

Capital Structure And Financial Performance Of Listed Manufacturing Firms In Nigeria

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Abstract: *There exists divergence of opinion in literature on the relationship between capital structure and firm's financial performance. This mix of opinions makes the direction of the relationship between debt holders and equity holders to be controversial. Therefore, this study investigated the impact of capital structure on financial performance of listed manufacturing firms in Nigeria. The study formulated four hypotheses and used generalized least square multiple regression to analyze the secondary data extracted from the annual reports and accounts of the 31 sampled firms for the period 2000 to 2023. The study found that total debt, long-term debt and short-term debt have significant impact on the financial performance of listed manufacturing firms in Nigeria. The study also found that total debt to total equity has no significant effect on the financial performance of the firms. In view of the findings, it is recommended among others that the management of listed manufacturing firms should work very hard to increase the short-term debt to total assets component of their capital structure, since it has positive impact on their financial performance. Also, the firms should reduce the level of total debt to total assets and long-term debt to total assets in their capital structure components because they affect their financial performance negatively.*

Keywords: Capital Structure, Financial Performance, total asset ratio, total equity ratio, short-term debt, Long-term debt and Manufacturing Sector

1.1 Introduction

The nature and extent of relationship between capital structure and financial performance of firms have attracted attention in the literature of finance. Capital structure involves the decision about the combination of the various sources of funds a firm uses to finance its operations and capital investments. These sources include the use of long-term debt finance called debt financing, as well as preferred stock and common stock also called equity financing. One of the most important goals of financial managers is to maximize shareholders wealth through determination of the best combination of financial resources for a company and maximization of the company's value by determining where to invest their resources. Capital structure represents the major claims to a corporation's asset. This includes the different types of equities and liabilities (Riahi-Belkaoui, 1999). The debt-equity mix can take any of the following forms: 100% equity: 0% debt, 0% equity: 100% debt; and X% equity: Y% debt. From these three alternatives, the first option is that of the unlevered firm, that is, the firm shuns the advantage of leverage (if any). Option two is that of a firm that has no equity capital. This option may not actually be realistic or possible in the real life economic situation, because no provider of funds will invest money in a firm without equity capital. This partially explains the term trading on equity", that is, the equity element that is present in the firm's capital structure that encourages the debt providers to give their scarce resources to the business. The third Option is the most realistic one in that, it combined both ascertain percentage of debt and equity in the capital structure and thus, the advantages of leverage (if any) is exploited. This mix of debt and equity has long been a subject of debate in finance literature concerning its determination, evaluation and accounting.

Financial performance is the measure of how well a firm can use its assets from its primary business to generate revenues. Erasmus (2008) noted that financial performance measures like profitability and liquidity among others provide a valuable tool to stakeholders which aids in evaluating the past financial performance and current position of a firm. Financial performance evaluation is designed to provide answers to a broad range of important questions, some of which include whether the company has enough cash to meet all its obligations, is it generating sufficient volume of sales to justify recent investment. Capital structure is closely linked with financial performance (Tian & Zeitun, 2007). Financial performance can be measured by variables which involve productivity, profitability, growth or, even, customers' satisfaction. These measures are related among each other. Financial measurement is one of the tools which indicate the financial strengths, weaknesses, opportunities and threats. Those measurements are return on investment (ROI), residual income (RI), earning per share (EPS), dividend yield, return on assets (ROA), growth in sales, return on equity (ROE), e.t.c (Stanford, 2009).

The fact that manufacturing firms in Nigeria frequently use leverage to finance their operation through debt or equity or both, the extent to which capital structure affects their operation has been an issue of concern. It has been argued that the fastest trend through which a nation can achieve sustainable economic growth and development is neither by the level of its endowed material resources or that of its vast human resources but technological innovation, enterprise development and

industrial capacity. In the modern world, manufacturing sector is regarded as a basis for determining a nation economic efficiency.

Arising from the strategic importance of the manufacturing sector to an economy such as Nigeria's, it is important for investors and shareholders to understand the effect of capital structure on the performance of manufacturing firms. This is because capital structure decision on how to finance their assets by debt or by equity will affect relationship with the result for any given period since it influences the returns and risks of shareholders and consequently affects the market value of the shares. In view of this, it becomes imperative to study the relationship between capital structure and financial performance of manufacturing firms in Nigeria.

1.2 Statement of the Problem

There has been an ongoing debate on the issue of capital structure and financial performance of firms. This controversy is further narrowed down to identifying which of the variables debated is most influential in predicting and determining the capital structure of manufacturing firms. The choice of optimal capital structure of a firm is difficult to determine. A firm has to issue various securities in a countless mixture to come across particular combinations that can maximize its overall value which means optimal capital structure. Optimal capital structure also means that with a minimum weighted-average cost of capital, the value of a firm is maximized. Hence, the capability of a company in managing its financial policies is important if the firm is to realize gains from its specialized resources. The nature and extent of relationship between capital structure and financial performance of firms have attracted the attention of many researchers. The studies, which are largely foreign based, have however revealed conflicting findings. However, they ignored short-term debt and long-term debt which constitute other important forms of financing for manufacturing companies in Nigeria. Owing to these identified gaps, a study that will cover the various forms of financing mix in order to address the following questions that remain unanswered is desirable: to what extent do total debt to total assets ratio, total debt to total equity ratio, and the ratios of short-term and long-term debt to total assets affect the performance of manufacturing firms in Nigeria? This study attempts to provide answers to this fundamental question.

1.3 Objectives of the Study

The overall objective of this study is to examine the impact of capital structure on the financial performance of listed manufacturing firms in Nigeria. Specifically, the study sought to:

- i. Evaluate the extent to which total debt to total asset ratio affect financial performance of listed manufacturing firms in Nigeria.
- ii. Determine the effect of total debt to total equity ratio on financial performance of listed manufacturing firms in Nigeria.
- iii. Examine the impact of short-term debt to total assets ratio on financial performance of listed manufacturing firms in Nigeria; and
- iv. assess the influence of long-term debt to total assets ratio on financial performance of listed manufacturing firms in Nigeria.

Literature Review

2.1 Capital Structure

Theoretical literature has documented a number of definitions of the term capital structure. Like most other terms in finance, no consensus exists on any of the definitions. According to Aliu (2010), a firm's capital structure refers to the combination of its financial liabilities and its equities. It is the way a corporation finances its assets through some mix of equity and debt. In line with this, Abdul (2010), Saad (2010), Shehu (2011), Miheala (2012) and Ishaya and Abduljaleel (2014) referred to it as a mix of different types of securities (long-term debt, common stock) which are issued by a firm to finance its assets. Semiu and Collins (2011) also referred to it as the proportions of capital at work in a business by type, namely, equity capital and debt capital, each of which having its own benefits and drawbacks. From the foregoing, capital structure is simply a firm's financial framework, which comprises of firms retain earnings, debt financing and equity financing in order to maintain the business entity in financing its operations.

Capital structure is essential to how a firm finances its overall operations and growth by using different sources of funds. Modigliani & Miller (M&M) theorem is the broadly accepted capital structure theory because it is the foundation of capital structure theory which has been used by many researchers. It is recognized as a sort of structure with which firms receive direction and orientation concerning their business activities. It is also the heart of both a market economy and a democratic society. It is said to be the financing performance of a firm (Simon & Afolabi, 2011). In addition, capital structure represents a means for decision making of business firms and facilitates maximization of return on investment, as well as boosting the efficiency of financing and dividend decisions (Chandrasekharan, 2012). Financing decisions generally facilitate the survival and growth of a business enterprise, which calls for the need to channel efforts of business towards realizing efficient decision, which will protect the shareholder's interest. Capital structure decision is thus considered as one of the effective tools of management to manage the cost of capital. A substantial part of wise corporate stewardship and management attempts to find the appropriate capital structure in term of risks and return payoff or shareholders. The capital structure of a firm consists of debt and equity. Debt is further classified into short and long term. Accounting and finance literature often discuss these components as ratio of total assets and of equity. The components are discussed hereunder.

2.2.1 Total Debt to Total Assets

The total debts to total assets measure the amount of the total funds provided by creditors in relation to the total assets of a firm. Generally, creditors would prefer low ratio for all debts because the lower the ratio the greater is the cushion against creditors losses in the event of liquidation. Total debt to total assets is a debt ratio that defines the total amount of debt relative to assets. This enables comparison of debt to be made across different companies. The higher the ratio the better degree of debt and consequently financial risk. This is a broad ratio that includes long term debt and short-term debt (borrowings maturity within one year) as well as all tangible and in tangible assets (Akinsulire, 2014).

Debt ratio is a solvency ratio that measures firm's total liabilities as percentage of its total assets. In a sense, the debt ratio shows a company's ability to pay off its liabilities with its assets. In other words, this shows how many assets the company must sell in order to pay off all of its liabilities. This ratio also measures the financial debt of a company. Companies with higher levels of liabilities compared with assets are considered highly indebted and riskier for lenders. It helps investors and creditors analyses the overall debt burden on the company as well as a firm's ability to pay off its debt in the future especially during uncertain economic times. The debt ratio is calculated by dividing total liabilities by total assets. Both numbers can easily be found in the balance sheet. A lower debt ratio usually implies a more stable business with the potential of longevity because a company with lower ratio also has an overall debt posture. Each industry has its own benchmarks for debt, but 0.5 is reasonable ratio (Ojo, 2012).

The debt ratio is a fundamental solvency ratio because creditors a real ways concerned about being repaid. When companies borrow more money, their ratio increases and creditors will no longer loan them money. Companies with higher debt ratios are better off looking to equity financing to grow their operations. Debt ratios measure a firm's ability to repay long term debt. It is a financial ratio that indicates the percentage of a company's assets that are provided via debt. It is the ratio total debt, the sum of current liabilities and long-term liabilities and total assets as well as the sum of current asset, fixed assets and other assets such as goodwill (Semiu & Collins, 2011).

2.2.2 Total Debt to Total Equity

Total debt to total equity ratios measures the proportion of creditors fund in relation to shareholders' fund. Creditors would like this ratio to be lower, because the lower the ratio the higher the level of firm's financing that is being provided by shareholders and the larger the cushion (margin of protection) in the event of shrinking asset values or outright losses. This is a measure of how much suppliers, lenders, creditors and obligors have committed to the company versus what shareholders have committed (Kurfi, 2003). Total debt to total equity refers to the ratio of debt to equity capital of a company. 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 (Magpayo, 2011).

The debt-to-equity ratio shows the percentage of a company's financing that comes from creditors and investors. A higher debt to equity ratio indicates that more creditors financing (bank loans) is used than investors financing (shareholders). The debt-to-equity ratio is considered a balance sheet because all of the elements are reported on the statement of financial position. Each industry has different debt to equity ratio benchmarks, as some industries tend to use more debt financing than others. A debt ratio of 0.5 means that there are half as many liabilities as there is equity. In other words, the assets of the company are funded 2 to 1 by investors to creditors. This means that investors own 66.6 cents on the dollar (Erasmus, 2008).

Companies with a higher debt to equity ratio are considered riskier to creditors and investors than companies with a lower ratio. Unlike equity financing, debt must be repaid to the lenders. Since debt financing also requires debt servicing or regular interest payments, debt can be a far cheaper form of financing than equity financing. Creditors view a higher debt to equity ratio as risky because it shows that investors have not funded the operations as much as creditors have. In other words, investors do not have as much skin in the game as the creditors do. This could mean that investors do not want to fund the business operations because the company is not performing well. Lack of performance might also be the reason why the

company is seeking for extra debt financing (Stanford,2009).

2.2.3 ShortTermDebt toTotalAssets

This measures how relative short-term debts to total asset of a firm are to be repaid within an accounting period. Some scholars argued that the shorter the debt the better the firm is in improving its performance. The short term debt to total assets ratio is a measure of the financial leverage of the company. It tells what percentage of the assets is financed by short term debt. Short term debt is debt due for repayment within or less than 12 months and is not included in the long-term liabilities figure on the statement of financial position. It includes creditors and accruals (Akinyomi, 2013). Short term debt to total assets ratio is the ratio that represents the financial position of the company's ability to meet its current financial requirements. It shows the percentage of company assets that are financed with loans and other financial obligations that last over a year. The short-term debt ratio is calculated by dividing current liabilities by total assets. Both of these numbers can easily be found in the balance sheet. A lower debt ratio usually implies a more stable business with the potentiality of longevity because a company with lower ratio also has short term debt.

2.2.4 LongTermDebt toTotal Assets

Long-term debt to total assets measures the relative weight of long-term debt to the capital structure (long-term financing) of a firm's long-term debt to- total assets. Long term debt to total assets ratio is the ratio that represents the financial position of the company's ability to meet its financial requirements. As this ratio is calculated yearly, decrease in the ratio would denote that the company is faring well, and is less dependent on debts for their business needs (Kurfi, 2003). The higher the level of long-term debt, the more important it is for a company to have positive revenue and steady cash flow. It is very helpful for management to check its debt structure and determine its debt capacity (Akinsulire, 2014). The long-term debt to total assets ratio is a measure of the financial leverage of a company. Long term debt is debt due for repayment in over 12 months and is not included in the current liabilities figure on the balance sheet. It includes mortgages and long-term leases, but not general trading liabilities (Akinyomi, 2013). A high ratio usually indicates a higher degree of business risk because the company must meet principal and interest obligations. Potential creditors are reluctant to give financing to a company with a high debt position. However, the magnitude of debt depends on the type of business. For example, a bank may have a high debt ratio, but its assets are generally liquid. A utility can afford a higher ratio than a manufacturer because its earnings are more stable (Khalaf, 2013).

2.2.5 Equity

Equity is the difference between the values of the assets/interest and the cost of the liabilities of something owned. In accounting context, shareholders' equity (stockholder's equity, shareholders' funds, shareholders capital or similar terms) represents the equity of a company is divided among individual shareholders of common or preferred stock (Kurfi, 2003). Accounting shareholders are the cheapest risk bearers as they deal with the public. In financial accounting, owners equity consists of the net asset which is the difference between the total assets of the entity and all its liabilities. Equity usually appears on the statement of financial position which is one of the four primary financial statements. The assets of an entity can be in tangible and intangible items. Intangible assets include items such as brand names, copy rights or goodwill. Tangible assets include land, equipment and cash (Akinsulire, 2014).

Equity is the residual interest in the assets of the entity after deducting all the liabilities (IASB framework). Equity is what the owners of an entity have invested in an enterprise. It represents what the business owes to its owners. It is also a reflection of the capital left in the business after assets of the entity are used to pay off any outstanding liabilities. This is what the owners take home in the event of liquidation of the entity (Erasmus, 2008). Equity is the owners' value in an asset or group of assets. It is also referred to the value of the assets contributed by the owners. This is added to the total income earned and retained by the company to give the company's total equity value. This description of equity is correct but very simplistic. A more profound description is really that used by a homeowner, that is, owners' value in an asset or group of assets. It is calculated by total assets minus total liabilities.

2.3 Financial Performance

A firm's financial performance is of importance to investors, stakeholders, and the economy at large. Investors are interested in the returns for their investment. A business that is performing well can bring better reward to their investors. Financial performance of a firm can increase the income of its staff, rendering quality product or services to its customers and creating more goodwill in the environment it operates. A company that has good performance can generate more returns which can lead to future opportunities that can in turn create employment and increase the wealth of people. Firm's performance is the ability of a firm to achieve its objectives resources. According to Rahul (1997) a company's performance in its ability to achieve its target objectives from its available resources. Suleiman (2013) viewed a firm's performance as the result of a company's assessment or strategy on how well a company accomplished its goals and objectives. Financial performance provides a deductive measure of how well a company can use assets from business operations to generate revenue. Van Horn (2005) defined financial performance as a subjective measure of how well a firm can use assets from its primary mode of

business and generate revenues. This term according to Pandey (2001) is used as a general measure of the overall financial health of a business. Research on the firm's financial performance emanates from organizations theory and strategic management. The notion of financial performance is used to describe performance of an entity with the legal status of a company. The concept of financial performance is a controversial issue in finance due to its multidimensional meaning. In analyzing a firm's financial performance, emphasis should be made in formulating an adequate description of the concept of a financial performance. Measuring of firms' financial performance is one of the management strategic functions aimed at satisfying the interest of shareholders and other stakeholders in a company. Firm's performance appraisal involves a periodic and systematic evaluation of its operations to determine the achievements of the firm's objectives. Evaluation of a firm's performance requires the use of certain principles that may be either internal or external. Internal principles are the ability of a company to achieve its stated objectives, while external principles refer to the comparison of a company with its competitors in the industry in order to develop a good business strategy that will enable the firm to compete favourably in the market. The existing research on the relationship between capital structure and financial performance used different methods of measuring firms' financial performance. Most of the previous studies on firm in financial performance measured firm performance from the accounting based or market-based methods of measuring company's financial performance.

Methodology

3.1 Research Design

Correlation research design was adopted based on positivism paradigm. This is because the study attempts to measure the relationship between capital structure and financial performance of listed manufacturing firms in Nigeria. Correlation design does not only establish relationship between variables but show cause and effect relationship between dependent and independent variables.

3.2 Population and Sampling Procedure of the Study

The population of this study consists of the 102 manufacturing firms listed on the Nigerian Exchange Limited as at December 2023. The firms are classified into eight (8) sub-sectors. For the purpose of this study, stratified and random sampling techniques are used considering the sectorial grouping of firms in the stock market. The sample size of the study is thirty-one (31) manufacturing firms drawn from the defined population and it is arrived at by using Yamane sample size formula, which is represented thus:

$$n = N / (1 + Ne^2)$$

Where, n = Number of samples

N = Total population
e = Error tolerance

$$\text{Hence: } n = 102 / (1 + 100 (0.15)^2) = 31$$

3.3 Sources and Method of Data Collection

This study used secondary sources of data. The data were obtained from the annual reports and accounts of the sampled manufacturing firms and Nigerian Exchange Limited FactBook. Secondary data were used due to the nature of the variables under study. Cross-sectional/time series data were extracted from the annual reports and accounts of the firms for the purpose of assessing the relationship between the variables of the study. Panel data were used in the study in order to detect and measure effect that cannot be simply observed by pure cross section or pure time series data. The data also suited the study dynamics of change and complicated behavioral pattern (Gujarati & Porter, 2009).

3.4 Technique of Data Analysis

Panel multiple regression was used to analyze the data in order to establish relationship between the variables. Multiple regression was considered appropriate in view of the fact that it helps in not only establishing relationship between variables but shows the effect cause and effect relationship. In order to achieve reliability of the result, robustness tests that include multicollinearity test, Hausman test and heteroskedasticity test were conducted.

3.5 Variables Measurement

The variables of the study consist of dependent variable, financial performance measured by return on assets (ROA), and independent variable, capital structure proxied by total debt to total assets (TDTA), total debt to total equity (TDTE), short-term debt to total assets (STTA) and long-term debt to total assets (LTTA).

3.6 Model Specification

The model that was used in testing the hypotheses of the study is presented below:

$$ROA_{it} = \beta_0 + \beta_1 TDTA_{it} + \beta_2 TDTE_{it} + \beta_3 STTA_{it} + \beta_4 LTTA_{it} + \epsilon_{it}$$

Where:

ROA=Return on asset

$\beta_0, \beta_1, \beta_4$ =parameters to be estimated
TDTA = Total-debt to total assets
TDTE = Total-debt to total equity
STTA = Short-debt to total assets
LTTA = Long-debt to total assets

ϵ =error term signifying other variables not captured in the study

3.7 Diagnostic and Robustness Tests

The following robustness tests were conducted in order to improve the validity of the results:

- (i) **Multicollinearity Test:** The study adopted multiple regression models to ascertain the association between the independent and dependent variables. Where the association is highly correlated, multicollinearity exists. For that the study tested for it, to see the possibility of its existence or otherwise. This was done using variance inflation factor (VIF) and tolerance value.
- (ii) **Heteroskedasticity Test:** The study deals with observations that constitute different sizes, some are in decimal while others in units, and that heteroskedasticity sometimes occurs when there is a large difference among the sizes of observations. For that, the study had to run a heteroskedasticity test in order to see its existence or otherwise. It was done using Breusch-pagan/cook-weisberg test for heteroskedasticity.
- (iii) **Hausman Test:** In view of the fact that both fixed and random effect tests were conducted, Hausman test was used to decide the best out of the two results. The test enabled the researcher to choose the most appropriate between the fixed and random effect models.

Data Analysis and Interpretation

4.1 Data Presentation

This chapter analyses and interprets the results obtained for the study. The chapter begins with descriptive statistics and correlation matrix. It then presents the regression results and discusses the findings in light of previous studies. The chapter concludes with a highlight of the policy implications of the findings.

4.2 Descriptive Statistics

The summary of the descriptive statistics of the variables are presented in table 4.1.

Table 4.1 Descriptive Statistics				
Variables	Min.	Max.	Mean	Std.Dev.
ROA	-5.265	14.573	0.2364194	1.268423
TDTA	0.043	19.6572	6.987807	7.151588
TDTE	0.030	72.755	8.203064	10.15754
LTTA	0.000	30.648	0.8527	2.607513
STTA	0.110	56.932	1.747409	6.034367

SOURCE: Extract from STATA Output, 2025

Table 4.1 presents the descriptive statistics for the dependent and explanatory variables. From the table, return on assets has minimum and maximum values of -5.265 and 14.573 respectively and the mean value of 0.2364 as well as the standard deviation value of 1.2684. The standard deviation of 1.2684 signifies that the data deviate from the mean value from both sides by 1.2684 implying that there is a wide dispersion of the data from the mean because standard deviation is higher than

the mean value. The table also shows that the mean of the total debt to total assets of the sampled firms is 6.9878 with standard deviation of 7.1516, and minimum and maximum values of 0.043 and 19.6572 respectively. This implies that the performance of the firms in terms of total debt to total assets is on average 6.9878, and the standard deviation value indicates that the total debt to total assets of the sampled firms deviates from the mean value from both sides by 7.1516, implying that there is significant dispersion of the data from the mean because the standard deviation is higher. Moreover, the table shows that the mean of the total debt to total equity of the firms is 8.2031 with standard deviation of 10.1575. The minimum and maximum values are 0.030 and 72.755 respectively. This implies that total debt to total equity of the sampled firms is on average 8.2031, and the standard deviation value indicates that the value deviates from the mean from both sides by 10.1575, implying that there is significant dispersion of the data from the mean because the standard deviation is larger.

Furthermore, the table shows that the mean of the long-term debt to total assets of the firms is 0.8527 with standard deviation of 2.6075. The minimum and maximum values are 0.000 and 30.648 respectively. This implies that long term debt to total assets of the firms is on average 0.8527. The standard deviation indicates that the value of the firms' long term debt to total assets deviates from the mean value from both sides by 2.6075. This implies that there is significant dispersion of the data from the mean because the standard deviation is higher. Finally, the table portrays that the short-term debt to total assets has an average value of 1.7474 with standard deviation of 6.0344. The minimum and maximum values are 0.011 and 56.932 respectively. The standard deviation indicates that the value of short-term debt to total assets of the firms deviates from the mean value from both sides by 6.0344. This further implies that there is widely dispersed data from the mean because the standard deviation is large.

4.3 Correlation Matrix

The correlation matrix explains the degree of relationship between the dependent and independent variables of the study as well as the independent variables among themselves. The summary of the associations among the variables of the study is presented in table 4.2, while the full result is attached as appendix (IIB)

Table 4.2 Correlation Matrix

Variables	ROA	TDTA	TDTE	LTTA	STTA
ROA	1				
TDTA	0.0191 (0.7958)	1			
TDTE	0.2323*** (0.0014)	-0.2766*** (0.0001)	1		
LTTA	0.0770 (0.2961)	0.0350 (0.6351)	0.4854*** (0.0000)	1	
STTA	0.5110*** (0.0000)	0.2065*** (0.0047)	0.5706*** (0.0000)	0.4732*** (0.0000)	1

SOURCE: STATA Output, 2025

Table 4.2 reveals that total debt to total equity and short-term debt to total assets of the firms are positively and strongly correlated with return on assets. The values of 0.2323 and 0.5110 of the variables indicated p-values of 0.0014 and 0.0000 that are all significant at 1% respectively. In contrast, total debt to total assets and long-term debt to total assets respectively have positive relationship with return on assets that is not statistically significant. The relationship of the independent variables among themselves indicates that total debt to total equity and total debt to total assets are negatively correlated among themselves. On the other hand, the relationship between short term debt to total assets and total debt to total assets, long term debt to total assets and total debt to total equity, short term debt to total assets and total debt to total equity, and short-term debt to total assets and long term debt to total assets are positively related among themselves. Although some of the variables exhibited strong association, the overall relationship for the independent variables among themselves is not significant, though this may not be enough to surmise that multicollinearity exists among the explanatory or exogenous variables of the study unless the variance inflation factor and tolerance values are comparatively beyond the established rule of thumb. Thus, the tolerance value and variance inflation factor (VIF) are advanced measures for assessing harmful multicollinearity among explanatory variables. The variance inflation factor and tolerance values are determined with the use of STATA 10 and were found to be concurrently smaller than ten and one respectively, indicating the absence of harmful multicollinearity. This therefore, indicates the adequacy of fitting the model of the study with four independent variables.

4.4 Analysis of Regression Results and Discussion of Findings

In view of the nature of the data, both fixed effect and random effect models were tested. Hausman specification test was

then used to decide between the two results. The result from the Hausman test revealed a Chi2 value of 34.34 with p-value of 0.000 that is statistically significant at 1%. This implies that the test considered the fixed effect as the most appropriate estimator. The full results of the fixed and random effect as well as Hausman test. In view of this, the fixed effect model was used for analysis.

Table 4.3 presents the summary of the fixed effect multiple regression results obtained

Table 4.3 Regression Results

Variables	Coefficient	T-Values	P-Values	Tolerance	VIF
Constant	0.5994104	2.58	0.011		
TDTA	-0.0550336	-2.19	0.030	0.721016	1.39
TDTE	-0.0206729	-0.94	0.348	0.465383	2.15
LT TA	-0.1892773	-5.42	0.000	0.701805	1.42
STTA	0.2017568	7.89	0.000	0.507822	1.97
R ²	0.4995				
Wald Chi ²	37.67				
Prob. Chi ²			0.0000		

Source: STATA Output, 2025

Table 4.3 shows that the functional relationship between the dependent and independent variables is:

$$\text{ROA} = 0.5994 - 0.0550\text{TDTA} - 0.0207\text{TDTE} - 0.1893\text{LT TA} + 0.2018\text{STTA}$$

The table showed that total debt to total assets has negative significant impact on the financial performance of listed manufacturing firms in Nigeria. This can be observed from the value of beta the coefficient of -0.0550336 with p-value of 0.030 indicating that the p-value is statistically significant at 5%. This implies that total debt to total assets as one of the proxies of capital structure that significantly affect the financial performance of listed manufacturing firms in Nigeria. The results serve as a basis for rejecting the first hypothesis, which states that total debt to total assets has no significant impact on the financial performance of listed manufacturing firms in Nigeria. The result supports? The findings of Song (2006), Fosberg and Ghosh (2006), Zaitun and Tain (2007), Ebaid (2009), Mramor and Cringoji (2009), Heydar et al (2012) and Abolfazl et al (2013) who found that total debt to total assets is negatively and significantly associated with performance of firms and the findings of Jude (2013) and Mathanika et al (2015) who found a positive insignificant relationship between total debt to total assets and financial performance. The table also revealed that total debt to total equity has negative insignificant impact on the financial performance of listed manufacturing firms in Nigeria. This can be seen from the value of the beta coefficient of -0.0206729 with p-value of 0.348 indicating that the p-value is not statistically significant. This implies that total debt to total equity does not have significant effect on the financial performance of the firms. The result could not provide sufficient evidence to reject the second hypothesis, which states that total debt to total equity has no significant impact on the financial performance of listed manufacturing firms in Nigeria. This is in line with the findings of Cengiz, Yunus and Sukriye (2013) who reported negative insignificant relationship between total debt to total equity and firms' financial performance. The result is however in contrast with the findings of Gholamreza et al (2013), Sulieman (2013), Amara and Bilal (2014) and Maina and Ishmail (2014) who found that total debt to total equity is negatively and significantly associated with performance of firms and the findings of Heydar (2012), Karadeniz et al (2012), Simon and Afolabi (2012), Khalaf (2013) and Idode et al (2014) who found a positive significant relationship between total debt to total equity and financial performance. Furthermore, the result showed that long term debt to total assets is negatively and significantly correlated with the financial performance of listed manufacturing firms in Nigeria. The beta coefficient of the variable is -0.1892773 and the p-value is 0.000 which is significant at 1% level of significance. This indicates that long term debt to total assets has negative significant impact on the financial performance of firms. The implication of this finding is that the lower the long-term debt to total assets ratio of a firm the better the quantum of profit to be reported by the firm. The result provided

a basis for rejecting the third hypothesis, which states that long-term debt to total assets has significant effect on the performance of listed manufacturing firms in Nigeria. This is in line with the findings of Zaitun and Tian (2007), Ngoc and Jeremy (2011), Muhammad et al (2012) and Rasa and Jurgita (2012) who found negative significant relationship between long-term debt to total assets ratio and financial performance and findings of Rafiu, Taiwo and Dauda (2012) who reported positive significant relationship between long-term debt to total asset and firms' financial performance. The result is however in contrast with the findings of Karadeniz et al (2012), Khalaf (2013) and Amara and Bilal (2014) who found that total debt to total assets is positively and insignificantly associated with performance of firms. Finally, the table revealed a value of beta coefficient of 0.2017568 with p-value of 0.000 for short term debt to total assets ratio. This signifies that short term debt to total assets has strong positive influence on the financial performance of listed manufacturing firms in Nigeria at 1% level of significance. The result implies that short term debt to total assets increase the financial performance of the firms. The result provides evidence of rejecting the fourth hypothesis that assumed short-term debt to total assets has no significant impact on the performance of listed manufacturing firms in Nigeria. The result is in line with the findings of Akinyomi (2013), Maina and Kondongo (2013) and Abdullah (2014) who reported positive significant relationship between short-term debt to total assets ratio and firms' financial performance. The result is contrary to the findings of Abdul (2010), Lorpev and Kwanum (2012) and Khalaf (2013) who found that short-term debt to total assets is negatively and insignificantly associated with performance of firms. The combined and overall effect of the predictor variables on the explained variable showed that the model is adequate and free from misspecification. The Wald Chi² value of 37.67 with Prob. Chi² of 0.0000 which is significant at 1% level of significance shows that the model is well fitted with the variables of the study. Furthermore, the coefficient of determination R² which stands at 50% indicates the proportion of the total variation independent variable (return on assets) that is explained by the independent variables. This signifies that 50% of the total variation in financial performance of listed manufacturing firms in Nigeria is caused by the combined effect of the ratios of total debt to total assets, total debt to total equity, long term debt to total asset and short term debt to total assets; while the remaining 50% is caused by other factors not captured in the model of the study. To enable comparison of the three results, table 4.4 presents summary of the Pooled OLS, Fixed and Random effects models.

Table 4.4 Summary of Pooled OLS, Fixed and Random effects Models

Variables	Pooled OLS	Fixed	Random
TDTA	-0.0266**	-0.0550**	-0.0340**
TDTE	-0.0142	-0.2067	-0.0158
LT TA	-0.0938***	-0.1893***	-0.1469***
ST TA	0.1468***	0.2018***	0.1724***
CONS	0.3624**	0.5994**	0.4269**
CHI²			119.2213
N	186	186	186
R²	0.3126	0.4994	

Source: STATA Output, 2025

From table 4.4 both LT TA and ST TA turned a p-value that is statistically significant at 1% for all the three models. In addition, the models returned p-values that are significant at 1% with respect to TDTA. This implies that though the R² values of pooled OLS and fixed model are different, in terms of level of significance of the p-values, the models are very similar.

4.5 Policy Implications of the Research Findings

The study has a number of theoretical, practical and regulatory implications. One major implication is that manufacturing firms are the main source of raw materials, goods and services needed by individuals to build their personal houses, corporate entities to expand their branch network and government to provide the needed infrastructural facilities for its citizens. The outcome of this study could be used by manufacturing firms on sources of capital decision, as well as proper utilization of its capital. Based on the result the firms would understand the need to focus more attention on capital structure decision regarding how to finance their assets by debt or by equity as such decision would affect relationship with the final result for any given periods influences the returns and risks of shareholders and consequently the market value of the shares. The

results of this study could also be used by the regulatory authorities in deciding on the most appropriate ways of increasing their assets and expanding the scope of their operations in order to maintain optimal levels of total debt, long-term debt and short-term debt in view of the directions of association that exist between the ratios of these three types of debt and financial performance. Theoretically, the study has implication on the understanding of both researchers and practitioners about the nature and extent of the relationship that exist between capital structure and performance. This will go a long way in contributing to existing literature on the subject matter and providing frontier for further studies.

Conclusions and Recommendations

5.1 Conclusion

As a corollary of the discussion and analysis in the preceding chapter, the study concludes as follows: Firstly, the study found a negative significant association between total debt to total assets ratio and financial performance. It is therefore concluded that total debt to total asset is one of the variables of capital structure that contribute in influencing financial performance of listed manufacturing firms in Nigeria.

In addition, the study found a negative insignificant association between total debt to total equity ratio and financial performance of listed manufacturing firms in Nigeria. Thus, the study concluded that total debt to total equity is not one of the factors that influence the financial performance of listed manufacturing firms in Nigeria. Furthermore, long-term debt to total assets ratio was found to have negative significant impact on financial performance of listed manufacturing firms in Nigeria. The study, therefore, concluded that long-term debt to total assets ratio is one of the strong determinants of the financial performance of listed manufacturing firms in Nigeria. More so, the study found a positive significant relationship between the ratio of short-term debt to total assets and the financial performance of listed manufacturing firms in Nigeria. Thus, the study concluded that short-term debt to total asset is amongst the determinants of the financial performance of listed manufacturing firms in Nigeria.

5.2 Recommendations

In line with the findings of the study, the following recommendations are made:

The management of Nigerian listed manufacturing firms should work very hard to optimize the capital structure of their listed manufacturing firms in order to increase the financial performance. They can do that through ensuring that their capital structure is optimal.

The Management of Nigerian listed manufacturing firms should increase their commitments into short term debt to total asset in order to improve financial performance from their business operation. This is in line with the findings of this study that the short-term debt of listed manufacturing firms in Nigeria influences their financial performance positively.

The Management of Nigerian listed manufacturing firms should be concerned about the level of their total debt to total equity, for better financial performance. This is because the findings of this study revealed a negative insignificant relationship the variables and financial performance.

Stakeholders of listed Manufacturing firms in Nigeria should also reduce the level of total debt to total assets and long-term debt of any firm in order to improve financial performance. This is in line with the findings of this study that revealed a negative significant impact of total debt and long-term debt on financial performance of listed manufacturing firms in Nigeria.

References

- Abbasali, P., Estandiar, M., Milad, E., & Mohammad, B. (2012). The Relationship between Capital Structure and Firm Performance Evaluation Measures: Evidence from Tehran Stock Exchange. *International Journal of Business and commerce*, 1(9) 166-181.
- Abdullah, E.M. (2014). The Impact of Capital Structure on Firms Performance: Evidence from Saudi Arabia. *Journal of Applied Finance and Banking*, 4(2), 183-193.
- Abolfazl, M., Ali, R.Y., Hamid, R.R., & Kambiz, B. (2013). Relationship between Capital Structure and Firm Performance. *Journal of Business Research*, 5(8), 421-432.
- Akinyomi, O.J. (2013). Effect of Capital Structure on Firm Performance: Evidence from Nigeria Manufacturing Industry. *International Journal of Innovation research and studies*, 2(9), 1-13.
- Almustapha, M. S. (2014). Capital structure and firm performance during and after the global financial crisis among Malaysian listed companies. Published M.sc Thesis, University Utara Malaysia.
- Amara, U., & Bilal, A. (2014). Impact of Capital Structure on Firm Performance: Analysis of Food Sector Listed on Karachi Stock Exchange. *International Journal of Multidisciplinary Consortium*, 1 (1).
- Amelia, M.R. (2012). Effect of firm characteristics, financial performance and environmental performance on corporate social responsibility disclosure intensity on manufacturing firm listed in the Indonesia Stock Exchange. Faculty of Economy, Gunadarma University.
- Amos, O.A. & Francis, K.E., (2014). Shareholders wealth and debt-equity mix of quoted companies in Nigeria. *International*

Appah,E.,Okofor,E.O&Bariweni,B.(2013)CapitalStructureandtheOperatingPerformance of Quoted Firms in the Nigerian Exchange Limited.Research Journal ofFinanceand Accounting, 4 (5), 2222-1697.

Aransiola, S. Y. &Oluwadetan, A. (2015). Capital structure and profitability: A criticalanalysisofquotedmanufacturingcompaniesinNigeria.AmericanJournalofEconomics,FinanceandManagement, 1(5), 369-376.

Babalola, Y.S.(2014).TriangulationAnalysisofCapitalStructureandFirmsPerformanceinNigeria. East Ukrainian National University. 69(12),75-82.

Cengiz, T.,Yunus,K.&Sukriye,G.R.(2013).TheEffectsofCapitalStructureDecisionsonFirmPerformanceEvidencefromTurkey.InternationalConferenceonEconomicsand Social Sciences,13, 137-142.

Gholamreza, E., Alireza, D. & Alireza, J. (2013). Investigating the Association betweenCapital Structure and Financial of Listed in Tehran Stock Exchange, Nature andScience Journal, 11(11),149-153.

Harwood, I.K. (2015). Effects of debt on firm performance: A survey of commercial bankslisted on Nairobi Securities Exchange. Global Journal of advance research, 2(6),1025-1029.

Heydar, M.S., Elham, G.,Vahid, T.K., & Mohsen, A.K. (2012). Capital Structure and FirmPerformance:Evidencefrom Tehran Stock Exchange.225-228.

Hoa, N. & Zainab, K. (2013). Determinants of Capital Structure in Asia- A ComparisonamongstdevelopedanddevelopingCountries.PublishedM.scThesis,LundUniversity.

Idode,P.E,Adeleke,T.M.,Ogunlowore,A.J,&Ashogbon,O.S.(2014).InfluenceofCapitalStructure on Profitability Empirical Evidence from Listed Nigerian Banks,16(11), 22-28.

Innocent,E.C.,Ikechukwu,A.C.,&Nnagbogu,E.K.(2014).TheEffectofFinancialLeverageOnFinancialPerformance:Evidence ofQuotedPharmaceuticalCompaniesin Nigeria. IOSRJournal of Economics and Finance, 5 (3),17-25.

Iorpev, L. &Kwanum, I. (2012) Capital Structure and Firm Performance: Evidence fromManufacturingCompaniesinNigeria.InternationalJournalofBusinessandManagement,2(5).

Ishaya, L.C. &Abduljeleel, B.O. (2014) Capital Structure and Profitability of NigerianQuotedFirms:TheAgencyCostTheoryPerspective.AmericanInternationalJournalof SocialScience, 3(1), 139-142.

Jude, S.A. (2013). The Impact of Capital Structure on Financial Performance of the ListedManufacturing Firms in Sri Lanka. Global Journal of Commerce and ManagementPerspective.2(5), 56-62.

Khalaf,A. (2013).TheRelationship betweenCapital Structure andFirm Performance:Evidencefrom Jordan.Journalof Financeand Accounting,1(3), 41-45.

Maina, L. &Ishmail, M. (2014). Capital Structure and Financial Performance in Kenya:Evidence from Firms Listed at the Nairobi Securities Exchange. International JournalofSocial Sciences and Entrepreneurship. 1(11) 1-14.

Maina, L., &Kondongo, O. (2013). Capital Structure and Financial Performance in Kenya:Evidence from Firms Listed at the Nairobi Securities Exchange. Paper Presented attheJomoKenyattaUniversityofScience&TechnologyResearchConference.Kenya.

Maniagi,G.M.,Mwalati,S.C.,Ondiek,B.A.,Mesiega,D.&Ruto,R.(2013).CapitalStructure and Performance: Evidence from Listed Non-Financial Firms on NairobiSecurities Exchange (NSE) Kenya. International Journal for Management ScienceandTechnology, 1(1), 2320-2325.

Mathanika, T., Virginia, A.G. &Paviththira, R. (2015). Impact of capital structure on firmvalue: Evidence from listed manufacturing companies on Colombo Stock ExchangeinSriLanka.International Conferenceon ContemporaryManagement, 24-35.

Mirza,S.A.&Javed,A.(2013).Determinantsoffinancialperformanceofafirm:CaseofPakistanStockMarket. JournalofEconomicsandInternationalFinance,5(2);43-52.

Muhammad, U., Zaighum T. & Saeed, A., & Muhammad, S.(2012). Impact of CapitalStructureonFirmsFinancialPerformance:EvidencefromPakistan.JournalofFinanceand Accounting, 3(9).

Mustafa,M.S.&Osama,S.(2013).CapitalStructureandCorporatePerformance:Empirical Study on the Public Jordanian Shareholdings Firms Listed in the AmmaStockMarket. Journal of European Scientific, 8, (22).

Mwangi,L.W.,Makau,M.S.,&Kosimbei,G.(2014).RelationshipbetweenCapitalStructures and Performance of Non-Financial Companies Listed in Nairobi SecurityExchange,Kenya.GlobalJournalofContemporaryResearchinAccounting,Auditingand Business Ethics, 1 (2), 72-90.

Pachori, S. &Tatala, K. (2012). Influence of financial leverage on shareholders returns andmarket capitalization: A study of automotive cluster companies of Pithampur, India.2thInternational Conferences on Humanities, Singapore.

Rafiu,O.S.,Taiwo,O.A,&Dauda,O.Y.(2012).FinancialPolicyandCorporatePerformance:AnEmpiricalAnalysisofNigeriaList

edCompanies.JournalofEconomicsand Finance,4(4), 175-181.

Raheel,M.,Shahnaz,A.R.,Bashir,A.&Umara,N.(2013).CapitalStructureandPerformance:EvidencefromPakistan.JournalofBasicandAppliedScientificResearch,3 (4) .113-119.

Rasa, N., &Jurgita, S. (2012). The Relationship of Corporate Governance Decision on Capital Structure and Company's Performance: Evidence from Lithuanian Food andBeverages Industry Companies. Journal of Economics and Management, 17(2), 480-486.

Sabastian,O.U&Rapulchukwu,U.E.(2012).TheImpactofCapitalStructureandLiquidity on Corporate Returns in Nigeria: Evidence from Manufacturing Firms.InternationalJournal of Accounting,FinanceandManagement,2(3), 1-16.

Suleiman, A. (2013). Capital Structure Effect on Firms Performance: Evidence from SaudiListedCompanies.

Suleiman, M.A. & Nour, A. (2012). The Effect of Capital Structure on the Performance ofPalestinianFinancialInstitutions.BritishJournalofEconomics,FinanceandManagementSciences,3(2).

Syed, S. R. (2013). Relationship between financial performances: Empirical evidence oflisted sugar companies in Pakistan. Global Journal of Management and BusinessResearchFinance, 13(8).

Taiwo, A.M. (2012). An Empirical Analysis of Capital Structure on Firms Performance inNigeria. International Journal of Advances in Management and Economics, 1(5),116-124.

Tudose,M.B.(2012).Capitalstructureandfirmperformance.EconomyTransdisciplinarycognition,15(2);76-82.

Waqas, T., Imran, A., Hafiz, M.U., Jawad, A. & Zaid, B. (2013). Empirical identification of determinant of firms' financial performance: A comparative study of textile and foodsectorofPakistan.Journal of Business, 3(1), 487-497.

Yinusa,O.G.& Babalola, Y. A. (2012). The impact of corporate governance on capitalstructuredecisions ofNigerian firms. EastUkrainian NationalUniversity.