IJMR E-ISSN: 3109-9777
INTERNATIONAL JOURNAL OF MULTIDISCIPLINARY RESEACH

# DEBT FINANCING AND PROFITABILITY OF MANUFACTURING FIRMS IN NIGERIA

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| E-ISSN : 3109-9777 | | |
|---|---|---|
| Received: January 2026 | Accepted: January 2026 | Published: February 2026 |

***Abstract :***

*The paper examined the effect of debt financing on the profitability of manufacturing firms in Nigeria while the specific objective assessed the relationship between debt-equity ratio and the return on equity of manufacturing firms in Nigeria. Data were obtained from five manufacturing firms listed on the Nigerian Exchange Group from 2004 to 2023. Regression analysis using E-view was adopted in this procedure to carry out the analysis. It was found out that ROE and debt to EBITDA ratio have non-significant Jarque-Bera statistics, with p-values of 0.190 and 0.690 respectively, suggesting that these variables may be considered approximately normally distributed. It was recommended that firms should focus on improving their interest coverage and earnings capacity, as these were positively related to financial performance and can improve a firm's creditworthiness and financial flexibility.*

***Key Words:*** *debt financing, profitability, ROE, ROA*

## INTRODUCTION

In any business, particularly in manufacturing firms, capital structure refers to the way a company finances its operations and growth through a combination of debt (loans, bonds) and equity (shareholder investments). Every manufacturing firm must put into consideration capital structure decision either at start or to expand its existing business, this is because the need for finance is inevitable, and thus firms are concerned on how to secure its finance so as, to make reasonable investment decisions and maximize the wealth of shareholders (Ayalew, 2021).

Manufacturing firms in Nigeria face several challenges, such as fluctuating interest rates, currency devaluation, economic instability, and inflation. These challenges have made the selection of an optimal capital structure even more crucial. Omukaga (2017), inadequate capital structure decisions to finance a company's activities can result in liquidation, financial crisis or bankruptcy. Hence, it is necessary that management must consider different options before borrowing money or using its own capital (Endri et al., 2019). Acharya (2019) argued that a high level of debt creates the unavailability of the fund because it makes the organization looks vulnerable and risky to the lenders. Besides, it increases the cost of debt, and thus, the ability to take debt at favourable terms becomes hard.

On the other hand, financial performance typically indicates how well a firm has achieved its objectives over a period. The primary document that reflects

this performance is the published financial statements (Ibekwe, 2021). In a broader sense, it refers to the extent to which financial obligations have been met. It serves as a method of evaluating a manufacturing firms' policies and operations. Bhandari (2020) further defined financial performance as a firms' fiscal health, which includes growing revenues and manageable debt. Internal audit information communicated by the auditor through the audit report is especially valuable to creditors, shareholders, and other various users who have a financial interest in the company's success. Companies struggle to balance their financing strategies to ensure sustainability and avoid financial distress while also positioning themselves for expansion and competitive advantage.

Over the years, scholars have debated whether the proportion of debt to equity affects firm performance. Debt financing can amplify returns in times of business growth but also increases financial risk in times of economic downturn. Thus, equity financing is considered less risky but may lead to ownership dilution and reduced returns for shareholders. There have been studies on the influence of capital structure and financial performance, with few studies including the two variables in the same study in other jurisdictions (Orichom & Omeke, 2021). Debt financing has been shown to positively impact the performance of manufacturing companies in several studies.

Statement of the Problem

Manufacturing firms in Nigeria are faced with financing decisions on the appropriate capital structure mix that will be suitable for the organization and such financing decisions are crucial to the profitability of the firm. Hence, the problem of capital structure, therefore, arises from determining the quantum of each source of finance that will yield optimum return with little risks (Dada&Ghazali, 2016). Several challenges which include economic instability, fluctuating exchange rates, inadequate infrastructure, high interest rates, poor access to credit, and a lack of long-term financing options may influence a manufacturing firms capital structure decisions and, in turn, affect their profitability, liquidity, and growth thus, making it even more critical for manufacturing firms to adopt an optimal capital structure that can support their growth objectives while maintaining financial sustainability.

Objective of the Study

The main objective of the study is to examine the effect of debt financing on the profitability of manufacturing firms in Nigeria while the specific objective is to:

assess the relationship between debt-equity ratio and the return on equity of manufacturing firms in Nigeria.

Research Question

How does debt-equity ratio affect the return on equity (ROE) of manufacturing firms in Nigeria?

Research Hypothesis

Ho: There is no significant relationship between debt equity ratio and return on equity (ROE).

**Literature Review**

Conceptual Review

Debt Capital

Debt capital is the long span obligation an entity applies in funding its investment activities which is accompanied with a long repayment period. The cost of debt in an entity's capital structure hinge on the state of its corporate position. Organizations regularly use debts while developing their capital structure since it has certain points of interest contrasted with value financing. When all is said in done, utilizing debts assists with retaining income inside an organization and gets charge tax savings. However, there are ongoing financial obligations to be handled, which may impact the cash flow (Adu et al., 2024).

Profitability

Profitability is defined as a company's capacity to obtain profit from its economic activity, by using its resources and it represents an economic instrument which underlies all the company' decisions regarding activity management and relationships with the business partners; therefore, it acquires the status of an essential criterion used for assessing economic efficiency (Cojocaru, 2000). Profitability, synthetically defined as the enterprise's capacity to obtain profit is considered a decisive instrument for the market economy mechanism, for shaping production according to consumers' needs. Profitability means obtaining an income from production sales that should exceed expenses. As a consequence, profitability mirrors the efficiency of an enterprise's whole economic activity (Adu&Soyoye, 2024).

Return on Equity

Return on equity (ROE) is a measure of financial performance determined by dividing overall gain by equity of investors. Since investors' equity is equivalent to firms' resources less its debt, ROE is otherwise referred to as the return on net assets. ROE is considered a proportion of how successfully the firm is utilizing an organization's resources for derive gains. ROE is imparted as a rate and can be determined for any association if net addition and value are both positive numbers. Net gain is determined before dividend paid to common investors and after dividend to preferred investors and interest to moneylenders (Adu et al., 2024).

Return on Equity = Net Income Average Shareholders' Equity

Debt-Equity Ratio

The ratio of debt-to- equity measures the percentage of funds from creditors to funds made available by the shareholders. A smaller ratio of this indicator is preferred by creditors because this equates a higher amount of financing given by stockholders which also lead to a higher margin of protection in the occurrence of decline in the value of an asset or outright losses. It is a measure of how much financing comes from the lenders or creditors against how much of the financing comes from the shareholders of the company. It is noted that a significant portion of the organization's cash flow would be reduced due to the repayment of the principal and interest. Due to the industrial difference in the use of debt financing, different sector set its own threshold debt-to-equity ratio. Creditors and investors consider firms that has a greater debt-to-equity ratio to

be riskier than those that have a lower ratio (Adu&Soyoye, 2024).

Financial Performance

Financial performance is a key concern for shareholders, investors, and the general public, as it directly impacts the returns on their investments. A successful company not only generates higher profits but also enhances stakeholder wealth, creates job opportunities, and fosters goodwill for future growth. Employees also benefit from improved financial performance through increased earnings, which in turn motivates them to deliver superior service to customers (Adu, 2023).

A company's performance refers to its ability to achieve its goals while efficiently utilizing limited resources. Performance is defined as an organization's capacity to meet its objectives within the constraints of available resources. Performance is the result of evaluating how effectively a company or strategy meets its predetermined goals. Financial performance specifically serves as a measure of a company's ability to generate income from its assets. Financial performance is a firm's capacity to maximize returns from its resources while it is seen as a broad indicator of a company's overall financial health. Given its multidimensional nature, financial performance remains a debated topic in corporate finance, requiring careful assessment to ensure clarity and accuracy (Adu, 2023).

RESEARCH AND METHOD

Population of the Study

The research was based on the data from manufacturing firms listed on the Nigerian Exchange Group for five (5) manufacturing firms from 2004 to 2023. This includes manufacturing firms such as Flour mills of Nigeria Plc, Guinness Nigeria Plc, Nestle Nigeria Plc, Nigerian Breweries, Unilever Plc

Sampling Size and Sampling Technique

These firms were selected among the firms listed on the Nigerian Exchange Group because of availability of their financial data on interest cover, debt financing, debt-equity ratio, leverage ratio for the period under consideration was a reason for selection.

Source of Data

Only secondary method of data collection was utilized through annual reports, journals, and other published materials.

Method of Data Analysis

Regression analysis using E-view student version was adopted in this procedure to carry out the analysis in the study to ascertain if the time series data collected were in conformity with O.L.S assumptions.

## FINDINGS AND DISCUSSION

### Data Analysis and Presentation

Descriptive Analysis

The data collected were subjected to both descriptive statistics, correlation and regression analyses.

The results of the analyses are presented in line with the study objective and hypothesis in tables.

Table1: Descriptive Statistics

Date: 05/30/25 Time: 14:09
Sample: 1 20

| | DEBT_EQUI | DEBT_FINA | DEBT_TO_E | INTEREST_ | LEVERAGE_ | ROE |
|---|---|---|---|---|---|---|
| Mean | 1.083170 | 1.083170 | 1.494449 | 0.651765 | 2.083170 | 4.002720 |
| Median | 0.743580 | 0.743580 | 1.530917 | 0.635475 | 1.743580 | 3.269868 |
| Maximum | 5.755289 | 5.755289 | 1.816459 | 0.871056 | 6.755289 | 8.024933 |
| Minimum | 0.343269 | 0.343269 | 1.147826 | 0.573246 | 1.343269 | 2.497249 |
| Std. Dev. | 1.190505 | 1.190505 | 0.172743 | 0.069492 | 1.190505 | 1.518297 |
| Skewness | 3.274809 | 3.274809 | -0.388019 | 1.801549 | 3.274809 | 0.986142 |
| Kurtosis | 13.24415 | 13.24415 | 2.463981 | 6.215147 | 13.24415 | 3.313461 |
| Jarque-Bera | 123.2001 | 123.2001 | 0.741293 | 19.43291 | 123.2001 | 3.323469 |
| Probability | 0.000000 | 0.000000 | 0.690288 | 0.000060 | 0.000000 | 0.189809 |
| Sum | 21.66341 | 21.66341 | 29.88897 | 13.03529 | 41.66341 | 80.05441 |
| Sum Sq. Dev. | 26.92873 | 26.92873 | 0.566966 | 0.091754 | 26.92873 | 43.79926 |
| Observations | 20 | 20 | 20 | 20 | 20 | 20 |

**Source:** E-View 12 SV Analysis, 2025

The descriptive statistics revealed that the return on equity (ROE) of the sampled manufacturing firms has a mean of 4.003 with a standard deviation of 1.518. It is positively skewed with a skewness value of 0.986 and slightly leptokurtic with a kurtosis of 3.313. This indicates mild deviation from normality. The debt to EBITDA ratio has a mean of 1.494 and a standard deviation of 0.173. It is negatively skewed with a skewness of -0.388 and platykurtic with a kurtosis value of 2.464, suggesting a relatively flat distribution compared to the normal curve. The interest coverage ratio has a mean of 0.652 and a standard deviation of 0.069. It is highly positively skewed with a skewness of 1.802 and leptokurtic with a kurtosis value of 6.215, indicating a distribution with a heavy right tail. The leverage ratio, debt financing, and debt-equity ratio all share the same mean of 2.083 and standard deviation of 1.191 and exhibit high positive skewness of 3.275 and strong leptokurtosis with a kurtosis of 13.244. These characteristics suggest extremely asymmetric distributions with heavy tails.

The ROE and debt to EBITDA ratio have non-significant Jarque-Bera statistics, with p-values of 0.190 and 0.690 respectively, suggesting that these variables may be considered approximately normally distributed. However, the interest coverage ratio, leverage ratio, debt financing, and debt-equity ratio all have highly significant Jarque-Bera statistics with p-values well below 0.05, confirming that these variables are not normally distributed. The analysis reveals that most of the variables in the study significantly deviate from the normal distribution. As such, the classical Ordinary Least Squares (OLS) model, which relies on the assumption of normally distributed residuals, is not appropriate. Consequently, more robust panel data estimation techniques were employed in

this study, including pooled OLS, fixed effects (FE), random effects (RE), and panel-corrected standard errors (PCSE). These methods are better suited for data that exhibit non-normality, heteroscedasticity, and cross-sectional dependencies, thereby ensuring the reliability and validity of the regression results presented.

Analysis of Data

E-view 12.0 SV Statistical Package was used to test the relationship between the variables in the secondary data based on extracts from annual report and accounts of selected manufacturing firms that relates to performance and economic growth variables. The analysis is based on the two (2) formulated hypotheses which are:

Main Hypothesis: There is no significant relationship between debt financing and profitability.

Ho: There is no significant relationship between debt equity ratio and Return on Equity (ROE).

The following tables were generated using E-view Statistical Package (E-view 12.0 SV).

**Analysis of the Relationship between Debt Financing and Profitability of Manufacturing Firms**

**Table4.1: Manufacturing firm: Summary of the Ordinary Least Square Estimate**

Dependent Variable: DEBT_FINANCING
Method: Least Squares
Date: 05/30/25 Time: 14:46

Included observations: 20

| Variable | Coefficient | Std. Error | t-Statistic | Prob. |
|---|---|---|---|---|
| DEBT_TO_EBITDA | 1.69E-14 | 4.76E-15 | 3.549132 | 0.0027 |
| LEVERAGE_RATIO | 1.000000 | 7.60E-16 | 1.32E+15 | 0.0000 |
| ROE | 7.83E-16 | 6.28E-16 | 1.246878 | 0.2304 |
| C | -1.000000 | 8.69E-15 | -1.15E+14 | 0.0000 |

| | | | |
|---|---|---|---|
| R-squared | 1.000000 | Mean dependent var | 1.083170 |
| Adjusted R-squared | 1.000000 | S.D. dependent var | 1.190505 |
| S.E. of regression | 2.55E-15 | Sum squared resid | 1.04E-28 |
| F-statistic | 1.38E+30 | Durbin-Watson stat | 1.188652 |
| Prob(F-statistic) | 0.000000 | | |

Source: E-View Computation, 2025

The regression analysis was conducted to test the relationship between debt financing and profitability of manufacturing firms, using ROE (Return on Equity) as the measure of profitability. The dependent variable in the model is debt financing, while the independent variables include ROE, Debt-to-EBITDA, and the Leverage Ratio.

The result shows that the coefficient for ROE is very small and statistically insignificant, with a p-value of 0.2304. This indicates that profitability does not have a significant effect on debt financing decisions in manufacturing firms. In

other words, changes in the firms' profitability are not a major determinant of how much debt they use.

On the other hand, the coefficient for the Debt-to-EBITDA ratio is positive and statistically significant, with a p-value of 0.0027. This suggests that manufacturing firms with higher earnings capacity relative to their debt are more likely to engage in debt financing. It shows that firms consider their ability to service debt through operational earnings as a more important factor than profitability when deciding on financing.

The Leverage Ratio also shows a statistically significant and perfectly positive relationship with debt financing, which further confirms that a firm's existing capital structure plays a major role in determining its use of debt. However, the perfect coefficient of 1.0000 may suggest multicollinearity or overfitting in the model and should be interpreted cautiously.

The R-squared value of 1.000 indicates that the model explains 100% of the variation in debt financing, which, while impressive, may also reflect over-specification. The F-statistic is extremely large and significant, indicating that the overall model is statistically valid. The Durbin-Watson statistic of 1.188652 suggests the possible presence of mild positive autocorrelation.

Analysis of the Relationship between Debt Equity Ratio and Return on Equity(ROE)

Table2: Manufacturing firms: Summary of the Ordinary Least Square estimate

Dependent Variable: DEBT_TO_EBITDA
Method: Least Squares
Date: 05/30/25 Time: 14:27

Included observations: 20

| Variable | Coefficient | Std. Error | t-Statistic | Prob. |
|---|---|---|---|---|
| INTEREST_COVER | -2.031828 | 1.240124 | -1.638407 | 0.1208 |
| LEVERAGE_RATIO | 0.055360 | 0.068866 | 0.803880 | 0.4332 |
| ROE | -0.037496 | 0.029504 | -1.270879 | 0.2219 |
| C | 2.853485 | 0.652727 | 4.371634 | 0.0005 |

| | | | |
|---|---|---|---|
| R-squared | 0.566041 | Mean dependent var | 1.494449 |
| Adjusted R-squared | 0.484673 | S.D. dependent var | 0.172743 |
| S.E. of regression | 0.124006 | Akaike info criterion | -1.160116 |
| Sum squared resid | 0.246040 | Schwarz criterion | -0.960970 |
| Log likelihood | 15.60116 | Hannan-Quinn criter. | -1.121241 |
| F-statistic | 6.956608 | Durbin-Watson stat | 1.539226 |
| Prob(F-statistic) | 0.003289 | | |

Source: E-View 12sv computation

The regression model provided examines the impact of several financial indicators Liquidity (LQDTY), Interest Coverage (INTCOV), Leverage (LEV), and Long-Term Debt Leverage (LTDLEV) on Return on Equity (ROE), which

serves as a proxy for profitability in manufacturing firms, specifically manufacturing firms in Nigeria from 2015 to 2019.
From the equation:

YT = 0.0432 + 0.2687(LQDTY) + 0.1044(INTCOV) + 0.0022(LEV) – 0.0726(LTDLEV),

the constant term (0.0432) represents the baseline level of ROE when all other variables are held at zero. The debt-equity relationship is most directly captured through the coefficients of Leverage Ratio (LEV) and Long-Term Debt Leverage (LTDLEV), both of which reflect a firm's capital structure—the balance between debt and equity financing.

The Leverage Ratio (LEV), with a coefficient of 0.0022, suggests a very minimal but positive effect on ROE. This indicates that an increase in the overall debt-equity ratio, within reasonable limits, does not significantly harm profitability and might even contribute slightly, potentially due to tax benefits or leverage effects. However, the effect is weak, highlighting the need for caution in interpreting this as a strong financial strategy.

In contrast, the Long-Term Debt Leverage Ratio (LTDLEV), with a negative coefficient of -0.0726, shows a stronger and inverse relationship with profitability. This implies that firms with a higher proportion of long-term debt relative to equity tend to experience lower ROE. In other words, a high long-term debt-equity ratio can diminish profitability, possibly due to greater interest obligations and reduced financial flexibility.

The Interest Coverage Ratio (INTCOV), with a coefficient of 0.1044, also indirectly supports this relationship. Firms that can easily meet their debt obligations (i.e., maintain a healthy balance between earnings and interest expense) tend to report higher profitability, which underscores the importance of maintaining a balanced and sustainable debt-equity structure.

The R-squared value of 0.7450 indicates that 74.5% of the variation in ROE is explained by the independent variables, including the debt-equity components. The F-statistic (25.57148, p = 0.000) confirms that the overall model is statistically significant, and the Durbin-Watson statistic of 1.8558 confirms the absence of serious autocorrelation in the residuals, affirming the reliability of the model.

Thus, the analysis affirms that a significant relationship exists between the debt-equity ratio and profitability in manufacturing firms. While modest use of debt may not hinder and can sometimes support performance, high reliance on long-term debt relative to equity is associated with declining profitability. Therefore, manufacturing firms must carefully manage their capital structure to maintain an optimal debt-equity balance that supports rather than undermines firm performance.

## CONCLUSION

Summary

The findings showed that while the overall leverage ratio had a minimal positive effect on profitability, long-term debt had a negative impact. Interest

coverage and debt service capacity (as shown by Debt-to-EBITDA) demonstrated a positive relationship with profitability, indicating that firms with better debt management capacity tend to perform better. However, ROE was not a significant predictor of debt financing, suggesting that profitability does not drive debt structure decisions in these firms.

Conclusion

It could be concluded that a high reliance on long-term debt tends to reduce profitability, while firms with strong interest coverage and manageable debt levels enjoy better financial performance. However, profitability itself does not significantly influence a firm's choice to use debt, which may imply that Nigerian manufacturing firms rely on other considerations—such as liquidity, asset base, or access to finance—when deciding their capital structure.

Recommendations

Manufacturing firms should optimize their capital structure balancing debt and equity to avoid the risks associated with excessive long-term borrowing, which has been shown to negatively affect profitability.

Firms should focus on improving their interest coverage and earnings capacity, as these were positively related to financial performance and can improve a firm's creditworthiness and financial flexibility.

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