shareholders. This problem may occur due to differences in the goals of both principal (shareholders) and agent (managers). This problem may arise because the principal may not be aware of the actions of the agent or is hindered by resources from acquiring the information. In order to solve agency problem, the principal incurred agency cost such as incentive to managers or composition of BOD to oversee the activities of the managers. For agency problem to be solved they inclusion of financial literate persons on Board of Directors (BOD) may aid to detect any

fraudulent act that managers may have done to serve their interest than the firms' performance and shareholders wealth and other stakeholders' interest.

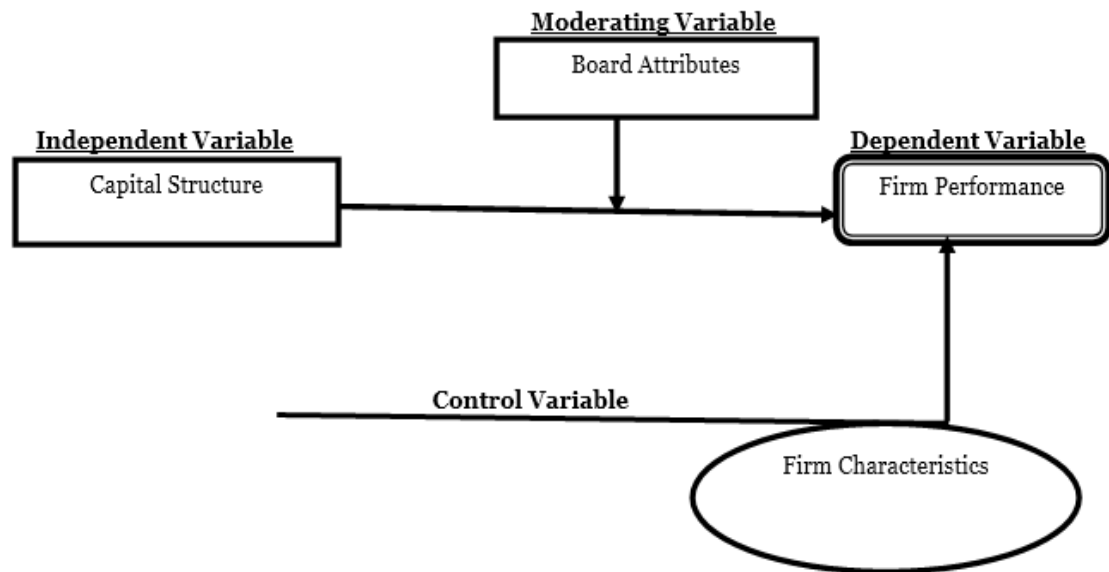


Figure 1. Conceptual Framework of the Study

Source: Researchers' Compilation, 2020

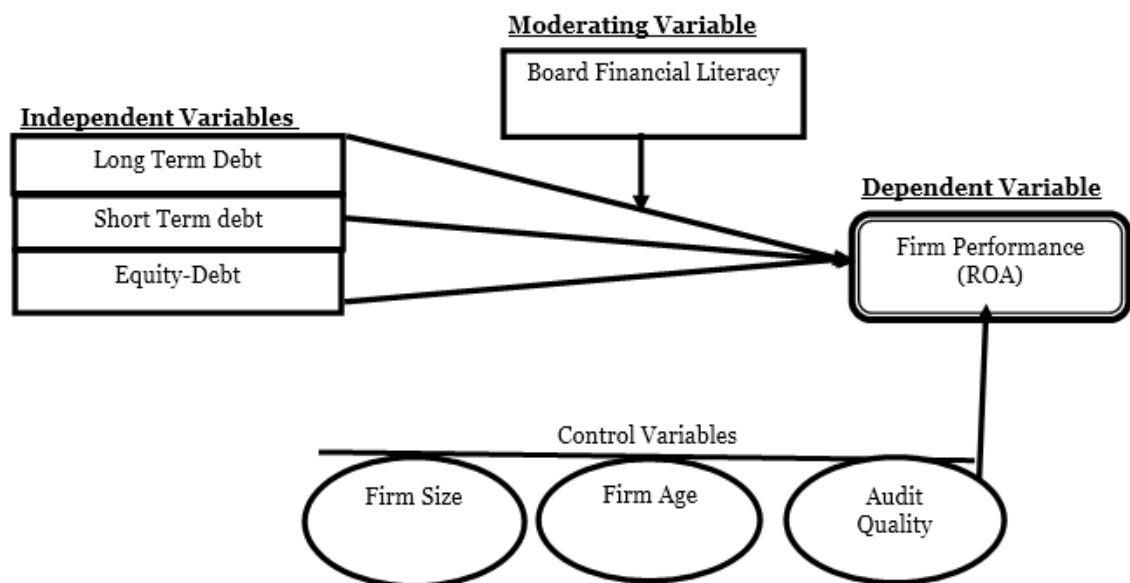


Figure 2. Conceptual Framework of the Study with Study Variables

Source: Researchers' Compilation, 2020

3. Research Method

The study employed the panel research design which is a combination of cross-sectional and time series design attributes. Secondary data were obtained from annual reports of 30 listed non-financial institutions on the floor of Nigerian Stock Exchange which were sampled based on convenience sampling techniques from the period 2009 to 2018. The data were analysed using the Panel Least Square estimation technique. The study conducted a panel regression based on the assumption that heterogeneity problem is associated with cross section study. This assumption is that the unobserved effect in each of the cross sections will correlate with the error term. However, if the correlation between the unobserved term and the error term is significant to challenge regression estimation, the fixed effect estimation is conducted (FEM) which implies that the analysis is conducted based on mean corrected values, thus, if not significant,

the random estimation (REM) result is accepted. The decision to choose between the FEM and REM is based on the Hausman test statistic. The decision rule is that if the Hausman probability value is less than 0.05, this indicate that the correlation between the unobserved effect in the cross section and the error term is significant. This will dent the regression result thereby requiring the FEM estimation, however if the probability value is greater than 0.05, the correlation is insignificant therefore the study will accept the REM. The study also carried out some post estimation test such as multicollinearity, Pesanra CD Test for the purpose of observing if there is presence of serial cross-sectional. In order to detect the harmful evidence of heteroscedasticity the study employed Brusch Pagan Test. The analysis was conducted using a panel data estimation model. Panel data estimation gives room for the control of individual effects which are unobservable and may be correlated with other explanatory variables included in the specification of the relationship between dependent and explanatory variables (Hausman and Taylor, 1981). The panel data regression model takes the form below:

Model 1

Pooled Regression Model Specification

$$ROA_{it} = \beta_0 + \beta_1 LTD_{it} + \beta_2 STD_{it} + \beta_3 ETD_{it} + \beta_4 BFL_{it} + \beta_5 FS_{it} + \beta_6 FA_{it} + \beta_7 AS_{it} + \varepsilon_{it} \dots\dots\dots 1$$

Fixed Effect Model Specification

$$ROA_{it} = \beta_0 + \beta_1 LTD_{it} + \beta_2 STD_{it} + \beta_3 ETD_{it} + \beta_4 BFL_{it} + \beta_5 FS_{it} + \beta_6 FA + \beta_7 AS_{it} + \sum_{it=1}^9 + \beta_8 idum + \varepsilon_{it} \dots\dots\dots 2$$

Random Effect Model Specification

$$ROA_{it} = \beta_0 + \beta_1 LTD_{it} + \beta_2 STD_{it} + \beta_3 ETD_{it} + \beta_4 BFL_{it} + \beta_5 FS_{it} + \beta_6 FA_{it} + \beta_7 AS_{it} + \mu_{it} + \varepsilon_{it} \dots\dots\dots 3$$

Model 2

Pooled Regression Model Specification

$$ROA_{it} = \beta_0 + \beta_1 LTD_{it} + \beta_2 STD_{it} + \beta_3 ETD_{it} + \beta_4 BFL_{it} + \beta_5 LTD_{it} * BFL_{it} + \beta_6 STD_{it} * BFL_{it} + \beta_7 ETD_{it} * BFL_{it} + \beta_8 FS_{it} + \beta_9 FA_{it} + \beta_{10} AS_{it} + \varepsilon_{it} \dots\dots\dots 4$$

Fixed Effect Model Specification

$$ROA_{it} = \beta_0 + \beta_1 LTD_{it} + \beta_2 STD_{it} + \beta_3 ETD_{it} + \beta_4 BFL_{it} + \beta_5 LTD_{it} * BFL_{it} + \beta_6 STD_{it} * BFL_{it} + \beta_7 ETD_{it} * BFL_{it} + \beta_8 FS_{it} + \beta_9 FA_{it} + \beta_{10} AS_{it} + \sum_{it=1}^9 + \beta_{11} idum + \varepsilon_{it} \dots\dots\dots 5$$

Random Effect Model Specification

$$ROA_{it} = \beta_0 + \beta_1 LTD_{it} + \beta_2 STD_{it} + \beta_3 ETD_{it} + \beta_4 BFL_{it} + \beta_5 LTD_{it} * BFL_{it} + \beta_6 STD_{it} * BFL_{it} + \beta_7 ETD_{it} * BFL_{it} + \beta_8 FS_{it} + \beta_9 FA_{it} + \beta_{10} AS_{it} + \mu_{it} + \varepsilon_{it} \dots\dots\dots 6$$

Variables and Measurement

The independent variables of this study are equity, long-term debt, short term debt, the moderating variable is board financial literacy, while the dependent variable is financial performance. The control variables are firm size, firm age and audit quality. Table 1 show the measurement of the variables.

Variable	Variable Type	Measurement
ROA	Dependent	Measured as income before interest and tax divided by total assets (Basit & Arwan, 2017; Uremadu & Onyekachi, 2018)
Long Term Debt	Independent	Measured as long-term debt divided by total assets (Ganiyu et al., 2019; Uremadu & Onyekachi, 2018).
Short Term debt	Independent	Measured as short-term debt divided by total assets (Ajibola et al., 2018; Basit & Arwan, 2017; Ganiyu et al., 2019).
Equity to debt	Independent	Total equity divided by total debt (Avci, 2016; Eniola et al., 2017).

Table 1. Measurement of Variables

Board Financial Literacy	Moderating	Ratio of member of BOD with qualification in accounting, finance, ICAN, ACCA, ANAN
Firm size	Control	Logarithm of total asset
Firm Age	Control	Lifespan of company since date of listing
Audit quality	Control	"1" for firm audited by Big four and if otherwise "0"

Source: Author's Compilation (2020).

4. Result and Discussion

To verify whether there is evidence of multicollinearity, the study used the Variance Inflation Factor (VIF). The VIF above 10 shows the evidence that multicollinearity is harmful (Gujarati & Porter, 2009). The outcome shows that 3.51 is the maximum VIF and 1.03 is the lowest VIF and both are less than 10, showing the absence of multicollinearity.

The study checks if there is existence of heteroscedasticity. The study employed Breusch/Cook-Weisberg test to check the presence of heteroscedasticity. The result shows that the results in both models, which are 0.1528 and 0.8116 for model one and two respectively, are not heterogeneous in nature at a 5 percent significance level. The Pesaran CD test shows that, because the probability value is greater than 0.05 for both models, there is no evidence of serial cross-sectional dependency in the results. The probability value for model one and two are 0.1263 and 0.1887 respectively. The study test for normality test using Shapiro wilk the result shows that the data are not normally distributed except for audit size which is 0.99. However, the data was transform using ladder (Turkey, 1977).

Table 2. Descriptive Statistics
(Observation=300)

Variables	Mean	Std. Dev.	Minimum	Maximum
ROA	-0.0275	1.1682	-20.0214	0.9345
LTD	0.1624	0.3102	0.0000	3.721
STD	0.7056	4.4147	0.0030	76.6307
ETD	2.0420	3.6228	0.0384	35.5120
BFL	0.2633	0.2118	0.0000	0.88
LTD*BFL	0.0415	0.1021	0.0000	1.4885
STD*BFL	0.1411	0.4646	0.0000	7.6631
ETD*BFL	0.4374	0.6521	0.0000	6.4369
FS	7.3717	0.8382	5.6261	10.3086
F Age	29.100	15.1478	1.0000	62.0000
Audit size	0.6233	0.485	0.0000	1.0000

Table 2 shows the summary of the descriptive statistics of the dependent variable, independent variables moderating, and control variables. The table shows the directions of variables used in the study. Descriptive results show that the average of ROA for the non-financial sector firms of Nigeria is -0.0275 with standard deviation of 1.1682 this indicates wide variation round the mean since the standard deviation is greater than the mean. This also means the average ROA of the non-financial companies is significantly different between companies and years. This is supported by the level of the differences of the minimum value and maximum value which are -20.0214 and 0.9345 respectively. The Table also illustrate that average long-term debt is 0.1612 that is 16.12% while the standard deviation of 0.3108 this shows a wide variation. The minimum of 0 indicates that there are some companies that do not use long term debt to finance their activities while the maximum value is 3.721.

The minimum and maximum value of equity to debt is 0.3984 and 35.5120 respectively. The mean of equity to debt is 2.0394 and standard deviation of 3.6243. This shows a significant variation. These also means most of the companies depend on equity. These can also mean that companies solely used equity since it is not mandatory

to paid dividend shareholders if a company make loss or low profit unlike debt which interest have to be paid regardless of the profit or loss a company suffer. The minimum and maximum value from 0 to 0.88 shows that there are companies without financial expertise while there are companies with 88% of members on board that are financial expert. The mean and standard deviation of the firms is 0.2633 and 0.2118. These ratings show that the non-financial sector firms of Nigeria have poor inclusion of board members that have financial literacy. Thus, the variation is moderate.

Maximum score for long term debt moderated by board financial literacy is 1.4885 with minimum score of 0.000 and average score is 4.15% which shows that Nigerian non-financial firms have weak and ineffective use of board members with financial literacy. The standard deviation is 0.1021 which is a wide variation. The minimum value of how board financial literacy moderate short-term debt is 0, maximum score is 7.6631 and mean score is 14.11% which indicates that non-financial companies in Nigeria has poor moderating effect of board financial literacy on short term debt. The moderating effect of board financial literacy on equity to debt has minimum score of -0.0398 and maximum value of 6.4369 and mean score of 43.41% which indicates that the board financial literacy fairly moderate equity. The result shows that the average firm size which is 7.3717 and standard deviation of 0.8382 this indicate no variation. The maximum value is 10.3086 and minimum value is 5.8382. The firm age has minimum value of 1 while the maximum value is 62. The mean of firm age is 29.1 and standard deviation of 15.1478 this indicate insignificant variation around mean. The maximum value of audit size 0 and minimum value is 1. The mean for audit size is 7.3717 and standard deviation of 0.8382 this indicate no variation.

Variables	ROA	LTD	STD	ETD	Firm Size	Firm age	Audit Quality
ROA	1.0000						
LTD	-0.2858	1.0000					
STD	-0.9866	0.3031	1.0000				
ETD	0.0234	-0.1091	-0.0490	1.0000			
Firm Size	0.0417	0.0128	-0.0655	-0.0096	1.0000		
Firm Age	-0.0534	-0.0334	-0.0666	-0.0588	0.2983	1.0000	
Audit Quality	-0.0345	-0.0277	0.0508	0.1015	-0.0022	0.0320	1.0000

Capital Structure, Firm Financial Performance, Board Financial Literacy

Table 3. Correlation Matrix for Capital Structure and Firm Performance.

Variable	ROA	BFL	LTD_B FL	STD_BFL	ETD_BFL	Firm Size	Firm age	AQ
ROA	1.0000							
BFL	0.0402	1.0000						
LTD_BFL	-0.0762	0.3375	1.0000					
STD_BFL	-0.9284	0.1408	0.3095	1.0000				
ETD_BFL	0.0244	0.3119	0.0219	-0.0293	1.0000			
Firm size	0.0417	0.0119	0.0409	-0.0718	-0.0855	1.0000		
Firm Age	-0.0534	-0.0067	-0.0336	0.0736	-0.1128	0.2983	1.0000	
AQ	-0.0345	-0.0041	0.0008	0.0632	0.0495	-0.0022	0.0320	1.0000

Table 4. Correlation Matrix for Capital Structure and Firm Performance with Moderator.

From the correlation matrix on table 4 it shows that ROA is positively correlated with equity and firm size, consistent with the agency theory and the M&M capital-structure irrelevance, between 2009 and 2018. However, the 2% and 4 percent correlation coefficient for equity and firm size respectively shows that the two study variables have a poor direct relationship. In other hand Table 2 also shows that the pair-relationship coefficient between ROA and long-term debt, short debt, firm age, audit quality is negative. It suggests that the higher the value incurred by the entity in the long-term debt, short debt, audit quality and at long run the lower the propensity of the firm performance. The low 29% coefficient, however, points to the fact that long term debt is weakly associated with ROA. Similarly, 98%, 5% and 3% of short-term debt, firm

age and audit quality implies that the paired variables move in opposite direction, as short debt, firm age and audit quality is increasing, ROA is decreasing and vice versa.

The correlation matrix between the board financial literacy and its terms of moderations on one side and ROA on the other is shown in Table 4. The moderating variable, i.e. board financial literacy, correlates favourably, albeit weakly, with ROA. Moderated long-term debt has unfavourable association to the tune of 7 percent with ROA. This means that a moderate long-term debt has not direct relationship with ROA. Similarly, moderate short-term debt has a negative association of about 92 percent with ROA suggesting that the two variables are changing in difference direction. In same manner with firm age and audit quality. While moderate equity has a favourable relationship with ROA to the tune of 2 percent. This means that a moderate equity has a direct relationship with RAO but weak relationship. Similarly, firm size has a positive association of about 4 percent with ROA suggesting that the two variables are changing in the same direction.

Table 5. Panel data
Regression Results

Variables	Model 1			Model 2		
	Coefficients	Z	p>z	Coefficients	Z	p>z
C	0.4301	3.12	0.002	0.5502	4.46	0.000
LTD	0.1342	4.33	0.000	0.2521	4.34	0.000
STD	-0.2648	-126.11	0.000	-0.3206	-28.89	0.000
ETD	-0.0033	-1.26	0.208	-0.0046	-1.41	0.157
BFL	0.040	0.74	0.458	0.4103	5.94	0.000
LTD*BFL				0.8664	4.35	0.000
STD*BFL				0.6059	5.54	0.000
ETD*BFL				-0.0143	-0.72	0.469
Firm Size	-0.0386	-2.06	0.039	-0.0394	-2.38	0.017
Firm Age	0.0001	0.10	0.918	-0.0005	-0.41	0.685
Audit size	0.0088	0.45	0.653	-0.0041	-0.25	0.805
Overall R ²		0.9628			0.9728	
F-stat		2716.46			2641.28	
Prob>F		0.0000			0.0000	
Hausman chi2		20.20			13.67	
Prob>Chi2		0.0052			0.1887	
LMTRE					236.78	
Chibar2						
Prob>Chibar2					0.0000	

Table 5 shows the coefficients and z-statistics of fixed effect for regression results for model 1 and random effect for model 2. The results show that the adjusted R² is about 96.28% for model one which expresses the percentage of the total variation in the dependent variable explained by the capital structure mechanisms (short term debt, long term debt, and equity) and board financial literacy variables jointly. It indicates that short term debt, long term debt, equity and board financial literacy constitute 96.28% variation in the performance of listed non-financial companies while the remaining 3.72% are factors not included in this study model. The results also show that the adjusted R² for model two is about 97.28% for model two which expresses the percentage of the total variation in the dependent variable explained by the capital structure mechanisms (short term debt, long term debt, and equity), board financial literacy and moderating effect of board financial literacy on capital structure varies jointly. This indicates board financial literacy moderate capital structure by increasing the R² by 1%. The probability of F-value (0.000) for both models indicates that the models are of good fit and the capital structure variables are used as substantial value of performance and are properly selected. It also indicates that the hypothesis of a significant linear relationship between the dependent and independent variables cannot be rejected at 5% level.

Due to the heterogeneity issue associated with cross-section analysis, the study performed a panel regression. There is the expectation that the unnoticed effect would be associated with the error term in each of the cross parts. However, if the correlation between the unnoticed term and the error term is important to undermine the regression estimate, the Fixed Effect Estimate (FEM) is performed, which implies that the analysis is performed on the basis of mean corrected values, but the random estimate (REM) result is accepted if not significant. The Hausman test showed a substantial p-value of 0.0052, which suggests that the association between the unnoticed variables and the error term is sufficient to undermine our estimation result; thus, the estimation result of the fixed effect (FEM) is agreed for model one, while the Hausman model two test is 0.1887. This implies that to undermine our estimation result, the connection between the unnoticed variables and the error term is not important; thus, the random effect (REM) estimation result is accepted. Therefore, the Langrangian Multiplier test is carried out to select between the REM and OLS for models 2.

To determine between OLS and random effect estimates, a Lagrange multiplier test is performed. The transition between entities is believed by random effects to be random and not associated with the independent variables used in the model. A significant assumption for choosing the estimate of the random effect is that the heterogeneity not observed should not be associated with the independent variables. Random effects should be used if no correlation is established, but OLS should be used if there is a correlation. The rule of decision is that if the chi-square probability is less than 5%, then random effect is used and vice versa. Test findings for the second model are in favour of a random effect since the p-values are less than 5%.

The result of the FEM in the first model revealed that 1% increase of long-term debt will lead to 14.2% increase of firm performance because the coefficient value is 0.142 which is positive value and shows verse relationship. It also revealed a significant relationship between long term debt and firm performance because p-value of 0.000 is less than 0.05 (level of significance). This finding provides enough evidence to rejects the first hypothesis which state that long term debt does not significantly affect firm performance. This is in line with the finding of (Ajibola et al., 2018; Amara & Bilal, 2014; Domnick, 2018; Ganiyu et al., 2019; Khalaf, 2013). Who found that long term debt is positively and significantly associated with performance of firms. The result is however in contrast with the finding of (Avci, 2016; Birru, 2016; Foo et al., 2015; Nenu et al., 2018; Ngoc & Jeremy, 2011; Rasa & Jurgita, 2012; Uremadu & Onyekachi, 2018). Who found negative and significant relationship between long term debt and firms' performance. This result is also in line with agency cost hypothesis. It is also consistent with Trade-off theory which believed that firm should use more of debt in order to take advantage of tax shield, which will increase firm performance.

The result also shows that 1% increase of short-term debt will lead to 26.48% decrease in firm performance as the coefficient value is -0.2648 which shows an inverse relationship. The result indicates that the relationship between short-term debt and firm performance is not only negative but also significant because the probability value (p-value) of 0.000 is less than 0.05 (level of significance). Hence the study provides enough evidence to reject the second hypothesis which state that short term debt does not have significant effect on firm performance. This finding is supported by Modigliani and Miller theory which opined that there no advantage for firm contarct debt to finance their business. This finding is consistent with (Ajibola et al., 2018; Avci, 2016; Foo et al., 2015). Who found that short term debt is negatively and significantly associated with performance of firms. This contradict the findings of (Abdullah, 2014; Akinyomi, 2013; Ganiyu et al., 2019; Maina & Kondongo, 2013), and who reported positive significant relationship between short term debt and performance.

Furthermore, the result shows that ~~N~~1 increase of equity will lead to ~~N~~0.33 decrease in return on asset because the coefficient value is -0.0033. In addition, equity has insignificant effect on return on asset because the p-value of 0.208 is greater than 0. 05.

The finding fails to reject the third null hypothesis which said equity does not have significant effect on firm performance significantly. The finding is in line with Modigliani and Miller theory of capital structure irrelevance, the theory believed that firm performance can be increased when firms effectively use their resources and it is irrelevant for originating funds from internal capital or external capital. The finding is in line with findings of (Amara & Bilal, 2014; Basit & Arwan, 2017; Chadha & Sharma, 2015; Gholamreza, Alireza, & Alireza, 2013; Maina & Ishmail, 2014; Uremadu & Onyekachi, 2018), who found that equity to debt is negatively and insignificantly associated with performance of firms. While it contradicts the findings of (Akeem et al., 2014; Avci, 2016; Eniola et al., 2017; Khalaf, 2013) who found a positive insignificant relationship between equity firm and financial performance. The study also revealed positive relationship between board financial literacy and firm performance at coefficient value of 0.040 this indicates that 1% increase of board financial literacy will lead to 4% increase of firm performance. This finding is insignificant because the probability value of 0.458 is greater than 0.05. Hence the study does not document enough evidence to reject the hypothesis fourth which stated that board financial literacy does not have significant effect on firm performance. This finding is in agreement with the findings of (Erin et al., 2019).

The result also revealed that there is a negative relationship between firms' size and return on asset at beta coefficient value of -0.00386 with significant effect at p-value of 0.039. The relationship between the ages of the firms is positive and insignificant at coefficient and p-value of 0.001 and p-value of 0.918 respectively. Lastly, the effect of audit quality on ROA is positive at coefficient value of 0.0088 but insignificant at p-value of 0.653.

Furthermore, the result of model 2 after introducing the moderating effect of board financial literacy on relationship between capital structure and firm performance shows that moderating effect of board financial literacy on the capital structure and firm performance is significant at F-statistics of 13.67 and probability value of 0.0000 which indicate that the relationship is significant at 1% level of significance. This study fails to reject the fifth hypothesis which states that board financial literacy does not significantly moderate relationship between capital structure and firm performance. In the same vein the results reveal that the relationship between long term debt and ROA ($\beta = 0.2521$; $p < 0.1$) was slightly strengthened and became significant. Similarly, the relationship between board financial literacy debt and ROA ($\beta = 0.4103$; $p < 0.1$) also improved and is significant. Only short-term debt and equity to debt that did not improve. For the moderating impact, the result indicates that board financial literacy interacted significantly and positively with long term debt ($\beta = 0.8664$; $p < 0.01$) to influence financial performance (ROA). Similarly, significantly moderated the relationship between short term debt and ROA ($\beta = 0.6059$; $p < 0.01$) but did not significantly moderate the relationship between equity to debt and ROA ($\beta = -0.0143$; $p > 0.1$).

In general, it indicates that involving board members that have knowledge, experience and qualification on finance in financing decision of firms will aid to improve firm financial performance.

5. Conclusions

The aim of this study was to investigate the moderating impact of board financial literacy on the relationship between the structure of capital and the performance of Nigerian non-financial companies. The study found that long-term debt has a positive and significant impact on company performance; short-term debt has a negative and significant effect on performance, equity has a negative effect, while board financial literacy has a positive negligible impact on company financial performance but insignificant impact on company performance.

As a result of the discussion and analysis the study shows that there is a positive significant association between long term debt and firm performance. It therefore implies that long term debt is one of the variables of capital structure that enhance and influence financial performance of firms in Nigerian non-financial companies. Furthermore, the results revealed that short-term debt and the financial performance of the listed non-financial firms in Nigeria are negatively and significantly associated. The study therefore concludes that one of the factors that does not influence the financial performance of non-financial firms in Nigeria is short-term debt. The implication is that short-term loans are due over a span of one year and often draw interest irrespective of whether the business makes a profit or loss. The study also concluded that equity has a negative effect on the success of businesses. Furthermore, the study also concluded that board financial literacy had a positive effect on the financial performance of Nigerian non-financial firms. Accordingly, the study concludes that board financial literacy is one of the strong financial success determinants. Furthermore, the study concluded that since board financial literacy significantly moderated the relationship between capital structure and firm performance and cause significant improvement on the relationship between long term debt, short term debt and firm performance. The study concluded that the involvement of board financial literate during financing decision will improve firm performance.

The study recommended that the management of Nigerian listed non-financial firms should optimize the capital structure in order to increase the financial performance. They can do that through ensuring that their capital structure is optimal by using more of current debts and non current debt than equity. The Board of Directors of listed Nigerian firms should be concerned with the level of long-term debt, short-term debt and include financially literate members who will contribute to the company's financing decisions in order to make the capital structure optimal for better financial performance. This is because the results of this study revealed that long-term debt, short-term debt and financial performance have a positive, significantly moderating relationship. In order to maintain their control over the company's activities in order to improve financial performance and have a high dividend, shareholders of listed non-financial firms in Nigeria should decrease the level of raising equity from the company's stock market. The limitation of the study is that it did not covered the entire non-financial institutions because of inadequate data for analysis.

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