

# CAPITAL STRUCTURE AND FINANCIAL PERFORMANCE OF QUOTED MANUFACTURING FIRMS IN NIGERIA

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## Abstract

*Decision about combination of various sources of finance that can maximize a firm's overall value which means optimal capital structure is pivotal to the performance and survival of same. This type of decision of determining the exact optimum capital structure however is not an easy one. The objective of the study was to determine the effect of capital structure (proxy by debt equity ratio) on the financial performance of quoted manufacturing firms in Nigeria. Data were sourced from the sampled firms' annual reports over the study period of 2008-2018 and analyzed using the generalized least square regression technique. The study found out that the use of more debt compared to equity has significant positive effect on the financial performance of quoted manufacturing firms in Nigeria. The study recommends that manufacturing companies increase their debt-to-equity ratio and Government should stimulate financial institutions so as to be debt friendly to these firms.*

**Key Words:** Capital Structure, Debt-to-Equity, Long-term Debt-to-equity M & M theory, Financial Performance

## Introduction

Capital structure is a significant managerial decision because it influences the shareholders' risk and return as the market value of share may be affected by capital structure decisions (Pandey, 2010). Capital structure decision relates to how firm combine equity and debt capital to finance its operations. These sources of capital attract different cost of capital which will affect the overall performance of the firm, so financial managers have to give a close attention to develop the appropriate mix of debt and equity that will result in the minimum cost to attain the goal of wealth maximization. Capital structure decision entails acquiring the optimum mixture or combination of sources of capital which will minimize cost and maximize value.

To Tudose (2012), debt level in a firm capital structure disciplines managers and according to Abdullahi, (2016), increasing debt level may increase the level of efficiency which in turn increase performance. Level of debt also as a result of higher fixed obligations that must be paid lead to higher variation in earnings. Firm's financial performance has to do with the manner in which a firm's financial resources are utilized to achieve its corporate objectives. It discloses to the various stakeholders of the organization the continuous ability for such organization to remain in business. Financial performance can be measured by applying financial analyses. According to Malik (2011), profitability is the one of the most important objectives of financial management since it leads to the maximization of shareholders' wealth, thus indicating better financial performance. This study is therefore premised on the motivation to determine the effect of capital structure on financial performance of quoted manufacturing companies in Nigeria,

## Statement of the Problem

Decision about combination of various sources of finance that can maximise a firm's overall value which means optimal capital structure is pivotal to the performance and survival of same. In the opinion of Eriki & Osagie (2017), a defective mix of a firm's capital structure can lead to liquidity and

solvency problems. This type of decision of determining the exact optimum capital structure is however, not an easy one. And despite the importance of making optimal capital structure decision, very few studies have been conducted to establish the effect of capital structure on financial performance in Nigeria (Adesina et al., 2015). More so, majority of existing studies have used shorter period of time in their analysis

### **Objectives of the Study**

The main objective of this study is to determine the effect of capital structure on financial performance of quoted manufacturing companies in Nigeria. The specific objectives are to;

- a. Ascertain the effect of total debt to equity (TDE) on financial performance of quoted manufacturing firms in Nigeria;
- b. Determine the effect of long-term debt to equity (LTDE) on financial performance of quoted manufacturing firms in Nigeria; and

### **Research Hypotheses**

To achieve the objectives of the study, the following null hypotheses were formulated for testing.

- $H_0^1$ : Total debt to equity (TDE) has no significant effect on financial performance of quoted manufacturing firms in Nigeria.
- $H_0^2$ : Long term debt to total equity (LTDE) has no significant effect on financial performance of **quoted** manufacturing firms in Nigeria.

### **Conceptual Framework**

#### **Concept of Capital Structure**

According to Pandey (2010), capital structure is the various means of financing a firm, that is, the proportionate relationship between debt and equity. To him, capital structure is a significant managerial decision because it influences shareholders' risk and return. Capital structure was defined firstly by Modigliani and Miller as the mix between debt and equity that the company uses in its operation (Nassar, 2016). To Pratheepkanth (2011), capital structure refers to a mixture of a variety of long-term sources of funds and equity shares including reserves and surpluses of an enterprise. Arulvel & Ajanthan (2013), however, describe it as the mixture of a company's debt (long term and short term) common equity and preferred equity.

#### **Concept of Financial Performance**

Financial performance is the outcome or end result (negative or positive) arising out of organizational activities that can be measured monetarily or financially (from the financial statements). To Kazmi (2008) as cited in Gunu & Adamade (2015), financial performance is the quantitative expression of goal attainment using financial variables. Similarly, to Akenga (2017) financial performance refers to the process of measuring the results of a firm's policies and operation in monetary terms. To her, it refers to a subjective way of how well a firm can use its assets for its primary mode of business and generate revenue. It is a measure of firm's overall financial health over a given period of time. According to Pandey (2010), financial performance of a firm is judged in terms of the profitability, solvency and valuation of the firm.

### **Theoretical Framework**

Amongst other theories that have been used to explain the relationship between capital structure and financial performance, the theory of Miller and Modigliani (1963) was adopted to underpin this study.

Modigliani and Miller (M&M) Theory (1958, 1963): Under the capital structure irrelevance theory, Modigliani and Miller (1958) argued based on the assumptions of existence of perfect capital market, homogenous expectations, absence of taxes and no transaction cost, that capital structure is

irrelevant to the value of a firm. Their proposition was that capital structure is irrelevant and therefore cost of capital and value of firm is the same for every level of gearing. This proposition was however criticized especially as regards no tax issue leading to Modigliani and Miller (1963) which now included tax. In the latter, M&M now proposed that debt is cheaper since debt holders doesn't face financial risk and besides, debt interest is tax deductible so then, the more debt a company has, the less its cost of capital and the more shareholders' wealth is maximized.

### **Firm Capital Structure and Financial Performance**

There are numbers of capital structure theory; the commonest however are the traditional theory of capital structure, Modigliani & Miller (1958) capital structure irrelevance theory, Modigliani and Miller (1963) capital structure theory, static trade-off theory and pecking order theory. The traditional theory of capital structure posits that initial inclusion of debt into the capital structure will make cost of capital fall and in turn increase market value, however as more debt is introduced, cost of capital increases and therefore market value decreases. So, the theory requires financial managers to find an optimum gearing position.

Modigliani & Miller (1958) initially argued that capital structure is irrelevant and therefore cost of capital and value of firm is the same for every level of gearing but later proposed that debt is cheaper since debt holders doesn't face financial risk and besides, debt interest is tax deductible so then, the more debt a company has, the less its cost of capital and the more shareholders' wealth is maximized whereas the pecking order posits that it is better to first consider the use of internal fund **before external which is debt**.

Berger & Di Patti (2006) assert that theories on capital structure point out that high leverage or low equity/asset ratio reduces agency cost of outside equity and thus increases firm value by compelling managers to act more in the interest of shareholders. As a result, the capital structure of a firm stands the possibility of impacting on its returns. Obviously, these theorists have put forward different arguments, thus indicating that managers of firms in order to make capital structure decision are left with the responsibility of identifying and making the optimum decision for best result.

Empirical evidence on the relationship between capital structure and financial performance are mixed and obvious in the following; Pratheepkanth (2011), Nimalathasan & Valeriu (2010); Adesina et al. (2015); Thamilla & Aruvel (2013); found positive association; Al-Taani (2013), Pouraghajan, et al. (2012) Bhutta & Hasan (2013) found negative association. More so, it is true (to the best of the researchers' knowledge) that according to Adesina, et al. (2015), empirical studies on capital structure and its implication on firm performance in developing countries, especially in Nigeria are very scanty.

Pratheepkanth (2011) analysed the impact of capital structure on financial performance of selected business companies in Colombo Stock Exchange Sri Lanka. The proxies for capital structure were debt to equity ratio and debt to total fund ration while that of financial performance were gross profit margin, net profit margin, return on assets and return on equity. Secondary data of the companies were collected over five-year period (2005 – 2009). The regression results showed that negative association exists between capital structure and financial performance.

Pouraghajan, et al (2012), carried out a study of the impact of capital structure on the financial performance of companies listed on the Tehran Stock Exchange. For this purpose, they tested a sample of 400 firms among Companies Listed on the Tehran Stock Exchange in the form of 12 industrial groups during the years 2006 to 2010. Variables used to measure the financial performance of companies are return on assets ratio (ROA) and return on equity ratio (ROE). They discovered, from the results, that there is a significant negative relationship between debt ratio and financial performance of companies, and a significant positive relationship between asset turnover, firm size, asset tangibility ratio, and growth opportunities with financial performance measures. However, the relationship between ROA and ROE measures with the firm age is not significant. According to their results, by reducing debt ratio, management can increase the company's profitability and thus the amount of the company's financial performance measures and can also increase shareholder wealth.



Iorpev & Kwanum (2012) investigated the relationship between capital structure and firm performance of manufacturing companies listed on the Nigerian Stock Exchange. They covered a period of five (5) years from 2005-2009. The study used multiple regression analysis to examine firm performance indicators such as Profit Margin (PM) and Return on Asset (ROA), while, the capital structure variables were, Long-term debts to Total assets (LTDTA), Short-term debts to Total assets (STDTA), and Total debt to Equity (TDE). They found that STDTA and LTDTA have insignificant negative relationship with ROA and PM; while TDE has positive relationship with ROA and negative relationship with PM. STDTA is significantly related with ROA while LTDTA is significantly related with PM. The study concluded that capital structure is not a main determinant of firm performance.

Aruvel & Ajanthan (2013) studied capital structure and financial performance of listed trading companies in Sri Lanka. The sample of the study included all the eight companies listed under the trading sector. Debt ratio and debt-equity ratio were the proxies for capital structure while gross profit, net profit, return on equity and earnings per share were the proxies for financial performance. Secondary data were collected and analyzed by employing correlation and multiple regressions. Results showed that debt ratio is negatively correlated with financial performance and debt- equity ratio is also negatively correlated with financial performance

Nirajini & Priya (2013) examined the impact of capital structure on financial performance of listed trading companies in Sri Lanka. They extracted data from the annual reports of the sample companies from 2006 to 2010. Correlation and multiple regression analysis were used for their analysis. They found out that there is a positive relationship between capital structure and financial performance. They also discovered that capital structure has significant impact on financial performance of the firm and showed that debt asset ratio, debt-equity ratio and long-term debt correlated with gross profit margin (GPM), net profit margin (NPM), Return on capital employed (ROCE), Return on Asset (ROA) and Return on Equity (ROE) at significant level of 0.05 and 0.1.

Al-Taani (2013) investigated the relationship between capital structure and firm performance across different industries using a sample of Jordanian manufacturing firm. The annual financial statements of 45 manufacturing firm listed on the Amman Stock Exchange were used for the study and covered a period of five (5) years, 2005 – 2009. He used multiple regression analysis on performance indicators such as return on asset (ROA) and profit margin (PM) as well as short – term debt to total assets (STDTA), long term debt to total assets (LTDTA) and total debt to equity (TDE) as capital structure variables. The results showed that there is a negative and significant relationship between STDTA and LTDTA and ROA and PM; while TDE is positively related with ROA and negatively related with PM. STDTA is significant using ROA and PM. STDTA is significant using ROA while LTDTA is significant using PM. His final conclusion is that statistically, capital structure is not a major determinant of firm performance.

Adesina, et al. (2015) in their work capital structure and financial performance in Nigeria tried to determine the impact of post-consolidation capital structure on the financial performance of Nigeria quoted banks. The study used profit before tax as a dependent variable and two capital structure variables (equity and debt) as independent variables. The sample for the study consists of ten (10) Nigerian banks quoted on the Nigerian Stock exchange (NSE) and period of eight (8) years from 2005 to 2012. The required data and information for the study were gathered from published annual reports. Ordinary least square regression analysis of secondary data showed that capital structure (both debt and equity) has a significant positive relationship with the financial performance of Nigeria quoted banks.

This research paper of Nadeem, Ahmad, Ahmed, Ahmad & Batool (2015) tried to measure the relationship between leverage and profitability of firms in the cement industry of Pakistan. Debt to equity was used to measure the leverage of the companies in the cement industry in Pakistan. Short term debt to equity (STD/E) and long-term debt to equity (LTD/E) were considered as leverage variables. Return on equity (ROE) and return on assets (ROA) were used to measure the financial performance of the companies. Ten (10) cement companies listed in the Karachi Stock Exchange during the time period 2008-2012 were considered for the study. The regression results showed negative and significant relationship between leverage and profitability.

The paper of Nassar (2016) tried to examine the impact of capital structure on the financial firm performance of industrial companies in Turkey. Annual financial statements of 136 industrial companies listed on Istanbul Stock Exchange (ISE) were used for the study which covers a period of 8 years from 2005-2012. A multivariate regression analysis was applied to test the relationship between capital structure and firm performance. Return on Asset (ROA), Return on Equity (ROE) and Earning per Share (EPS) were used to measure firm performance while Debt Ratio (DR) was the proxy for capital structure. The results showed that there is a negative significant relationship between capital structure and firm performance.

The research of Basit & Irwan (2017) aimed to identify the impact of capital structure on firm performance of Malaysia listed industrial product company. Convenience sampling technique was used to select 50 industrial product companies listed in Bursa Malaysia main exchange market. Data were sourced from 2011 to 2015 annual reports of selected companies. The independent variables used in the research were debt to equity ratio, total debt ratio and total equity ratio. Return on asset (ROA), return on equity (ROE) and earnings per share (EPS) were used as dependent variable to measure firm performance. The multiple regression analyses revealed that industrial product companies rely heavily on equity finance in their capital structure. Besides that, debt to equity has significant negative impact on ROA, ROE and EPS, total debt has insignificant negative effect on ROA and significant positive impact on ROE and EPS total equity ratio has insignificant impact on ROA and ROE, total debt ratio and total equity has insignificant impact on ROE. Finally, debt to equity has a negative significant impact on EPS, total debt ratio has positive significant impact on ROE and EPS and total debt has insignificant impact on EPS. Future researchers were recommended to use large sample size and other variable to identify the impact of capital structure on firm performance.

The study of Eriki & Osagie (2017) examined the effect of debt-equity mix on financial performance of downstream oil and gas firms in Nigeria. The annual financial statements of twelve (12) oil and gas firms listed on the Nigerian Stock Exchange were used for the study which covers a period of five (5) years from 2011 - 2015. Panel regression analysis using fixed effect model and hausman test were applied on performance indicators such as Return on Asset (RoA) and Return on Equity (RoE). The capital structure variables used as explanatory variables were Debt to Capital (DC), debt to common equity (DCE), Debt to Asset (DA) and long-term debt to common equity (LDCE). The results show that there is negative and insignificant effect between debt to capital employed (DC) and long-term debt to common equity (LDCE) on firm performance using ROA and ROE while debt to asset (DA) and debt to common equity (DCE) are positively and significantly impact on ROA and ROE. The study recommends that oil and gas firms' managers should apply caution in using the right mix of equity and debt to enhance the performance of the firm.

Ajibola, et al. (2018) examined the impact of capital structure on financial performance of quoted manufacturing firms in Nigeria over the period 2005-2014. Panel methodology was applied to analyze the impact of capital structure on financial performance of quoted manufacturing firms in Nigeria. The findings of the panel ordinary least square show that a positive statistically significant relationship exist between long term debt ratio (LTD) (0.0001), total debt ratio (TD) (0.0065) and return on equity (ROE) while a positive statistically insignificant relationship between ROE (return on equity) and STD (Short term debt ratio). There was also a negative insignificant relationship between all the proxies of capital structure (LTD, STD and TD) and ROA which makes ROE a better measure of performance. The study concluded that capital structure has a positive impact on financial performance and companies should employ more of long-term debts.

### **Research Design**

This study adopts the ex-post facto research design. This was to enable the use of panel data analysis to determine whether the observed relationship between capital structure and financial performance holds over time.

### **Population of the Study**

The population of the study comprises of all the forty-five (45) manufacturing companies quoted on the floor of the Nigerian Stock Exchange (NSE) as at 31st December, 2017. This include firms in the consumer goods, industrial goods and healthcare subsectors who obtain materials in their raw form and convert same to useable form

### **Sampling Technique and Sample Size**

Both the probability and non-probability sampling technique was adopted for the study. Firstly, the year of listing on the NSE is used as a filter on the population, which will eliminate manufacturing companies that are quoted on the floor of the NSE after the commencement of the study period (2008). Consequently, Dangote Cement Plc., Honeywell Flour Mills Plc., McNichols Plc., Multi-Trex Integrated Foods Plc., Notore Chemical Ind Plc. and Portland Paints and Products Nigeria Plc. would have eliminated, but Dangote Cement Plc. was included because of its significance in Nigeria's manufacturing sector. This resulted to a sample frame of forty (40) manufacturing firms in Nigeria.

The sample frame includes eighteen (18) firms in the consumer sector, eleven (12) firms in the industrial sector and ten (10) firms in the health sector. Because of poor nature of data trail, the stratified random sampling method was used to sample twenty-two (22) firms while Dangote Cement Plc. was purposely included. So, in all, twenty-three (23) firms were studied which represents 51% of the study population. This proportion according to Aminu (2013) is a reasonable estimate. Ten (10) firms from the consumer sector, six (6) firms from the Health care sector and seven (7) from the industrial sector.

### **Source and method of Data Collection**

The secondary source of data was employed for the study. Data were sourced from the annual report and accounts of the sampled quoted manufacturing companies in Nigeria over a study period of 2008-2018. Data extracted from this source include: profit after tax, total equity, total debt, non-current liabilities and total assets.

### **Variables Definition and Measurement**

This study aims at determining the effect of firm characteristics on the performance of quoted manufacturing companies in Nigeria. The dependent variable for this study which is financial performance was measured in terms of return on equity (ROE) while the independent variable will be capital structure (CS) measured in terms of total debt to equity (TDE) and long-term debt to equity (LTDE). The definition and measurement of these variables is presented in table 1 below.

**Table 1: Variables Definition and Measurement**

<b>Variable</b>	<b>Type</b>	<b>Measurement</b>	<b>Source/Justification</b>
Financial Performance	Dependent	$\frac{\text{Profit after Tax}}{\text{Total Shareholders' equity}} \times 100$	Olawale, Ilo & Lawal, (2017)
Debt to equity ratio	Independent	Debt / Equity	Arulvel & Ajanthan (2013)
Long term debt to equity ratio	Independent	Long term debt/Equity	Eriki & Osagie (2017)

**Source:** Research Survey, (2019)

### **Technique for Data Analysis**

This study adopted the quantitative and statistical methods of data analysis. Consequently, the study used the panel data regression analysis technique to determine the effect of capital structure on financial performance of the sampled quoted manufacturing companies in Nigeria. All analysis was carried out using the statistical data analysis (STATA v.12) software package, the outcome of which formed the basis for conclusion and recommendations.

### Model Specification

The regression model for the study is as below:

$$ROE_{it} = \alpha + \beta_1 TDE_{i,t} + \beta_2 LTDE_{i,t} + \epsilon_{i,t}$$

Where;

TDE is Total Debt Equity ratio

TDTE is Total Debt to Equity ratio

### Data Analysis

**Table 2: Descriptive Statistics**

Variable	Obs	Mean	SD	Min	Max
ROE (%)	233	20.879	21.011	-29	107.98
LTDE	233	.345	0.339	0	2.5
TDE	233	1.399	1.372	0.04	15.41

**Source:** Stata Output (2019)

The descriptive statistics was generated as a summary of data collected. Although, data were not available for some years, this does not however reduce or undermine the result as the stata software provides the xtset option which allows it to handle unbalanced data set. There were 233 observations for ROE, LTDE and TDE. The mean is generally described as the average. This means that the average ROE of the studied quoted manufacturing in Nigeria is 21%, the average long-term debt to equity ratio is 0.33:1 (which means that these firms use less long-term capital compared to equity. This might be due to scarcity in the availability of such in the Nigeria's credit system. The average is debt to equity ratio is 1.37:1 that is, these firms use more debt capital than equity.

The standard deviation is a measure of dispersion. All the values were not significantly different from the mean, that is, these firms are similar in all the variables studied. The minimum ROE was -29% with particular reference to Neimeth international pharmacy plc's 2015 operations where the firm recorded a loss of N335,684 and had N1,157,325 as shareholders' equity for the year and the maximum was 107% with particular reference to Cadbury Nigeria plc's 2008 operations where the firm recorded of N2,952,772 and had N2,734,527 as shareholders' equity for the year. The minimum long-term debt to equity ratio was 0:1 (Glaxosmithline consumer plc's 2016 and 2017 financial years' operation) and the maximum long-term debt to equity ratio was 2.5:1 (of Lafarge Africa Plc 2009 financial year's operation). The minimum total debt to equity ratio was 0.04:1 (of Cement Company of the north's 2018 operation) and the maximum total debt to equity ratio was 15.41:11 (of Morrinson Industries' 2017 operation).

**Table 3: Correlation Matrix**

Variables	ROE	LDTE	TDE
ROE	1.00		
LDTE	0.3121	1.00	
TDE	0.3562	0.6242	1.00

**Source:** Stata Output (2019)

The correlation matrix was generated to check for the presence of multicollinearity. Multicollinearity exists when the predictor variables are within themselves highly correlated. The values of 0.6242 for the relationship between LTDE and TDE, is lower than 0.8 thus revealing that the independent variables were not highly correlated with themselves.



**Table 4: Variance Inflation Factor**

Variables	Vif	1/vif
LTDE	1.64	0.61034
TDE	1.64	0.61034
Mean vif	1.64	

Source: Stata Output (2019)

Further investigation involving the use of the variance inflation factors revealed values that are far less than 10 which is the rule of thumb. The tolerance value was also far greater than 0.1.

### Regression Result

Panel data analysis technique was used to analyse data. This is suitable for analysing panel data since such might not be normal and homoscedastic in nature. In choosing the most appropriate between Fixed effect, Random effect, and ordinary least square regression for this study, usually two important tests are conducted; Hausman Specification Test and Breusch Pagan Lagrangian Multiplier test. The Hausman specification test revealed chi 2 value of 4.08 with p-value of 0.1303 which is greater than 0.05. There is therefore no ground to reject the null hypothesis that random effects model is appropriate indicating the need to conduct Breusch Pagan Lagrangian Multiplier test. The result of the Breusch Pagan Lagrangian Multiplier test revealed a chibar2 value of 164.91 value with p-value of 0.000 which give us ground to reject the null hypothesis and conclude that random effects model is more appropriate. The robust option was used to control heteroscedastic nature of panel data which was evident from the Breusch Pagan/ Cook-Wiesberg test for heteroscedasticity that revealed a chi 2 value of 54.62 at p-value of 0.000. This is to ensure that estimates are not biased

**Table 5: Regression Results**

ROE	Coef.	z-value	p-value
Ltde	1.48	0.21	0.833
Tde	5.25	1.66	0.097*
Constant	4.22	3.21	0.001***
R-squared	0.13		
Wald chi <sup>2</sup> (2)	4.54		
Prob> chi <sup>2</sup>	0.00		
N	233		

Note: \*p<0.1, \*\*\*p< 0.01

Source: Stata Output (2019)

### Discussion of Results

From the panel data regression analysis, the study found that long term debt to equity ratio has positive effect on financial performance of studied firms with the coefficient 1.46 this means that a unit increase long term debt to equity ratio will improve performance by 1.46%. This was not however statistically significant at p-value of 0.833.

Also, the study found total debt to equity ratio to have significant positive effect on the financial performance of studied firm with the coefficient 5.25 and p-value of 0.097. This means that a unit increase total debt to equity ratio will improve performance by 5.25%

The constant with the coefficient 4.22 and p-value of 0.001 indicates that capital structure has significant positive effect on the performance of the firms under study. The r-squared which is the coefficient of determination of 13% means that 13% change in the financial performance of quoted manufacturing firms in Nigeria could be explained by change in capital structure of same.



### Summary of Findings

The general objective of the study was to establish the effect of capital structure on financial performance of quoted manufacturing firms in Nigeria. The study found out that capital structure has significant positive effect on financial performance of quoted manufacturing firms in Nigeria. The study also found out that the companies use less of long-term debt.

### Conclusion

This study was conducted to find out the effect of capital structure on financial performance of quoted manufacturing firms in Nigeria. The study found out that capital structure represented by debt to equity has significant positive effect on the financial performance of quoted manufacturing firms in Nigeria. On this note the study conclude that increasing debt to equity ratio of these firms will improve their performance

### Recommendation

- From the findings of this study, this study recommends that
- Manufacturing companies increase their debt-to-equity ratio as this will to improve its performance
  - The government of Nigeria encourages financial institutions in the regard of extending debt facilities to these firms, as this will improve the financial performance.

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