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DEBT FINANCING AND FINANCIAL PERFORMANCE OF LISTED INDUSTRIAL GOODS COMPANIES IN NIGERIA

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Abstract

Debt financing remains one of the principal sources of external capital for companies, particularly in developing economies such as Nigeria, where limited access to equity financing compels companies to rely heavily on borrowed funds. Although debt financing provides opportunities for business expansion and investment in productive assets, excessive dependence on debt might increase financial risk and adversely affect profitability. This study evaluated the effect of debt financing on the financial performance of nine listed industrial goods companies in Nigeria for the period of 14 years from 2011-2024. Short-term debt to total assets, long-term debt to total assets, and debt-to-equity ratio were employed as proxies for debt financing, while return on assets was used as the proxy for financial performance. The study was anchored on the Trade-Off Theory of Capital Structure and adopted the ex-post facto research design. Secondary data were extracted from the published annual reports of the sampled companies, and the data were analyzed using random effects regression. The findings revealed that

Keywords: Debt financing, short-term debt, long-term debt, debt-to-equity ratio, return on assets, financial performance.

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short-term debt to total assets and long-term debt to total assets had positive and significant effect on return on assets, while debt-to-equity ratio had negative but significant effect on return on assets. The study concluded that debt financing significantly influenced the financial performance of the studied listed industrial goods companies in Nigeria. The study, therefore, recommended that managers should optimize the use of short-term and long-term debt for productive investments while maintaining an optimal debt-to-equity ratio to minimize financial risk and enhance profitability. This study contributes to the knowledge by providing empirical evidence on the optimal debt structure for improving the return on assets of listed industrial goods companies in Nigeria, thereby supporting informed financing decisions and sustainable growth in the industrial goods sector.

Introduction

Return on Assets (ROA) is one of the most widely accepted measures of financial performance because it evaluates the efficiency with which a company utilizes its total assets to generate profits. It reflects management's ability to convert investments in assets into earnings and is regarded as a key indicator of operational efficiency, profitability, and overall corporate performance. A higher ROA indicates effective utilization of available resources, while a lower ROA suggests inefficiencies in asset management and resource allocation. For companies operating in capital-intensive industries such as the industrial goods sector, maintaining a satisfactory ROA is essential for sustaining competitiveness, attracting investment, supporting expansion, and contributing to economic growth (Nnadi & Chukwu, 2020).

The industrial goods sector constitutes a vital component of Nigeria's economy through the production of capital goods and industrial inputs required for manufacturing, construction, and infrastructure development. The sector contributes significantly to industrialization, employment generation, technological advancement, and gross domestic product. However, achieving and sustaining satisfactory returns on assets has become increasingly challenging due to high operating costs, inflationary pressures, exchange rate volatility, inadequate infrastructure, and limited access to affordable long-term finance. These challenges are compounded by the underdeveloped nature of Nigeria's capital market, making deposit money banks (DMBs) the dominant providers of external finance for industrial companies (Adewale & Sanusi, 2021; Bello & Adekunle, 2019; Eze & Okoye, 2020).

To improve returns on assets and finance operational and capital investment requirements, companies rely on both internal and external sources of finance. External financing comprises equity financing and debt financing. While equity financing provides

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permanent capital through the issuance of shares, debt financing enables firms to obtain funds without diluting ownership, although it imposes contractual obligations for interest and principal repayment (Myers, 2001). Consequently, selecting an appropriate financing mix has become a critical strategic decision because the level and composition of debt influence firms' profitability, risk exposure, and long-term sustainability, as explained by capital structure theory (Modigliani & Miller, 1958).

Debt financing has attracted considerable scholarly attention because of its potential influence on firms' returns on assets. Short-term debt provides financing for working capital and day-to-day operations but might expose firms to refinancing and liquidity risks if excessively utilized. Long-term debt supports investment in fixed assets, expansion projects, and technological development, although increasing borrowing costs might reduce profitability when debt servicing obligations become excessive. Similarly, the debt-equity ratio measures the extent to which a firm's assets are financed through borrowed funds relative to shareholders' equity and serves as an important indicator of financial leverage and solvency. While moderate leverage might improve ROA through tax advantages associated with debt financing (Modigliani & Miller, 1963), excessive leverage might increase financial distress costs, reduce profitability, and constrain operational flexibility (Jensen, 1986).

In Nigeria, financing decisions have become increasingly complex due to persistent macroeconomic instability characterized by high interest rates, inflation, exchange rate depreciation, and limited access to long-term credit. These conditions have raised the cost of borrowing for listed industrial goods firms and increased debt servicing burdens, thereby affecting their ability to generate satisfactory returns on assets. Although debt financing remains an important source of capital for funding productive investments, the effectiveness of borrowed funds in enhancing ROA largely depends on firms' ability to deploy such resources efficiently (Afolabi et al., 2022; Bello & Adekunle, 2019).

Some studies report that debt financing enhances profitability and operational efficiency by promoting managerial discipline and reducing agency conflicts (Onyekwelu & Eze, 2018), whereas others find that excessive debt adversely affects profitability due to increased interest obligations and financial distress risks (Owolabi & Ajagbe, 2017). Furthermore, Nigeria's banking sector has experienced recurrent episodes of restructuring and tightening credit conditions, while the capital market continues to offer limited long-term financing alternatives for industrial companies (Okafor & Uche, 2021). Consequently, companies often face financing constraints that might encourage short-term financing decisions at the expense of long-term investments, although prudent utilization of debt might equally enhance productive capacity, operational efficiency, and shareholder value (Adeoye & Popoola, 2019). Since evidence from developed economies

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might not fully reflect Nigeria's institutional and macroeconomic realities (Abor, 2005), there is a need for country-specific empirical investigation.

Against this backdrop, this study evaluated the effect of debt financing, measured by short-term debt to total assets, long-term debt to total assets, and debt-equity ratio, on the return on assets of listed industrial goods companies in Nigeria. The study seeks to provide empirical evidence on whether these components of debt financing enhance or diminish asset utilization and profitability, thereby offering useful understanding for corporate managers, investors, policymakers, and other stakeholders in making informed financing and investment decisions.

Statement of the Problem

Debt financing remains the dominant source of external capital for companies in Nigeria, where the banking sector provides the largest share of corporate credit (Bello & Adekunle, 2019). For listed industrial goods companies, which require substantial capital investment in plants, machinery, and infrastructure, debt financing is essential for supporting operations and expansion (Adewale & Sanusi, 2021). However, the Nigerian financial environment is characterized by high lending rates, short loan maturities, stringent collateral requirements, exchange rate volatility, and inflationary pressures, all of which increase borrowing costs and debt servicing burdens (Afolabi et al., 2022; Okafor & Uche, 2021). Consequently, companies might experience declining profitability and financial sustainability despite increased access to borrowed funds (Owolabi & Ajagbe, 2017).

Recent evidence indicates that many listed industrial goods companies in Nigeria continue to operate with increasing leverage, but inconsistent financial performance, particularly in terms of profitability, liquidity, and market value (Ogunleye & Adedeji, 2023). Although debt financing is expected to improve performance through tax shield benefits (Modigliani & Miller, 1963), excessive leverage might increase financial risk, agency costs, earnings volatility, and the likelihood of financial distress (Jensen, 1986). Furthermore, the limited availability of alternative long-term financing instruments has compelled many companies to depend heavily on DMBs loans, exposing them to frequent interest rate adjustments and the possibility of short-term earnings management to satisfy debt obligations (Abor, 2005; Adeoye & Popoola, 2019; Myers, 2001; Okafor & Uche, 2021; Owolabi et al., 2022).

Although previous Nigerian studies have investigated debt financing, limited empirical evidence specifically explores how short-term debt to total assets, long-term debt to total assets, and debt-equity ratio influence the financial performance of listed industrial goods companies under Nigeria's current economic realities. This contextual and empirical gap necessitates further investigation to determine whether debt financing is being optimally

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utilized to enhance financial performance or whether increasing leverage is undermining companies' profitability through rising financing costs, financial risk, and liquidity pressures.

Objectives of the Study

The main objective of this study is to assess the effect of debt financing on the financial performance of listed industrial goods firms in Nigeria. The specific objectives are to:

(i) Investigate the effect of short-term debt on the return on assets of listed industrial goods companies in Nigeria.
(ii) Determine the effect of long-term debt on the return on assets of listed industrial goods companies in Nigeria.
(iii) Assess the effect of the debt–equity ratio on the return on assets of listed industrial goods companies in Nigeria.

Research Hypotheses

The following null hypotheses are formulated and tested in this study:

H_{01}: Short-term debt has no significant effect on the return on assets of listed industrial goods firms in Nigeria.
H_{02}: Long-term debt has no significant effect on the return on assets of listed industrial goods firms in Nigeria.
H_{03}: Debt–equity ratio has no significant effect on the return on assets of listed industrial goods firms in Nigeria.

Financial performance

Financial performance refers to the extent to which a firm efficiently utilizes its resources to achieve profitability, growth, and sustainability (Wooldridge, 2016). It serves as a key indicator of managerial effectiveness and operational efficiency and is central to stakeholders' decision-making processes. Financial performance can be measured using various indicators, including profitability ratios, liquidity ratios, and market-based measures. In this study, financial performance is measured using ROA because it captures how effectively a firm uses its total assets—both debt-financed and equity-financed—to generate profit.

Return on assets

Return on Assets is a profitability ratio computed as profit after tax divided by total assets. It measures the efficiency of asset utilization and reflects the combined effects of operational efficiency, financing decisions, and asset management (Gujarati & Porter, 2009). ROA is particularly relevant for industrial goods firms due to their heavy reliance on fixed assets such as plants, machinery, and equipment. A higher ROA indicates that management is effectively using available assets to generate earnings, while a lower ROA

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suggests inefficiency or excessive financial burden arising from debt servicing obligations. Debt financing influences ROA through interest expenses and asset expansion effects. When debt is invested in productive assets that yield returns above borrowing costs, ROA improves. Conversely, excessive debt reduces net income through high interest payments, thereby lowering ROA (Jensen, 1986).

Debt Financing

Debt financing is a major source of external finance through which firms obtain funds by borrowing, with a contractual obligation to repay both the principal and interest over an agreed period. It constitutes a critical component of a firm's capital structure and plays a significant role in determining corporate financial performance (Myers, 2001). Unlike equity financing, debt financing does not dilute ownership control, which makes it attractive to firm managers and shareholders who wish to retain decision-making authority.

In corporate finance literature, debt financing is often viewed as a strategic instrument that can either enhance or impair firm performance depending on its structure, cost, and utilization efficiency (Modigliani & Miller, 1958). When properly deployed, borrowed funds can increase a firm's productive capacity, support expansion, and improve profitability. However, excessive reliance on debt exposes firms to fixed financial obligations in the form of interest and principal repayments, thereby increasing financial risk and the likelihood of distress.

In the Nigerian context, debt financing remains a dominant financing option for listed industrial goods firms due to underdeveloped equity markets, high cost of equity capital, and limited access to long-term funds (Okafor & Uche, 2021). Industrial goods firms, such as cement manufacturers, steel producers, and construction material companies, are capital-intensive and require substantial funding to acquire heavy machinery, plants, and equipment. As a result, these firms often depend on a combination of short-term and long-term debt to finance operations and investments. However, Nigeria's volatile macroeconomic environment, characterized by high interest rates, inflation, and exchange rate instability, raises concerns about the sustainability and performance implications of debt financing (Adewale & Sanusi, 2021).

Short-term debt to Total Assets

Short-term debt refers to borrowings that are repayable within a period of one year or within the firm's operating cycle. It includes bank overdrafts, short-term bank loans, trade credit, accrued expenses, and other current liabilities used primarily to finance working capital needs (Abor, 2005). Short-term debt is widely used because of its accessibility, flexibility, and relatively lower transaction costs compared to long-term financing. Conceptually, short-term debt supports the day-to-day operational activities of firms by ensuring liquidity for inventory procurement, payment of wages, settlement of trade

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obligations, and maintenance of production flow (Owolabi & Ajagbe, 2017). For industrial goods firms, efficient management of short-term debt can enhance operational efficiency and asset utilization, which may positively influence return on assets.

However, excessive dependence on short-term debt exposes firms to significant liquidity and refinancing risks. Frequent repayment obligations may strain cash flows, especially during periods of declining sales or economic downturns (Bello & Adekunle, 2019). Additionally, using short-term debt to finance long-term assets can result in maturity mismatch, where assets generate returns over a longer period than the debt repayment schedule. Such mismatch can negatively affect financial performance and increase the probability of financial distress. In Nigeria, short-term debt dominates corporate financing due to banks' preference for short-tenure lending and the perceived risk associated with long-term loans. This situation raises critical questions about how short-term debt influences the financial performance of listed industrial goods firms, particularly in relation to asset profitability.

Long-term debt to Total Assets

Long-term debt consists of borrowings with repayment periods exceeding one year and is typically used to finance fixed assets, expansion projects, and long-term strategic investments (Modigliani & Miller, 1963). Examples include long-term bank loans, corporate bonds, debentures, lease obligations, and development finance loans. From a conceptual standpoint, long-term debt is considered more appropriate for capital-intensive firms because it aligns the maturity of financing with the economic life of assets, thereby reducing refinancing pressure and liquidity risk (Myers, 2001). Long-term debt also provides tax advantages through interest deductibility, which can improve after-tax profitability and enhance return on assets.

Despite these benefits, long-term debt increases fixed financial commitments and may negatively affect firm performance if investment returns fall below the cost of borrowing (Jensen, 1986). High long-term leverage can restrict managerial flexibility, increase agency costs, and expose firms to insolvency risk during adverse economic conditions. In Nigeria, access to long-term debt is constrained by weak financial markets, stringent lending conditions, and high interest rates. Consequently, firms that obtain long-term debt must utilize such funds efficiently to justify the associated costs. The extent to which long-term debt contributes positively or negatively to the financial performance of listed industrial goods firms remains an empirical issue that necessitates careful investigation.

Debt–equity ratio

The debt–equity ratio is a leverage indicator that measures the proportion of total debt relative to shareholders' equity in a firm's capital structure (Gujarati & Porter, 2009). It reflects the degree of financial risk and the extent to which a firm relies on borrowed funds to finance its assets. Conceptually, a moderate debt–equity ratio indicates balanced financing and optimal leverage, which may enhance asset productivity and financial

performance. The use of debt can magnify returns on assets through financial leverage, provided that the returns generated exceed the cost of debt (Modigliani & Miller, 1963). However, a high debt–equity ratio suggests excessive reliance on debt, increasing interest burden, financial risk, and vulnerability to economic shocks (Owolabi & Ajagbe, 2017).

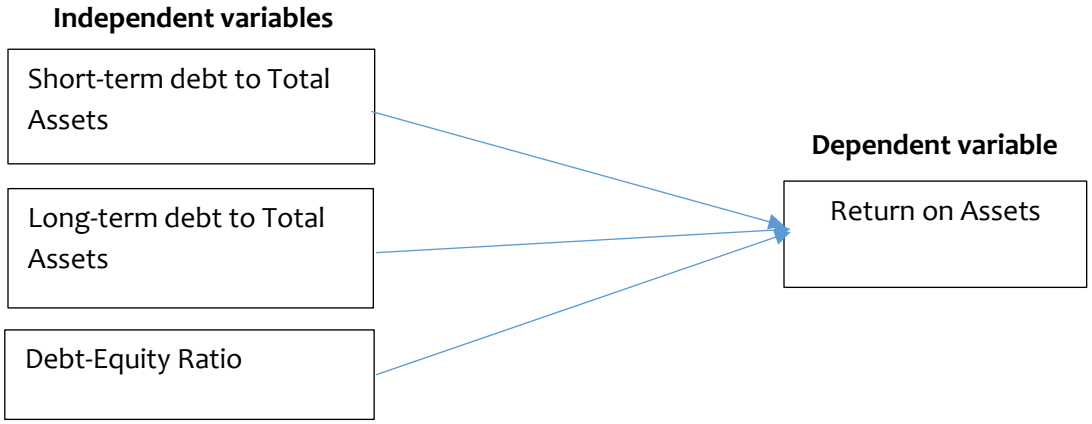
In the Nigerian industrial sector, fluctuations in interest rates and macroeconomic instability amplify the risks associated with high leverage levels. Firms with excessive debt–equity ratios may experience declining profitability, reduced investor confidence, and limited access to additional financing. Therefore, examining the debt–equity ratio is essential for understanding the overall impact of debt financing on firm performance.

Conceptual Framework of the Study

The study conceptualizes that short-term debt to total assets, long-term debt to total assets, and debt–equity ratio influence return on assets of listed industrial goods companies in Nigeria. Short-term debt to total assets affects liquidity and operational efficiency, long-term debt to total assets influences capital investment and tax benefits, while debt–equity ratio captures the overall leverage and financial risk position of companies. The combined interaction of these variables determines the extent to which debt financing enhances or diminishes asset profitability. The conceptual framework also illustrates the theoretical relationship between debt financing components and financial performance of listed industrial goods companies in Nigeria. The conceptual framework is developed based on capital structure theories and empirical finance literature, which suggest that a firm's financing decisions significantly influence its financial performance. The framework assumes that the structure, maturity, and proportion of debt financing adopted by listed industrial goods firms in Nigeria directly affect how efficiently assets are utilized to generate profit.

This relationship is depicted in Figure 1.

Figure 1: Conceptual framework of Debt Financing and Financial Performance



Source: Kanji et al. (2025)

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Theoretical Framework

The theoretical framework provides the foundation upon which this study is built by explaining the relevant theories that guide the relationship between debt financing and financial performance of firms. It offers a logical explanation of how and why short-term debt, long-term debt, and debt–equity ratio influence return on assets (ROA) of listed industrial goods firms in Nigeria. This study is anchored primarily on the Trade-Off Theory of Capital Structure, while also drawing insights from the Pecking Order Theory and the Agency Cost Theory to enrich understanding.

Trade-Off Theory of Capital Structure

The Trade-Off Theory was developed by Modigliani and Miller (1963) following their earlier irrelevance proposition, and was later expanded by scholars such as Kraus and Litzenberger (1973). The Trade-Off Theory posits that firms determine their optimal capital structure by balancing the benefits of debt financing against its associated costs. According to the theory, firms trade off the tax advantages of debt, particularly interest tax shields, against the costs of financial distress, such as bankruptcy risk, agency costs, and loss of operational flexibility (Modigliani & Miller, 1963).

The theory argues that debt is beneficial up to a certain point because interest payments are tax-deductible, which reduces taxable income and enhances firm profitability. However, beyond an optimal level, excessive debt increases the probability of financial distress, leading to higher costs that can outweigh the benefits of borrowing. Therefore, firms are expected to seek an optimal debt level that maximizes firm value and financial performance.

The Trade-Off Theory is most appropriate for this study because it directly explains the non-linear relationship between debt financing and financial performance. Listed industrial goods firms in Nigeria operate in a capital-intensive environment and rely heavily on debt to finance large asset bases. The theory provides a strong framework for examining how short-term debt, long-term debt, and debt–equity ratio can either improve or impair return on assets, depending on whether debt levels are within or beyond the optimal range. Given Nigeria's high interest rates, volatile economic environment, and exposure to financial risk, the balance between debt benefits and distress costs is critical. The Trade-Off Theory, therefore, offers a robust explanation of how debt financing decisions affect asset profitability and justifies its adoption as the anchor theory for this study.

Pecking Order Theory

The Pecking Order Theory was proposed by Myers and Majluf (1984) and later refined by Myers (2001). The Pecking Order Theory argues that firms follow a hierarchical order in

financing decisions due to information asymmetry between managers and external investors. According to the theory, firms prefer to finance investments first with internal funds (retained earnings), then with debt, and finally with equity as a last resort. The rationale is that internal funds do not require external scrutiny and incur no issuance costs. When internal funds are insufficient, firms resort to debt because it is less sensitive to information asymmetry compared to equity. Equity issuance is avoided because it may signal overvaluation and dilute ownership control.

The Pecking Order Theory explains why listed industrial goods firms in Nigeria might rely more on debt financing rather than equity. Due to underdeveloped capital markets and high equity issuance costs, firms often resort to short-term and long-term debt to finance asset expansion. While debt may improve ROA when efficiently utilized, excessive borrowing can reduce profitability through interest burden. Thus, the theory complements the Trade-Off Theory by explaining why firms choose debt, while the Trade-Off Theory explains how much debt is optimal.

Agency Cost Theory

The Agency Cost Theory was developed by Jensen and Meckling (1976) and later expanded by Jensen (1986). The Agency Cost Theory focuses on conflicts of interest between managers (agents) and shareholders (principals). According to the theory, managers may pursue personal interests such as empire building, excessive perks, or inefficient investments, which may not align with shareholders' wealth maximization objectives. Debt financing plays a disciplinary role by reducing free cash flow available to managers, thereby limiting wasteful spending. Interest and principal repayment obligations compel managers to use resources efficiently, which can improve firm performance. However, excessive debt may also introduce conflicts between shareholders and debt holders, leading to underinvestment or risk-shifting behaviors.

In the context of Nigerian listed industrial goods companies, debt financing could serve as a governance mechanism that disciplines management and enhances asset efficiency, thereby improving ROA. However, high leverage levels might also increase agency conflicts and financial distress costs, negatively affecting performance. This dual effect reinforces the relevance of exploring debt structure and leverage in relation to financial performance.

In assessing the effects of debt financing on the financial performance of listed industrial goods companies in Nigeria, this study adopts the Trade-Off Theory of Capital Structure as its anchor theory. This choice is justified by the nature of the study variables, the characteristics of the Nigerian industrial goods sector, and the explanatory strength of the theory in accounting for both the benefits and costs of debt financing. The Trade-Off Theory provides a comprehensive framework for understanding how companies

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determine their optimal capital structure by balancing the advantages of debt financing against its associated risks. Unlike other capital structure theories that emphasize either financing preference or agency control, the Trade-Off Theory explicitly recognizes that debt has dual effects on financial performance. On the one hand, debt financing offers significant benefits, such as tax shields arising from the deductibility of interest expenses, which could enhance profitability and improve return on assets. On the other hand, excessive debt increases the likelihood of financial distress, raises bankruptcy risk, and imposes fixed financial obligations that might erode firm performance. This balanced perspective makes the theory particularly suitable for analyzing the relationship between debt financing and return on assets.

The relevance of the Trade-Off Theory is further reinforced by the capital-intensive nature of listed industrial goods companies in Nigeria**.** Companies in this sector require substantial long-term investments in plants, machinery, and equipment, which often necessitate reliance on external financing. As a result, decisions regarding the mix of short-term debt, long-term debt, and equity are critical to their operational sustainability and financial performance. The Trade-Off Theory offers a logical explanation of how these companies could benefit from debt financing up to an optimal level, beyond which additional borrowing might become counterproductive. This directly aligns with the study's objective of evaluating how different forms of debt financing affect return on assets.

In addition, the Nigerian business environment is characterized by high interest rates, macroeconomic volatility, inflationary pressures, and exchange rate instability**.** These conditions significantly increase the cost of borrowing and amplify the risks associated with excessive leverage. The Trade-Off Theory explicitly incorporates financial distress costs into its framework, making it particularly relevant in an economy where borrowing risks are pronounced. By adopting this theory, the study is able to contextualize debt financing decisions within Nigeria's economic realities and explain why the same level of debt might have different performance implications across companies and periods.

Empirical Review

This section reviewed some of the empirical studies conducted on the effect of debt financing on financial performance. The essence of the assessment is to identify the period scope, variables used and the techniques of data analysis employed so that gaps inherent in the studies could be clearly identified.

Aniefor and Onatuyeh (2019) assessed the effect of debt finance choices on the financial performance of 15 consumer goods companies listed in Nigeria for the period of 12 years from 2006 to 2017. Debt finance was represented by long-term debt to total assets ratio (LTDS), short-term debt to total assets ratio (STDS), and total debt to total assets ratio

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(TATS), whereas financial performance was represented by ROA. Firm size, represented by log of total assets, was applied as control variable. Ordinary least squares (OLS) regression was utilized for analysis of data. Results of the study revealed that LTDS and TATS had negative and insignificant effect on ROA, while STDS had negative but significant effect on ROA. Based on these findings, the study recommended that the studied companies should rely less on short-term debts, which forms the major part of their leverage, and focus more on developing internal strategies that could help improve their performance.

Another African study by Manzano (2019) evaluated the effect of debt financing on the financial performance of 35 non-financial companies listed on the Nairobi Securities Exchange (NSE) for the period of five years between 2014 and 2018. Debt financing was measured by debt to total assets ratio, while financial performance was measured by ROA. Liquidity, firm size and tangibility were applied as control variables. Data were analyzed using OLS regression. The results showed that debt to total assets ratio exhibited negative and insignificant effect on ROA. The study concluded that increase in debt financing lowered financial performance in the sampled companies. The study, therefore, recommended that management of the studied companies should ensure they hold optimum debt levels to ensure that they do not affect other functions of the companies.

In Pakistan, Abbas et al. (2020) investigated the effect of debt financing on the financial performance of three airlines for the period of 11 years from 2008 to 2018. Short-term debt to total assets (STDTA), long-term debt to total assets (LTDTA), and total debt to total assets (TDTA) were employed as proxies for debt financing, while earnings per share (EPS) and ROA were applied as measures of financial performance. Firm size was utilized as control variable. OLS regression was used for analysis of data. The result showed that, for the EPS model, STDTA exhibited negative and insignificant effect, while LTDTA and TDTA exhibited negative but significant effect. For the ROA model, STDTA and TDTA exhibited positive but insignificant effect, while LTDTA exhibited negative and insignificant effect. The study concluded that there was an inverse relationship between the performance of the airlines and debt as higher level of debt caused the decline in the performance of the airlines. The study recommended that the studied airlines should focus on their internal sources of financing.

In another Nigerian study, Akaji et al. (2021) evaluated the effect of debt financing on the financial performance of 20 listed oil and gas, health care and ICT companies for the period of eight years spanning from 2013-2020. The study measured debt financing using long-term debt financing (LTDF), short-term debt financing (STDF) and preferred stock financing (PSF), while financial performance was measured using Return on equity (ROE). OLS regression was used for analysis of data. The findings showed that LTDF and STDF

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had positive and significant effect on ROE, whereas PSF had negative and insignificant effect on ROE. The study concluded that debt financing improved financial performance over the years, and based on this conclusion, the study recommended that companies should finance their investment activities with debts, and consider equity as a last option.

Tan et al. (2021) assessed the effect of debt level on the financial performance of 50 Malaysian listed companies within the property sector during a five-year period covering 2015 to 2019. Accounts payables (AP), Short-term debt (STD), and long-term debt (LTD) were employed to measure debt level, while ROA was utilized as proxy for financial performance, and firm size was applied as a control variable. Fixed-effects regression was used to analyze data. The results indicated that AP had a negative and insignificant effect on the ROA of the studied companies. This means that an increase in AP reduced ROA, but the reduction was not large enough to affect the ROA. On the other hand, STD and LTD had positive but insignificant effect on ROA, which means that the increase in the STD and LTD led to an increase in the return on assets, although the increase was not large.

Another Nigerian study by Meshack et al. (2022) explored the effect of long-term debt financing on the financial performance of 75 listed manufacturing companies in Nigeria for the period of 10 years from 2010-2019. Long-term debt was measured by long-term debt to total assets ratio (LTDE), total equity to total assets ratio (TETA) and long-term debt to total equity ratio (LTDA), while financial performance was measured by ROE and Tobin's Q (TOBINQ). Fixed effects regression was employed for analysis of data. The study revealed that LTDE had positive and significant effect on ROE, but positive insignificant effect on TOBINQ, while LTDA had negative but significant effect on ROE and TOBINQ. TETA had positive and significant effect on ROE, but positive insignificant effect on TOBINQ. The study recommended that companies should engage in long-term debt productively and reduce the agency cost that accompanies debt financing, such as the opportunity for managerial opportunism and inefficient use of debts due to their long maturity characteristic.

Ali and Shaik (2022) investigated the influence of debt financing on the financial performance of four Saudi Arabian oil companies listed on the Tadawul, the stock exchange of Saudi Arabia, between 2012 and 2019. Debt financing was assessed by debt-equity ratio (DE), while financial performance was evaluated by ROA and ROE. Data for the study were taken from yearly accounts issued by the sampled companies. Current ratio (CR) was also incorporated as an interaction variable in the study. Fixed effects and random effects regression were used for analysis of data. For the ROA model, DE had negative but significant effect, but when CR was introduced, DE had positive but insignificant effect. For the ROE model, DE had negative but significant effect, and when CR was introduced, the result was still negative but significant. The findings indicated that

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debt financing had a detrimental influence on financial performance. Even after accounting for the interaction variable, the effect remained negative.

Abuamsha and Shumali (2022) studied the effect that debt structure had on the financial performance of 41 companies listed on the Palestinian Exchange (PEX). The companies cut across the insurance, investment, industrial and services sectors. Debt structure was measured by long-term debt, short-term debt and total debt, while financial performance was measured by ROA. Firm size, measured as the natural logarithm of revenue value, was introduced as a control variable. OLS regression was used for analysis of data. Findings of the study revealed that long-term debt had positive and significant effect on ROA, while short-term debt and total debt had positive but insignificant effect on ROA. The study concluded that Palestinian companies could increase their performance rates by relying on long-term debt financing. The study, therefore, recommended that the studied companies should depend on properly balanced long-term debts to increase their revenue.

Another Nigerian study by Bamgboye (2024) investigated the effect of debt financing on the financial performance of 13 listed DMBs in Nigeria for the period of 10 years spanning 2014-2023. Debt financing was proxied by debt-equity ratio (DER), debt ratio (DR) and total liability (TL), whereas financial performance was proxied by ROA and ROE. Fixed effects regression was used for analysis of the ROA model, while random effects regression was used for analysis of the ROE model. Findings for the ROA model revealed that DER and DR had negative and insignificant effect, which implied that a high level of debt is not beneficial for the DMBs as it could hinder their ability to generate sustainable profits and increase their vulnerability to financial instability. TL had positive but insignificant effect, which indicated that having an appropriate level of liabilities could actually benefit DMBs by allowing them to leverage capital efficiently and generate higher ROA. For the ROE model, DER had positive and significant effect, indicating that equity financing might be a more sustainable option for DMBs looking to maintain or improve their profitability ratios. DR had negative but significant effect, indicating that increasing debt level could result in a reduction in DMBs' ROE. This suggests that while debt financing might provide short-term benefits in terms of capital availability, it might have a detrimental influence on the overall financial performance of DMBs. The study concluded that debt financing management had a major effect on the financial performance of the studied DMBs, and, therefore, recommended that DMBs should focus on optimizing prudent debt financing practices to effectively manage their loan to deposit ratios, and strategically use debt to enhance asset utilization and profitability.

Efemena and Augustine (2024) evaluated the effect of debt financing on the financial performance of 10 listed manufacturing companies in Nigeria for the period of four years covering 2019 to 2022. Debt financing was measured by STD, LTD and DR, while financial

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performance was measured by ROE and EPS. Random effects regression was employed for analysis of data for the ROE model, whereas fixed effects regression was applied for the EPS model. For the ROE model, the result revealed that STD had a negative but significant effect, LTD had a positive and significant effect, while DR had a negative and insignificant effect. For the EPS model, STD had a positive but insignificant effect, whereas LTD and DR had negative but significant effect. The study concluded that, STD had negative significant effect on ROE, which implies higher risks and costs in the short run. Conversely, LTD positively affected ROE, suggesting that strategic, longer-term financing could enhance profitability. This highlights the importance of balancing debt structure to optimize corporate performance. STD and LTD had negative but significant effect on EPS, which implied that higher debt levels, especially long-term obligations, could dilute shareholder returns. The study, therefore, recommended that manufacturing companies should aim to reduce reliance on short-term debt, as it negatively impacts ROE due to higher interest rates and repayment pressures. Instead, companies should consider increasing long-term debt, which positively affects ROE by providing stable, lower-cost financing over extended periods. A balanced debt structure, with strategic use of long-term financing, could help companies enhance profitability while maintaining financial flexibility and managing risks effectively.

Ogbu et al. (2025) looked at how the ROA of 11 listed DMBs in Nigeria was affected by total debt to total assets (TDTA), and long-term debt to total assets (LTDTA) for the period of 10 years between 2014 and 2023. Firm size (FMS) and firm age (FMA) were employed as control variables. Random effects regression was used for analysis of data. The results showed that TDTA had negative but significant effect on ROA, suggesting that excessive reliance on debt reduces profitability due to increased interest expenses and financial distress, whereas LTDTA had positive and significant effect on ROA, implying that long-term financing supports business expansion and enhances profitability when properly managed. The study concluded that debt financing has a significant impact on the financial performance of listed DMBs in Nigeria, and, therefore, recommended that DMBs should use debt more sparingly in order to prevent debt traps that could jeopardize their ability to continue operating in the event of default.

Saborogha et al. (2025) assessed the effect of debt structure on the financial performance of five DMBs in Nigeria over a 10-year period between 2009 and 2018. The study assessed how short-term debt to total assets (SDTA) and long-term debt to total assets (LDTA) affected ROA. Data were analyzed using fixed effects regression. The results showed that both SDTA and LDTA had positive but statistically insignificant effect on ROA, suggesting that while Nigerian DMBs relied heavily on short-term debt financing, neither short-term debt nor long-term debt significantly influenced profitability. Based on the findings, the study recommended that bank managers and shareholders should critically evaluate their

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debt composition, focusing on cost-effectiveness and strategic alignment; and encouraged investors to consider the debt structure of banks as a factor influencing expected returns. The results challenge conventional theories suggesting a strong link between capital structure and performance, indicating that in Nigerian banks, other variables might play more dominant roles in shaping profitability.

Kanji et al. (2025) investigated the influence of debt financing on the financial performance of four East African countries' (Kenya, Rwanda, Tanzania and Uganda) listed non-financial companies for the period of 10 years from 2011–2020. The study measured debt financing by debt/assets ratio, while financial performance was measured by ROA and EPS. OLS regression was used for analysis of data. Results showed that debt/assets ratio had negative but significant effect on ROA in all the four countries. For the EPS model, Debt/Assets ratio had positive but insignificant effect in Kenya and Tanzania, negative but significant effect in Rwanda, and negative and insignificant effect in Uganda. The study concluded that, by concentrating on the cost and benefit analysis of debt, trade-off theory forecasts the ideal debt ratio that contributes to maximizing a company's value. The study, therefore, recommended that the studied companies should seek out tactics that boost their assets so as to increase their working capital financing as their total assets increased.

Gap in the Empirical Review

Previous Nigerian studies concentrated on sectors other than the industrial goods sector. Aniefor and Onatuyeh (2019) focused on consumer goods companies, Akaji et al. (2021) evaluated oil and gas, healthcare and ICT companies, Bamgboye (2024), Ogbu et al. (2025), and Saborogha et al. (2025) investigated DMBs, while Efemena and Augustine (2024) studied manufacturing companies generally. Although Meshack et al. (2022) investigated manufacturing companies, the study emphasized long-term debt financing rather than the overall debt structure. Consequently, there is limited empirical evidence focusing specifically on listed industrial goods companies in Nigeria, despite their capital-intensive nature and significant contribution to economic development. This study, therefore, filled the sectoral gap by studying the debt structure and its effect on financial performance of the industrial goods sector in Nigeria.

Methodology

This study adopted the ex-post facto research design. This design is appropriate because the study relied on historical data obtained from published financial statements, and the variables under investigation could not be manipulated by the researcher. The population of the study comprises all the 13 industrial goods companies listed on the Nigerian Exchange Group (NGX) as at 31 December, 2024. These companies operate in capital-

intensive industries such as cement manufacturing, building materials, and industrial production, making them suitable for examining debt financing decisions. The study adopted a purpose or judgmental sampling technique, where all listed industrial goods companies with complete and accessible financial data over the study period were selected. Companies with incomplete annual reports, inconsistent listing status, or missing key variables were excluded to ensure data reliability and consistency. Consequently, a sample size of nine companies was adopted.

The study relied solely on secondary data, which were extracted from published annual reports and accounts of the sampled companies. Data on debt financing were extracted from the statement of financial position, while data on financial performance were extracted from the statement of comprehensive income. The data covered a 14-year period from 2011–2024 to capture variations in debt structure and financial performance across different economic conditions, such as changes in interest rates, inflation, and exchange rate movements that affect financing decisions in Nigeria. Debt financing was measured using Short-Term Debt to Total Assets (STDTA), Long-Term Debt to Total Assets (LTDTA), and Debt-to-Equity Ratio (DER), while financial performance was proxied by ROA. The study was geographically limited to Nigeria and sectorally restricted to listed industrial goods companies. Random effects regression was adopted to analyze the data of the study.

Model Specification

To assess the effect of debt financing on financial performance, the study applied the following econometric model:

$$ROA_{it} = \beta_0+\beta_1 STDTA_{it}+\beta_2 LTDTA_{it}+\beta_3 DER_{it}+\varepsilon_{it}$$

Where:

ROA_{it} = Return on Assets of company i at time t

$STDTA_{it}$ = Short-Term Debt to total assets of company i at time t

$LTDTA_{it}$ = Long-Term Debt to total assets of company i at time t

DER_{it} = Debt–Equity Ratio of company i at time t

β_0 = Intercept/Constant (The average amount the dependent variable increases when an independent variable increases by one unit, other independent variables held constant).

β_1,β_2,β_3, = Coefficients of the explanatory variables

ε_{it} = Error term (used to capture all other variables not included in the model)

i = Firm dimension or cross-sectional units of the variables (1-9)

t = Time dimension of the variables (2011-2024)

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The apriori expectation is that all the independent variables would have positive effect on the dependent variable.

Descriptive Statistics

This section presents the descriptive statistics of the data generated on the dependent and independent variables of the study. Table 1 displays the calculated values for the mean, the standard deviation, the minimum and the maximum for each of the research variables.

Table 1: Descriptive Statistics

Variables	Obs.	Mean	Standard Dev.	Minimum	Maximum
ROA (%)	126	0.1108	0.1385	-0.1416	0.9345
STDTA (%)	126	0.2982	0.1641	0.0031	0.7969
LTDTA (%)	126	0.1182	0.1105	0.0000	0.4776
DEBTEQ-Y (%)	126	0.9359	0.8754	0.0291	5.2415

Source: STATA 16.0 Output

Table 1 presents the summary statistics for the variables used in the study. The number of observations of 126 (nine companies multiplied by 14 years) is consistent across all variables, indicating a balanced dataset with no missing values. The mean value of ROA is 11.08%, suggesting that, on average, the studied companies generated 11 kobo profit from every ₦1 of assets. The standard deviation of 13.85% indicates high variability in profitability among the companies. The minimum value of -14.16% shows that some companies experienced losses, while the maximum value of 93.45% suggests that a few companies achieved very high profitability. This wide range indicates significant differences in performance across the studied companies.

The mean STDTA shows that 29.82% of the companies' assets are financed through short-term debt. The standard deviation of 16.41% reflects moderate dispersion. The minimum value of 0.31% indicates that some companies relied very little on short-term debt, while the maximum of 79.69% shows that others depend heavily on it. This suggests variation in companies' short-term financing strategies. The average LTDTA indicates that long-term debt accounts for 11.82% of total assets. Compared to STDTA, this suggests that companies relied less on long-term debt financing. The standard deviation of 11.05% shows high variability. The minimum value of 0% implies that some companies did not use long-term debt at all in some years during the study period, while the maximum of 47.76% shows that some companies have substantial long-term debt exposure. The mean DEBTEQ-Y ratio is 93.59%, indicating that, on average, companies use nearly equal proportions of debt and equity financing. The relatively high standard deviation of 87.54%

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suggests considerable variation in leverage across companies. The minimum value of 2.91% indicates very low leverage for some companies, while the maximum 524.15% shows that some companies are highly leveraged, relying heavily on debt.

The descriptive statistics reveal substantial variability in both financial performance and capital structure among the sampled companies. While ROA shows a reasonable average, the wide range indicates that some companies performed significantly better than others. In terms of financing, companies relied more on short-term debt than long-term debt, with notable differences in leverage levels across the sampled companies.

Correlation Analysis

The summary of the Pearson correlation coefficients of the variables of the study is presented in Table 2.

Table 2: Correlation matrix

	ROA	STDTA	LTDTA	DEBTEQ-Y
ROA	1.0000			
STDTA	0.4950*	1.0000		
	0.0000			
LTDTA	-0.2301*	-0.1456	1.0000	
	0.0095	**0.1037**		
DEBTEQ-Y	-0.0770	0.5690*	0.5281*	1.0000
	0.3914	**0.0000**	**0.0000**	

Source: STATA 16.0 Output

Table 2 presents the Pearson correlation coefficients among ROA, STDTA, LTDTA, and DEBTEQ-Y. The correlation coefficient measures the strength and direction of the linear relationship between the dependent and independent variables, while the associated probability values indicate statistical significance. The correlation coefficient between ROA and STDTA is 0.4950, and is significant (p-value = 0.0000). This indicates a moderate positive relationship, suggesting that an increase in short-term debt relative to total assets is associated with an increase in company profitability. This implies that companies might be effectively utilizing short-term financing to enhance performance.

The correlation between ROA and LTDTA is -0.2301, which is significant (p-value = 0.0095). This shows a weak negative relationship, indicating that higher long-term debt is associated with lower profitability. This might suggest that long-term debt financing imposes costs that negatively affect financial performance. The correlation coefficient between ROA and DEBTEQ-Y is -0.0770, with a p-value of 0.3914, which is not significant. This implies a very weak and insignificant negative relationship between debt-to-equity

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ratio and profitability. Therefore, leverage does not appear to have a meaningful linear association with ROA. Additionally, the correlations among independent variables are moderate and below the commonly accepted threshold of 0.80, suggesting that multicollinearity is not a serious concern in the model.

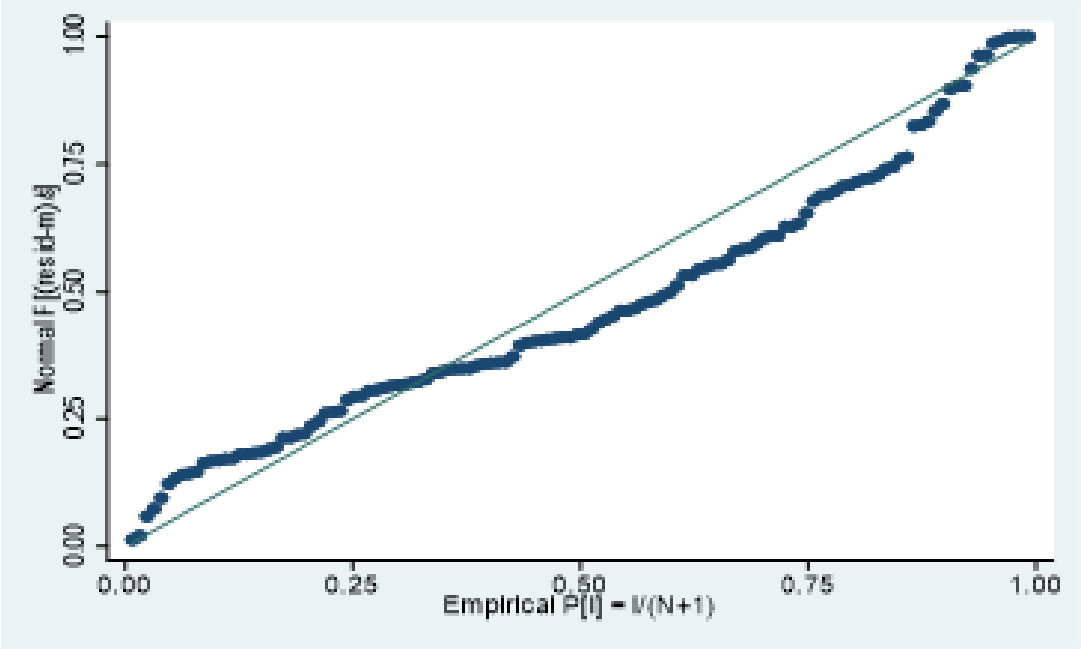
Diagnostic Tests

Diagnostic tests are essential procedures in econometric analysis used to assess the validity and reliability of regression results. They help ensure that the underlying assumptions of the classical linear regression model are not violated, thereby enhancing the credibility of the estimated coefficients and statistical inferences. The following diagnostic tests were carried out in the study:

Normality test

The result of the normality test is presented in Figure 1.

Figure 1: Graph of Normality test



Source: STATA 16.0 Output

The x-axis on Figure 1 plots the quantiles of the actual dataset for STDTA, LTDTA, DEBTEQ-Y, and ROA against the quantiles of a standard normal distribution on the y-axis. The diagonal line in the figure is a reference line. Quantile–normal plots emphasize the tails of the distribution, while Normal probability plots put the focus on the center of the distribution. The closer the points hug the diagonal line, the stronger the evidence for

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normality. The plots as presented in Figure 1 revealed that the residuals of the data cluster close to the diagonal line of the graph. This shows that the data is normally distributed.

Heteroskedasticity test

The heteroskedasticity test was conducted to determine whether the variance of the error terms in the regression model is constant across observations. The assumption of homoskedasticity (constant variance of residuals) is a key requirement of classical linear regression, as its violation might affect the efficiency and reliability of the estimated standard errors. The heteroskedasticity test (Hettest) in Table 4 shows a Wald Chi^2 value of 63.83 and Prob>Chi^2 value of 0.0000, indicating the presence of heteroskedasticity in the model. This suggests that the variance of the error terms is not constant, which might affect the efficiency of the estimates. Therefore, the use of OLS is not suitable for analysis of data, and the preferred model is the Generalised Least Squares (GLS) model.

Hausman test

Since the heteroskedasticity test produced a significant result, implying that OLS regression could not be used, the Hausman test was conducted to decide which of the GLS regressions (fixed effects or random effects) should be used. The test result showed a chi^2 of 2.50 and prob>chi^2 of 0.4750. Since the probability value of 0.4750 is greater than the conventional significance level of 0.05, the null hypothesis could not be rejected. This demonstrates that there is no significant difference between the coefficients estimated by the fixed effects and random effects models. In other words, the assumption that the individual-specific effects are uncorrelated with the explanatory variables holds. Therefore, the random effects model is considered more appropriate for the analysis**,** and so it was used for analysis of data.

Multicollinearity test

The multicollinearity test was conducted to assess the extent of correlation among the independent variables included in the regression model. This is necessary because high correlation among explanatory variables could distort the reliability and validity of the regression estimates. The result is presented in Table 3.

Table 3: Multicollinearity Result

	COLLINEARITY STATISTICS	
VARIABLE	**VIF**	**TOLERANCE (1/VIF)**
STDTA	2.50	0.4003
LTDTA	2.34	0.4269
DEBTEQ-Y	3.39	0.2949
Mean VIF	**2.74**	

Source: STATA 16.0 Output

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The result of the multicollinearity test shows that all the independent variables have VIF values that are below the conventional threshold of 10, ranging from 2.34 to 3.39. This indicates that there is no serious multicollinearity problem among the explanatory variables. In addition, the tolerance values are above the minimum acceptable level of 0.10, ranging from 0.2949 to 0.4269, and further confirming the absence of harmful multicollinearity. This implies that the independent variables are not highly correlated with one another, and each variable contributes uniquely to the explanation of variations in ROA.

Table 4: Summary of Random Effects Regression Result

ROA	Coefficient	Std error	z	P> z
STDTA	0.7254	0.1094	6.6300	0.0000
LTDTA	0.4910	0.1146	4.2900	0.0000
DEBTEQ-Y	-0.1389	0.0187	-7.4100	0.0000
Consant	-0.0336	0.0397	-0.8500	0.3980
R^2				0.4733
Wald Chi^2				63.8300
Prob>chi^2				0.0000
Hettest				0.0000

Source: STATA 16.0 Output

Table 4 shows that the coefficient of determination (R^2) is 0.4733, which implies that 47.33% of the variation in ROA is explained by the independent variables. This indicates a moderate explanatory power of the model. The remaining 52.67% of the variation in ROA is explained by other factors not captured in the model. These might include variables such as firm size, managerial efficiency, asset utilization, market conditions, corporate governance practices, macroeconomic factors, and other firm-specific characteristics. The omission of these variables does not invalidate the model but suggests that financial performance is influenced by a broader set of factors beyond capital structure. Furthermore, the Wald Chi-square statistic of 63.83 with a probability value of 0.0000 indicates that the model is statistically significant overall. This suggests that the explanatory variables of the study are well selected, combined and used.

Table 4 also shows that STDTA has a coefficient of 0.7254, indicating that STDTA has a positive effect on ROA. Hence, a unit increase in STDTA would result in 72.54% increase in ROA, holding other variables constant. This suggests that short-term financing is beneficial to the companies under study. Similarly, LTDTA has a coefficient of 0.4910, indicating a positive effect on ROA. A unit increase in LTDTA is associated with a 49.10% increase in ROA. This finding implies that companies effectively utilize long-term financing

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to enhance profitability. In contrast, DEBTEQ-Y shows a coefficient of -0.1389, indicating a negative effect on ROA. Thus, a unit increase in DEBTEQ-Y reduces ROA by 13.89%. This implies that excessive reliance on debt financing might adversely affect profitability. The constant term has a coefficient of -0.0336 with a p-value of 0.3980, which is not significant. This indicates that the intercept does not have a meaningful impact on the model, implying that, in the absence of all the independent variables, ROA would exhibit a negative return of 3.36%.

Test of Hypotheses

This section presents the test of the research hypotheses based on the results obtained from the random effects regression analysis as presented in Table 4.

H_{01}: Short-term debt to total assets ratio has no significant effect on the return on assets of listed industrial goods companies in Nigeria.

The regression result showed that STDTA has a p-value of 0.0000. Since the p-value is less than the preselected 5% level of significance, the result provides evidence to reject the null hypothesis. The study, therefore, concludes that short-term debt to total assets has significant effect on the return on assets of the studied industrial goods companies in Nigeria during the study period.

H_{02}: Long-term debt to total assets has no significant effect on the return on assets of listed industrial goods companies in Nigeria.

The regression result revealed that LTDTA has a p-value of 0.0000. Given that the p-value is less than the preselected 0.05, the result provides evidence to reject the null hypothesis. The study, therefore, concludes that long-term debt to total assets has significant effect on the return on assets of the studied industrial goods companies in Nigeria during the study period.

H_{03}: Debt-to-equity ratio has no significant effect on the financial performance of firms.

The regression result indicated that DEBTEQ-Y has a p-value of 0.0000. Since the p-value is less than the preselected 0.05, the result provides evidence to reject the null hypothesis. The study, therefore, concludes that debt-to-equity ratio has significant effect on the return on assets of the studied industrial goods companies in Nigeria during the study period.

Discussion of Findings

This section discusses the findings of the study based on the results obtained from the random effects regression analysis. The discussion is aligned with the study's specific objectives. The discussion of the findings is divided into three sub-sections with each sub-section focused on each of the independent variables and the dependent variable.

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Short-term debt to total assets and return on assets

The findings of the study reveal that STDTA has a positive and significant effect on ROA. This suggests that companies that utilize a higher proportion of short-term debt tend to experience improved profitability. The positive effect might be attributed to the relatively lower cost of short-term financing and its flexibility in meeting working capital requirements. Short-term debt allows companies to efficiently manage their day-to-day operations, thereby enhancing operational performance and overall profitability. This finding implies that short-term financing is a viable and beneficial source of funds for companies when properly managed.

This result answers Research Question One and achieves Objective One of the study. From the perspective of the Trade-Off Theory, this finding indicates that companies are operating within the beneficial range of debt, where the advantages of debt financing, particularly cost-effectiveness and operational flexibility, outweigh the associated costs. Short-term debt typically carries lower transaction costs and could be adjusted quickly to match operational needs, thereby contributing positively to financial performance. Empirically, this finding is consistent with Akaji et al. (2021), who reported a positive and significant effect of short-term debt on financial performance, suggesting that companies benefit from the efficient use of short-term financing. However, the result contradicts studies of Aniefor and Onatuyeh (2019) and Efemena and Augustine (2024), which found that short-term debt negatively affects performance due to refinancing risk and high interest obligations. The difference might be attributed to sector-specific characteristics, as industrial goods companies might utilize short-term debt more efficiently for productive activities compared to companies in other sectors.

Long-Term Debt to Total Assets and Return on Assets

The study finds that LTDTA has positive and significant effect on the ROA of the studied listed industrial goods companies. This result answers Research Question Two and achieves Objective Two of the study. It also suggests that companies effectively utilize long-term debt to finance capital-intensive investments, such as plant, machinery, and infrastructure, which are essential for production and revenue generation. By aligning the maturity of debt with the lifespan of assets, companies are able to reduce liquidity pressure and enhance operational stability.

This finding is strongly supported by the Trade-Off Theory, which posits that debt financing provides tax shield benefits through interest deductibility, thereby increasing net income and financial performance. In line with the Trade-Off Theory, the positive effect of long-term debt suggests that companies have not exceeded their optimal debt threshold and are still benefiting from the advantages of leverage. The positive relationship indicates that companies are benefiting from these tax advantages while

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maintaining debt levels within manageable limits. The result is consistent with Meshack et al. (2022) and Ogbu et al. (2025), who found that long-term debt positively influences financial performance when invested in productive assets. It also aligns with Abuamsha and Shumali (2022), who concluded that long-term debt enhances profitability due to its stability and alignment with long-term investment needs. However, the finding contradicts studies such as Abbas et al. (2020) and Ali and Shaik (2022), which reported a negative relationship between long-term debt and financial performance. These differences might have arisen from variations in borrowing costs, economic conditions, and efficiency in debt utilization across countries and sectors.

Debt Equity ratio and return on assets

The findings reveal that DEBTEQ-Y has negative but significant effect on the ROA of the studied listed industrial goods companies. The result answers Research Question Three and achieves Objective Three of the study. This implies that higher leverage levels, relative to equity, reduce company profitability. This result indicates that excessive reliance on debt financing increases financial risk, interest burden, and the likelihood of financial distress, which ultimately reduces company performance. High leverage exposes companies to macroeconomic shocks such as interest rate fluctuations, inflation, and exchange rate volatility, factors that are particularly pronounced in the Nigerian economic environment.

This finding strongly supports the Trade-Off Theory, which argues that while debt provides benefits, such as tax shields, beyond an optimal level, the costs of financial distress and bankruptcy outweigh these benefits. The negative relationship observed in this study suggests that many companies might have exceeded their optimal leverage level, thereby experiencing diminishing returns from additional debt. Empirically, this result is consistent with Bamgboye (2024), who found that high leverage negatively affects company performance, Ali and Shaik (2022), who reported a negative and significant relationship between debt-equity ratio and ROA, and Kanji et al. (2025), who concluded that excessive debt reduces profitability. However, the finding contradicts Akaji et al. (2021), who found a positive relationship between leverage and performance. This inconsistency highlights the context-dependent nature of capital structure decisions and reinforces the Trade-Off Theory's assertion that the effect of debt depends on whether companies operate within or beyond the optimal debt level.

Implication of the findings is that debt financing should not be entirely avoided, as it plays a significant role in enhancing company performance. However, companies must carefully balance their debt levels to avoid excessive financial risk. Emphasis should be placed on achieving optimal capital structure, where the marginal benefit of debt equals its marginal cost.

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Summary, Conclusion and Recommendations

This section presents the summary of the findings, conclusion drawn from the findings, and recommendations based on the empirical results. It also highlights the contributions of the study to knowledge.

Summary of Findings

The study employed panel data analysis using the random effects model to assess the relationship between debt financing and financial performance of listed industrial goods companies in Nigeria over the study period. The key findings of the study are summarized as follows:

(i) STDTA has positive and statistically significant effect on ROA. This indicates that increased use of short-term debt improves company profitability.
(ii) LTDTA has positive and significant effect on ROA. This suggests that long-term financing contributes to enhanced financial performance when properly utilized.
(iii) DEBTEQ-Y has negative but significant effect on ROA. This implies that excessive leverage reduces profitability and adversely affects financial performance.

Conclusion

The aim of this study is to assess the effect of debt financing on the financial performance of nine listed industrial goods companies in Nigeria for the period of 14 years spanning 2011-2024. The positive effects of short-term and long-term debt indicate that companies benefit from debt financing through improved operational efficiency and investment in productive assets. This suggests that debt, when properly utilized, serves as a valuable tool for enhancing profitability. Conversely, the negative effect of the debt-to-equity ratio indicates that excessive reliance on debt financing leads to increased financial risk, higher interest burden, and reduced profitability. This implies that companies that are highly leveraged might experience diminishing returns and financial distress.

Based on these findings the study concluded that debt financing plays a significant role in determining the financial performance of listed industrial goods companies in Nigeria. However, the effect of debt financing is not uniform; rather, it depends on the structure and level of debt employed by companies. Overall, the findings support the Trade-Off Theory of Capital Structure, which posits that firms must balance the benefits of debt, such as tax advantages and improved efficiency, against the costs, such as financial distress and bankruptcy risk. While debt financing could enhance financial performance, companies must maintain an optimal capital structure to maximize profitability and ensure long-term sustainability.

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Recommendations

Based on the findings and conclusion of the study, the following recommendations are made:

(i) Optimal use of short-term debt: Companies should continue to utilize short-term debt for financing working capital needs, as it enhances operational efficiency and profitability. However, such debt should be carefully managed to avoid excessive refinancing risk and liquidity pressure.

(ii) Strategic utilization of long-term debt: Management should prioritize the use of long-term debt for financing capital-intensive investments such as plant and machinery. Long-term debt should be channeled into productive projects that generate returns above the cost of borrowing.

(iii) Maintain optimal debt-to-equity ratio: Companies should avoid excessive reliance on debt financing and strive to maintain a balanced capital structure. Management should establish internal policies that define optimal leverage levels to minimize financial distress and maximize performance.

(iv) Strengthening financial risk management: Companies should develop robust financial risk management frameworks to monitor and control their debt levels. This includes regular assessment of borrowing costs, repayment capacity, and exposure to macroeconomic risks such as interest rate and inflation fluctuations.

(v) Policy support for long-term financing: Policymakers and regulatory authorities should promote the development of long-term financing instruments in Nigeria's capital market. This would enable firms to access stable and affordable long-term funds for investment.

Contribution to Knowledge

This study contributes to the existing body of knowledge in the following ways:

(i) It provides empirical evidence on the relationship between debt financing and financial performance in Nigeria's industrial goods sector.

(ii) It distinguishes between short-term and long-term debt, thereby offering deeper insights into how debt structure affects financial performance.

(iii) It validates the Trade-Off Theory within the context of an emerging economy, demonstrating that optimal debt levels are critical for maximizing company financial performance.

(iv) It helps reconcile conflicting findings in previous studies by showing that debt could have both positive and negative effects depending on its level and structure.

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