



Kaduna State University

**Journal of  
Management Science** Vol. 11 No. 2 December, 2025**CAPITAL STRUCTURE AND FIRM VALUE OF LISTED MANUFACTURING  
FIRMS IN NIGERIA**

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**Abstract**

*This study investigates the effect of capital structure on the firm value of listed manufacturing firms in Nigeria between 2015 and 2024. The study specifically examines the impact of equity financing and debt financing on firm value, measured using Tobin's Q. The research is anchored on the Traditional Theory of Financial Structure, which posits the existence of an optimal mix of debt and equity that minimizes the cost of capital and maximizes firm value. Secondary data were obtained from the annual reports and financial statements of selected manufacturing firms listed on the Nigerian Exchange Group (NGX). Descriptive statistics, correlation analysis, and panel regression techniques were employed to analyze the data. The findings reveal that both equity and debt financing significantly influence firm value, although the magnitude and direction of their effects vary across firms and periods. The results support the traditional theory that moderate leverage enhances firm value, while excessive reliance on debt leads to a decline in market valuation. The study concludes that a balanced capital structure promotes financial stability and investor confidence in the Nigerian manufacturing sector. It recommends that managers should pursue optimal leverage policies that align with firm-specific characteristics and market conditions, while policymakers should promote access to affordable long-term financing to strengthen the industrial sector's competitiveness and growth potential.*

**Keywords:** debt, equity, capital structure, firm value, firm size

**Introduction**

Capital structure represents one of the most fundamental decisions in corporate financial management because it determines how firms finance their assets, operations, and growth. It reflects the proportion of debt and equity used in financing the firm's total assets. The mix between equity financing and debt financing influences not only the firm's cost of capital but also its risk exposure, operational flexibility, and ultimately its value as perceived by investors. The central question of how firms should finance their operations whether through retained earnings, new equity issues, or debt has long been a major concern for corporate managers, investors, and policymakers alike.

According to Modigliani and Miller (1958), in a perfect capital market without taxes, bankruptcy costs, or asymmetric information, a firm's value is independent of its capital structure. However, subsequent studies have shown that in real-world situations, these assumptions rarely hold. Once taxes, information asymmetry, and agency costs are introduced, capital structure becomes relevant to firm value. For instance, debt financing provides tax advantages because interest payments are tax-deductible, but excessive reliance

on debt can lead to financial distress and bankruptcy. On the other hand, equity financing reduces financial risk and improves liquidity, but may dilute ownership and lead to agency conflicts if not managed effectively.

The balance between debt and equity is particularly important for manufacturing firms, which are typically capital-intensive and require significant investments in fixed assets such as machinery, equipment, and technology. In Nigeria, manufacturing firms play a critical role in economic diversification and industrial development. However, they operate within a volatile financial environment characterized by fluctuating interest rates, unstable exchange rates, inflationary pressures, and limited access to affordable long-term financing (Central Bank of Nigeria, 2023). These macroeconomic conditions have made financing decisions more complex and strategic for firm survival and growth.

Over the years, Nigerian manufacturing firms have experienced varying degrees of leverage and market valuation performance. Some firms rely heavily on debt to expand production, while others prefer equity-based financing to maintain financial stability. The outcome of these choices is often reflected in the firm's market value, which represents investors' confidence in its financial health and growth prospects. A popular indicator of this is Tobin's Q, defined as the ratio of the market value of a firm to the replacement cost of its assets. A Tobin's Q greater than one suggests that the market values the firm above the replacement cost of its assets, implying effective use of resources and strong investor confidence. Conversely, a Tobin's Q below one signals undervaluation or inefficient use of capital.

In the Nigerian context, the capital structure–firm value nexus has become increasingly relevant following economic reforms, exchange rate adjustments, and post-pandemic financial restructuring. Many listed manufacturing firms on the Nigerian Exchange Group (NGX) continue to experience low market capitalization despite large asset bases. This paradox raises questions about whether their financing strategies align with value maximization objectives. Moreover, the evolving financial landscape between 2015 and 2024 including policy reforms, interest rate volatility, and inflationary trends necessitates a renewed empirical assessment of how capital structure influences firm value.

Given the strategic importance of manufacturing to Nigeria's industrialization agenda, understanding how financing choices affect firm value is essential for managers, investors, and policymakers. Managers require insights into the financing mix that maximizes shareholder wealth, investors seek signals of firm quality through capital structure composition, and policymakers need evidence-based research to design supportive credit and capital market policies.

Despite the strategic importance of the manufacturing sector to Nigeria's industrialization and economic diversification agenda, the sector continues to struggle with poor financial performance and declining market value. Listed manufacturing firms in Nigeria are confronted with persistent challenges in choosing the optimal mix of debt and equity that maximizes their firm value. In recent years, many manufacturing companies have experienced declining share prices, low investor confidence, and inconsistent dividend payouts, raising concerns about whether their financing decisions are value-enhancing or detrimental.

One of the major practical problems is the high cost of borrowing and limited access to long-term credit. The Central Bank of Nigeria (2023) reported that average lending rates to the manufacturing sector remain above 20%, making debt financing expensive and risky. As a result, some firms, such as Dangote Sugar Refinery Plc, Flour Mills of Nigeria Plc, and

Cadbury Nigeria Plc, have resorted to heavy short-term borrowing to meet working capital needs, increasing their leverage ratios and exposure to financial distress. Conversely, firms like Nestlé Nigeria Plc and Nigerian Breweries Plc have relied more on retained earnings and equity financing, resulting in lower financial risk but sometimes slower asset growth. These contrasting approaches underscore the dilemma manufacturing firms face in balancing debt and equity to optimize firm value.

Furthermore, the unstable macroeconomic environment in Nigeria exacerbates the financing problem. Frequent exchange rate fluctuations, double-digit inflation, and volatile interest rates significantly affect the real cost of debt and investors' perception of firm value. For example, the Nigerian naira experienced substantial depreciation between 2015 and 2024, which increased the cost of servicing foreign-denominated debts and eroded the profitability of manufacturing firms that rely on imported raw materials (National Bureau of Statistics, 2024). Such macroeconomic instability discourages long-term debt financing and contributes to uncertainty in firms' valuation on the stock market.

Another critical issue is that many previous studies aggregate capital structure into a single leverage ratio without distinguishing between equity financing and debt financing as separate components. This limit understanding of how each financing source uniquely influences firm value. Additionally, most prior research used outdated data that do not capture recent economic disruptions, such as the COVID-19 pandemic, exchange rate unification reforms, and post-2020 inflationary shocks.

Given these realities, there is a pressing need to reassess how the composition of financing particularly equity and debt affects the firm value of listed manufacturing firms in Nigeria using a comprehensive and updated dataset (2015–2024). Understanding this relationship is essential for managers seeking to optimize financing decisions, investors aiming to evaluate firm performance, and policymakers working to enhance access to affordable capital in the manufacturing sector.

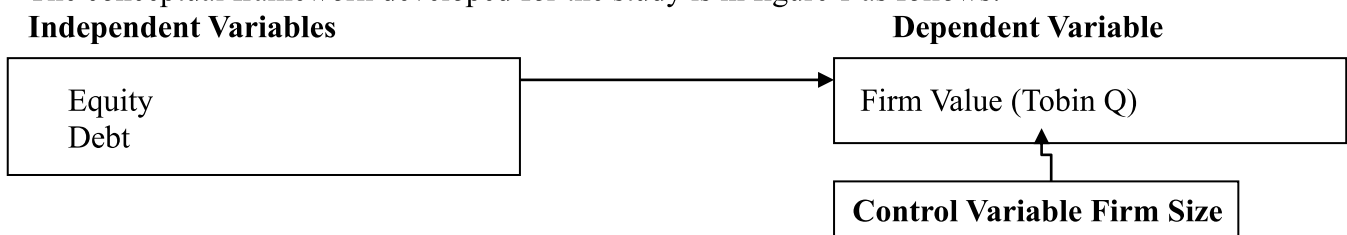
This study, therefore, addresses these gaps by empirically examining the effects of equity financing and debt financing on the firm value of listed manufacturing firms in Nigeria, measured through Tobin's Q, over a ten-year period. Thus, the general objective of this study is to examine the effect of capital structure on firm value of listed manufacturing firms in Nigeria between 2015 and 2024. Thus, the specific objectives are to:

- i. determine the effect of equity financing on the firm value of listed manufacturing firms in Nigeria.
- ii. examine the effect of debt financing on the firm value of listed manufacturing firms in Nigeria.

### **Literature Review**

### **Conceptual Framework**

The conceptual framework developed for the study is in figure 1 as follows:



**Source:** Generated by the Researcher, 2026.

Figure 1: Conceptual Framework.

## **Empirical Review**

### **Equity and Firm Value**

Akinyemi and Abdulrahman (2023) explored “The Effect of Capital Structure on Firm Value of Quoted Nigerian Firms” using the trade-off and pecking order theories. The study employed an ex post facto design and used secondary data obtained from NGX annual reports between 2012 and 2021. The sample consisted of 20 listed firms selected purposively, and panel regression analysis was performed. Findings revealed a positive and significant relationship between equity financing and firm value. The authors concluded that a balanced mix of equity and debt financing enhances firm value.

Bui and Nguyen (2024) in Vietnam investigated “Firm Size, Capital Structure, and Market Value: Empirical Evidence from Vietnam” using the trade-off theory. Employing a quantitative design and a sample of 80 listed firms between 2010 and 2020, the study used secondary data and applied multiple regression analysis. The results indicated that equity financing has a positive and significant influence on firm value, especially among large firms. The study emphasized the moderating role of firm size.

Olawale and Olayinka (2024) examined “Equity Financing and Market Valuation of Nigerian Manufacturing Firms” using the agency and pecking order theories. The study used a quantitative ex post facto research design and analyzed data from 25 listed manufacturing firms between 2014 and 2023. The data were obtained from annual financial statements and NGX factbooks. Using panel regression analysis, the findings revealed that equity financing positively and significantly affects firm value. The study recommended that firms maintain optimal capital structures that balance equity and debt.

Similarly, Fatima and Musa (2024) assessed “The Effect of Equity Financing on Firm Value in Nigerian Manufacturing Companies” underpinned by the signalling theory. The study adopted an ex post facto quantitative design using secondary data from 20 manufacturing firms from 2013 to 2022. Purposive sampling was used, and panel regression techniques were applied. Findings revealed that equity financing significantly influences firm value, suggesting that investors positively perceive equity-funded firms.

Finally, Bello and Hassan (2025) conducted “Capital Structure and Firm Value: Evidence from Emerging Markets” using a meta-analytical approach grounded in the Modigliani–Miller and trade-off theories. The study reviewed empirical evidence from 75 published articles across emerging economies and found that equity financing generally has a positive influence on firm value, particularly in markets with transparent regulatory environments. The study concluded that capital market development is essential for optimizing firm valuation.

### **Debt and Firm Value**

Igwe (2024) examined “Effect of Debt Financing on Firm Value of Listed ICT Firms in the Nigeria Exchange Group (NGX)” grounded in trade-off theory using an ex post facto panel research design; the study sampled listed ICT firms purposively (sample size reported in the paper), extracted annual report data for 2010–2022, used fixed and random effects regressions, and concluded that debt financing exerted a statistically significant effect on firm value in the ICT sector, but the sectoral focus limits generalizability to manufacturing.

Orji (2021) investigated “Effect of Debt Financing on Firms’ Performance in Nigeria” using a quantitative ex post facto design grounded in the trade-off framework; the population comprised Nigerian firms, with the paper drawing on secondary annual report data (sample

details given in the article), applying pooled OLS and panel regressions to show that debt financing improved measured financial performance indicators, though the study conflated performance and value measures.

Uddin et al. (2022) in “Leverage Structure Dynamics and Firm Value” applied dynamic panel techniques (GMM and PCSE) to examine how leverage composition affects firm value in Bangladesh; the research used a multi-industry panel (sample size reported in the article), sourced secondary financial and market data, and found that the dynamics of debt composition (short vs long term) matter for Q-based valuation, with strong robustness checks a useful methodological template for addressing endogeneity in the study.

### **Theoretical Framework**

There are a number of theories that explain the relationship between capital structure and financial performance. According to Durand (1959) in Pandey (2005) the three approach on assets are: Net income approach on assets. This approach on assets states that a firm's financial structure affects its value. This results from benefit arising from decrease in weighted average cost of capital (WACC) of funds used in the business. Net operating income approach, this approach states that financial structure of the firm does not affect its value. This is based on the assumption that WACC remains constant and the traditional approach. This approach states that cost of capital declines and value of the firm increase with leverage up to a prudent debt level.

After reaching the optimum point leverage causes the cost of fund to increase and value of the firm to decline. This study considered the effect of a structure of financing on financial performance of quoted insurance firms in Nigeria. Financial structure theories are reviewed in the following sub-heads. Also, this study is underpinned by traditional theory of financial structure.

### **The Traditional Theory of Financial Structure**

This theory holds the position that the cost of capital and an organization's total valuation are not independent of their capital structure. It maintains that there is an optimal capital structure and that the firm can increase its total value and reduce its cost of capital through judicious use of funds. There is an efficient combination of equity and debt financing which could bring about better financial performance by firms (Pandey, 2010). In the traditional view, the cost of capital decreases within some reasonable limits of debt and then increases if more debt is employed. However, at some point, the proportion of debt will become sufficiently large for the firm to become very risky to lend more to its business (Van Horne, 2006). This therefore raises the risk level for equity holders. This theory is criticized on the ground of the assumption that the cost of equity remains unaffected by use of debt up to some reasonable point is not true. It is also believed that the value of the firm depends on its net operating income and the risk attached to it. The form of financing can neither change the net operating income nor the risk it carries. It can only change their distribution between equity and debt holders. The theory has the credit of recognizing that an optimum capital structure exists. This is supported by the existence of market imperfections and tax deductibility of interest charges on debt which reduces the actual cost of debt to the firm.

### **Research Methodology**

The study employed an ex post facto and correlational research designs and a quantitative approach, relying on secondary data from financial reports of listed manufacturing firms in Nigeria. This design is appropriate since the variables under investigation already exist and cannot be manipulated. The population comprises 70 manufacturing firms listed on the

Nigerian Exchange Group (NGX) as of December 2024. Filter was used to select firms with complete data for the 10-year period (2015–2024). As a result, 14 manufacturing were dropped based on incomplete financial information within the period of the study.

**Table 1**

***Definition and Measurement of Variables***

| Variable         | Symbol | Measurement                                                                        | Type        | Expected Sign |
|------------------|--------|------------------------------------------------------------------------------------|-------------|---------------|
| Firm Value       | TQ     | (Market Value of Equity + Book Value of Debt) / Total Assets (Rahman et al. 2020). | Dependent   | —             |
| Equity Financing | EQF    | Total Equity / Total Assets (Pham, 2020).                                          | Independent | +             |
| Debt Financing   | DEF    | Total Debt / Total Assets (Rahman et al. 2020).                                    | Independent | ±             |
| Firm Size        | SIZE   | ln(Total Assets) (Pham, 2020).                                                     | Control     | +             |

**Source:** The Researcher, 2026.

The econometric model is specified as:

$$TQ_{it} = \beta_0 + \beta_1 EQF_{it} + \beta_2 DEF_{it} + \beta_3 SIZE_{it} + \varepsilon_{it}$$

Where:  $TQ_{it}$  = Firm value of firm  $i$  in year  $t$ ,  $EQF_{it}$  = Equity financing,  $DEF_{it}$  = Debt financing,  $\varepsilon_{it}$  = Error term

## Result and Discussions

### Descriptive Statistics

The descriptive statistics is presented in table 3 where the mean, standard deviation, minimum, maximum, kurtosis and skewness of the variables employed are described.

**Table 2**

*Descriptive Statistics*

| Variable         | Obs | Mean   | Std. Dev. | Min   | Max    |
|------------------|-----|--------|-----------|-------|--------|
| Tobin's Q        | 560 | 3.792  | 0.258     | 0.265 | 3.814  |
| Equity Financing | 560 | 0.806  | 0.054     | 0.215 | 0.814  |
| Debt Financing   | 560 | 0.758  | 0.081     | 0.152 | 0.782  |
| Firm Size        | 560 | 21.543 | 1.398     | 9.451 | 21.745 |

**Source:** Extracted from STATA 17 Output, 2026.

Table 2 reveals that firm value (Tobin's Q) has a mean of 3.79, suggesting that, on average, the market value of listed manufacturing firms in Nigeria is about 3.8 times greater than the book value of their assets. This indicates that investors generally have positive perceptions about the growth and profitability potential of these firms.

The mean value of equity financing (0.81) implies that most firms rely heavily on equity capital, which aligns with the relatively low debt appetite typical of Nigerian manufacturing

firms due to high interest rates and strict borrowing conditions. Conversely, debt financing has a mean of 0.76, indicating a moderate level of leverage. The minimum value of 0.15 and maximum of 0.78 suggest significant variation across firms, some are conservatively financed while others rely heavily on borrowings.

### Correlation Matrix

Table 4 presents correlation matrix of the study where the degree of association between the dependent variable and independent variables is determined as well as the association among the repressors themselves.

**Table 4**

*Correlation Matrix*

| Variables | TQ    | EQF   | DEF   | FSZ   |
|-----------|-------|-------|-------|-------|
| TQ        | 1.000 |       |       |       |
| EQF       | 0.489 | 1.000 |       |       |
| DEF       | 0.167 | 0.163 | 1.000 |       |
| FSZ       | 0.204 | 0.158 | 0.775 | 1.000 |

**Source:** Extracted from STATA 17 Output by the Researcher, 2026.

The correlation analysis shows that equity financing ( $r = 0.489$ ) is positively and moderately correlated with firm value. Debt financing ( $r = 0.167$ ) also shows a positive but weaker correlation with firm value. Moreover, the correlations linking the independent variables are insignificant, which indicate that this study's model is free from multicollinearity.

### Diagnostic Test

This section discussed the diagnostic test conducted so as to determine the reliability and validity of the inferential statistics from the regression model. The test consists of Multicollinearity test (that is tolerance value and variance inflation factor VIF) and Modified Wald Test for Groupwise Heteroskedasticity for heteroskedasticity.

**Table 3**

*Variance Inflation Factor Test*

| Variable | VIF  | 1/VIF |
|----------|------|-------|
| DEF      | 2.52 | 0.397 |
| FSZ      | 2.51 | 0.398 |
| EQF      | 1.03 | 0.971 |
| Mean VIF | 2.02 |       |

**Source:** Extracted from STATA 17 Output by the Researcher, 2026.

The VIF results show that all variables have VIF values below 10, and the mean VIF is 2.02, which indicates no multicollinearity problem (Gujarati & Porter, 2019). This means that each explanatory variable independently contributes to explaining variations in firm value without being linearly dependent on other variables. The slightly higher VIFs for debt financing and firm size (around 2.5) are expected, given their strong positive correlation, but remain within acceptable limits.

**Table 4***Modified Wald Test for Groupwise Heteroskedasticity*

| Test               | Chi <sup>2</sup> (56) | Prob > Chi <sup>2</sup> | Decision              |
|--------------------|-----------------------|-------------------------|-----------------------|
| Modified Wald Test | 65,512.36             | 0.0000                  | Reject H <sub>0</sub> |

**Source:** Extracted from STATA 17 Output by the Researcher, 2026.

The Modified Wald test has a chi-square statistic of 65,512.36 with a p-value of 0.0000, leading to the rejection of the null hypothesis of homoskedasticity. This indicates that the residuals across panels (firms) are heteroskedastic, meaning the variance of the error terms is not constant across firms. As a result, the Panel-Corrected Standard Errors (PCSE) regression model was appropriately applied to produce robust standard errors that correct for cross-sectional heteroskedasticity.

**Regression Results**

This section presents the result of the regression for the dependent variable, the independent variables. Henceforth, the summary of the regression result attained from the regression model of the study is presented in the Table 5.

**Table 5**

## Panel Corrected Standard Errors (PCSE) Regression Result

| Variable                | Coefficient | Z-Value | P-Value |
|-------------------------|-------------|---------|---------|
| Equity Financing        | 2.259       | 3.85    | 0.000   |
| Debt Financing          | -0.081      | -0.37   | 0.715   |
| Firm Size               | 0.028       | 1.75    | 0.080   |
| R-squared               | 0.256       |         |         |
| Wald Chi <sup>2</sup>   | 14.91       |         |         |
| Prob > Chi <sup>2</sup> | 0.002       |         |         |

**Source:** Extracted from STATA 17 Output by the Researcher, 2026.

The PCSE regression model explains 25.6% of the variation in firm value (Tobin's Q) across listed manufacturing firms in Nigeria, as shown by the  $R^2 = 0.256$ . The overall model is statistically significant (Prob > Chi<sup>2</sup> = 0.0019), indicating that the explanatory variables jointly influence firm value.

**Equity and Firm Value**

Table 5 shows that equity financing ratio has a positive and significant relationship with firm value of the listed manufacturing firms in Nigeria evidenced from p-value of 0.000 and coefficient of 2.259, which is significant at 5% level. This implies that in every N1 increase in equity financing ratio it will translate to an increase by 2.26% in the firm value of the listed manufacturing firms in Nigeria. Also, this outcome reveals that equity financing ratio is likely to significantly influence the firm value of listed manufacturing firms in Nigeria for the period of 2015 to 2024. This aligns with the researcher's apriori expectation, it also valid the traditional theory of financial structure. Hence, the result of this model rejected the formulated null hypothesis one of the study. In addition, the findings is in conflict with the work of Basit and Irwan (2017) & Dahiru (2016) but consistent to that of (Abdulwahab et al. 2023; Mohammed et al., 2022; Tanko et al., 2021 and Chechet & Olayiwola, 2014).

### Debt and Firm Value

Again, Table 5 revealed that debt financing ratio has a negative insignificant correlation with firm value of the sampled manufacturing in Nigeria evidenced from p-value of 0.715 and coefficient of -0.081. This signifies that in every N1 increase in DEBT it will lead to no effect on firm value of the listed manufacturing firms in Nigeria. This signifies that debt financing ratio does not influence firm value of listed manufacturing firms in Nigeria for the period 2015 to 2024. This does not align with the researcher's apriori expectation, it also invalid the traditional theory of financial structure. Hence, the result of this model fail to reject the formulated null hypothesis two of the study. In addition, the findings contradicts that of Abdulwahab et al. (2023), Mohammed et al., (2022) and Tanko et al. (2021) but it's in cohort with that of (Uremadu & Onyekachi, 2018).

### Conclusion ad Recommendations

This study concludes that: Equity financing ratio was found to be positive and significantly related with firm value of listed manufacturing firms in Nigeria for the period under review. Debt financing ratio was found to be negative and insignificantly related with firm value of listed manufacturing firms in Nigeria for the period under review.

In line with the findings of this study, the following recommendations were drawn: Manufacturing firms should focus on strengthening their equity base by reinvesting retained earnings, issuing new equity, or attracting strategic investors. A robust equity position enhances investor confidence, reduces bankruptcy risk, and ultimately improves firm value. Since debt financing was found to have an insignificant and negative effect on firm value, firms should adopt a conservative debt policy. Borrowing should be limited to productive investments that generate sufficient returns to cover interest obligations. Firms must also consider the prevailing macroeconomic conditions and exchange rate risks before increasing leverage.

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