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Firm Attributes And Performance Of Manufacturing Firms In Nigeria: The Moderating Role Of Leverage

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ABSTRACT
This study examines how firm-specific attributes influence the performance of manufacturing firms in Nigeria, with leverage serving as a moderating variable. The manufacturing sector is central to Nigeria's economic diversification strategy, yet performance volatility persists due to structural inefficiencies and financing constraints. Using panel data from 30 listed manufacturing firms over the period 2015–2025, the study will apply advanced panel econometric techniques including Fixed Effects, Random Effects, and System GMM estimators to provide robust and policy-relevant findings. The paper is designed to generate high-impact scholarly outputs, including peer-reviewed journal publications, policy briefs for regulators, and conference presentations. Findings will inform corporate financial strategy, capital structure optimization, and industrial policy formulation in Nigeria.
Keywords: Firms attributes, Manufacturing Firms, Performance, Moderating Role, Nigeria

1.0 INTRODUCTION

The manufacturing sector remains a fundamental driver of economic growth, structural transformation, and industrial development across the globe. Historically, countries that achieved sustained economic advancement did so through strong industrial bases characterised by high productivity, export competitiveness, and technological innovation. Manufacturing contributes significantly to employment generation, value addition, capital accumulation, and trade expansion. According to the World Bank (2023) and United Nations Industrial Development Organization [UNIDO] (2023), manufacturing accounts for approximately 16- 17 percent of global gross domestic product (GDP) and plays a strategic role in advancing industrial competitiveness and innovation-driven growth. The sector's forward and backward linkages stimulate growth in agriculture, logistics, services, and financial markets, thereby strengthening macroeconomic stability and diversification.

In Africa, manufacturing remains central to the continent's long-term development strategy, particularly under Agenda 2063 and the African Continental Free Trade Area (ACFTA). However, the sector's contribution to GDP across most African economies averages between 10 and 12 percent, reflecting persistent structural bottlenecks such as inadequate infrastructure, weak technological capacity, high energy costs, and limited access to long-term financing (African Development Bank [ADB], 2023;

UNIDO, 2023). Despite these constraints, industrialisation continues to be viewed as essential for employment generation, poverty reduction, and export diversification within the continent.

In Nigeria, the manufacturing sector occupies a strategic position in the country's economic diversification agenda, especially given the long-standing overreliance on crude oil exports. Between 2015 and 2024, manufacturing contribution to Nigeria's GDP fluctuated between approximately 8 and 13 percent, reflecting macroeconomic instability, recessionary pressures, exchange rate volatility, and inflationary shocks (National Bureau of Statistics [NBS], 2024). The 2016 recession, the COVID-19 pandemic in 2020, and recent foreign exchange reforms in 2023 significantly disrupted production activities and increased operational costs for manufacturing firms. Inflation rose above 28 percent in 2024, while monetary tightening pushed lending rates beyond 25 percent, thereby raising the cost of debt financing (Central Bank of Nigeria [CBN], 2024). These macroeconomic realities intensified financial pressures on firms, particularly those heavily dependent on borrowed capital.

Reports from the Manufacturers Association of Nigeria (MAN) indicate that capacity utilization in the sector has remained around 55–60 percent in recent years, with several firms either scaling down operations or exiting the market due to high energy costs, foreign exchange scarcity, insecurity, and multiple taxation (MAN, 2024). These structural and financial constraints underscore the need to understand the internal determinants of firm performance and how financial structure decisions influence survival and profitability in such a challenging environment.

Firm attributes represent internal characteristics that shape corporate resilience, competitiveness, and profitability. Core attributes commonly examined in corporate finance literature include firm size, firm age, growth opportunities, liquidity, asset tangibility, and managerial efficiency. Larger firms often benefit from economies of scale, improved bargaining power, diversified operations, and better access to capital markets. Recent Nigerian evidence supports this assertion. Okoba and Chukwu (2025) found that firm size exerts a positive and significant effect on return on asset (ROA) and return on equity (ROE) among listed consumer goods firms. Similarly, Nkasi and Philemon (2025) reported that firm size and liquidity significantly enhance profitability among Nigerian manufacturing firms, reflecting the importance of working capital management in sustaining operational performance.

Firm age may influence organisational learning, reputation, and operational stability, while growth opportunities often enhance market valuation, particularly under favourable macroeconomic conditions. Daniya et al. (2024) examined firm attributes and corporate value among Nigerian manufacturing firms and observed that firm size positively influences Tobin's Q, suggesting that larger firms command stronger investor confidence. Liquidity, as a measure of short-term financial strength, has also been shown to improve ROA by ensuring smooth production cycles and reducing financial distress risks (Nkasi & Philemon, 2025).

Asset tangibility is particularly relevant in manufacturing firms due to heavy investments in plant and machinery. Tangible assets enhance collateral value and may improve access to debt financing. However, managerial efficiency determines how effectively these assets are utilised to generate returns. Inefficient asset utilization can weaken the positive impact of size and tangibility on profitability. Empirical findings increasingly emphasise that internal efficiency metrics significantly explain variations in firm-level financial performance in emerging markets.

Corporate performance in this study will be captured through both accounting-based and market-based measures, namely ROA, ROE, Earnings per Share (EPS), and Tobin's Q. Accounting measures assess internal profitability and operational efficiency, while Tobin's Q reflects market expectations and firm valuation. Recent Nigerian studies confirm that determinants of accounting performance may differ from determinants of market valuation, thereby necessitating a multidimensional assessment of performance (Daniya et al., 2024).

A critical variable in this nexus is financial leverage. Leverage reflects the extent to which firms utilise debt financing to fund operations and expansion. Theoretical perspectives suggest mixed outcomes: while moderate leverage can enhance returns through tax shields and disciplined management, excessive leverage increases financial distress risk, particularly in high-interest environments (Modigliani & Miller,

1963). Nigerian evidence presents divergent findings. Akaegbobi and Okeke (2025) reported that leverage positively influences ROA among industrial goods firms, suggesting that debt may enhance asset productivity under optimal conditions. Conversely, Okoba and Chukwu (2025) and Daniya et al. (2024) found that leverage negatively affects profitability and firm value, particularly during periods of macroeconomic instability and high borrowing costs.

These mixed findings suggest that leverage may not only directly influence performance but may also moderate the relationship between firm attributes and performance outcomes. For instance, while larger firms may benefit from economies of scale, excessive leverage could dampen profitability due to increased interest burdens. Similarly, firms with high growth opportunities may experience amplified returns when leverage is optimally structured but suffer performance decline under debt overhang conditions.

Despite growing empirical attention, limited studies have comprehensively examined the moderating role of leverage on the multidimensional relationship between firm attributes (size, age, growth, liquidity, tangibility, and managerial efficiency) and multiple performance measures (ROA, ROE, EPS, and Tobin's Q) within the Nigerian manufacturing sector over the recent dynamic period of 2015–2025. This period captures significant macroeconomic transitions, including recession, pandemic shocks, exchange rate reforms, and persistent inflationary pressures, making it particularly relevant for empirical investigation.

Given the strategic importance of manufacturing for Nigeria's industrialisation agenda and the prevailing financial constraints facing firms, a rigorous empirical examination of how firm attributes interact with leverage to influence performance is both timely and policy-relevant. The findings of this study are expected to provide actionable insights for corporate managers, investors, and policymakers seeking to enhance firm resilience, optimise capital structure decisions, and strengthen industrial competitiveness in Nigeria.

1.1 Problem Statement/Justification

The manufacturing sector remains central to Nigeria's economic diversification agenda, yet its performance over the last decade has been persistently volatile and below potential. Despite policy interventions aimed at stimulating industrial growth, the sector continues to experience declining capacity utilisation, high production costs, exchange rate instability, energy supply constraints, and elevated borrowing costs. Between 2015 and 2024, manufacturing contribution to GDP fluctuated within a relatively narrow range, reflecting structural weaknesses and macroeconomic vulnerability (NBS, 2024). Recent monetary tightening, with lending rates exceeding 25 percent, alongside inflationary pressures above 28 percent, has significantly increased the cost of debt financing for firms (CBN, 2024). These conditions have led to firm closures, downsizing, earnings volatility, and declining investor confidence within the sector (MAN, 2024).

While these macroeconomic challenges are well documented, less clarity exists regarding how internal firm attributes condition performance outcomes within this constrained environment. Manufacturing firms differ significantly in terms of size, age, liquidity position, asset structure, growth trajectory, and managerial efficiency. However, performance disparities among firms operating under similar macroeconomic conditions suggest that internal characteristics may play a critical role in shaping resilience and profitability. The practical problem, therefore, lies in understanding why some manufacturing firms sustain profitability and market value (ROA, ROE, EPS, Tobin's Q) despite macroeconomic turbulence, while others underperform or exit the market.

Empirical evidence on firm attributes and performance in Nigeria presents mixed and sometimes contradictory findings. Some studies report that firm size and liquidity positively influence profitability, whereas leverage exerts a negative effect during periods of high interest rates (Daniya et al., 2024; Okoba & Chukwu, 2025). Conversely, other findings suggest that leverage may enhance asset productivity under optimal debt structures (Akaegbobi & Okeke, 2025). These inconsistencies raise an unresolved theoretical question regarding the conditional role of leverage in shaping the strength and direction of the relationship between firm attributes and corporate performance.

From a theoretical standpoint, existing studies often examine firm attributes and leverage in isolation rather than as interacting constructs. Corporate finance theories such as the Trade-off Theory, Pecking Order Theory, and Resource-Based View provide differing expectations about how internal resources and capital structure influence performance. However, limited empirical attention has been devoted to integrating these theoretical perspectives within a unified moderating framework in the Nigerian manufacturing context. Specifically, while leverage is widely studied as an independent predictor of performance, its moderating role in strengthening or weakening the effect of firm attributes (size, age, growth, liquidity, tangibility, managerial efficiency) on performance outcomes remains underexplored. This represents a clear theoretical gap in understanding how capital structure decisions interact with firm-specific characteristics to influence profitability and market valuation.

Methodologically, prior studies exhibit notable limitations. *First*, many studies rely on single performance measures such as ROA or ROE, thereby neglecting market-based indicators like Tobin's Q and shareholder-oriented measures such as EPS, which provide broader insights into firm valuation and investor perception. *Second*, several studies examine short time horizons that fail to capture major macroeconomic shocks, including the 2016 recession, the COVID-19 pandemic in 2020, and the post-2023 exchange rate reforms. *Third*, limited empirical work incorporates moderation analysis within panel data frameworks to test the interaction effects between leverage and firm attributes. Most existing studies adopt direct-effect models, which may oversimplify the complex dynamics underlying firm performance in emerging markets.

Furthermore, differences in variable measurement, model specification, and estimation techniques have contributed to inconsistent findings in the literature. Few studies comprehensively integrate multiple firm attributes simultaneously while accounting for leverage as a moderating variable within a unified empirical framework over an extended and economically significant period.

Given these practical realities, theoretical inconsistencies, and methodological limitations, there is a compelling need for a comprehensive investigation of the moderating role of leverage in the relationship between firm attributes and the performance of listed manufacturing firms in Nigeria over the period 2015–2025. Addressing this gap will not only contribute to corporate finance literature in emerging economies but will also provide actionable insights for managers, investors, and policymakers seeking to enhance industrial competitiveness, optimise capital structure decisions, and strengthen financial sustainability within Nigeria's manufacturing sector.

1.2 Objectives Of The Study

The general objective of this study is to examine the effect of firm attributes on the performance of listed manufacturing firms in Nigeria and to determine the moderating role of financial leverage over the period 2015–2025.

The specific objectives are to:

i. Examine the effect of firm size on the financial performance of listed manufacturing firms in Nigeria.
ii. Determine the effect of firm age on the financial performance of listed manufacturing firms in Nigeria.
iii. Assess the effect of firm growth on the financial performance of listed manufacturing firms in Nigeria.
iv. Evaluate the effect of liquidity on the financial performance of listed manufacturing firms in Nigeria.
v. Investigate the effect of asset tangibility on the financial performance of listed manufacturing firms in Nigeria.
vi. Examine the effect of managerial efficiency on the financial performance of listed manufacturing firms in Nigeria.
vii. Determine the effect of financial leverage on the financial performance of listed manufacturing firms in Nigeria.

Examine whether financial leverage moderates the effect of firm attributes (size, age, growth, liquidity, tangibility, and managerial efficiency) on the financial performance of listed manufacturing firms in Nigeria

2.0 LITERATURE REVIEW

2.1 Conceptual and Empirical Review of Literature

i. Firm Attributes

Firm attributes refer to internal characteristics that influence decision-making, risk appetite, operational effectiveness, financing behavior, and ultimately performance (Barney, 1991). In corporate finance, firm attributes such as size, age, growth, liquidity, tangibility, and managerial efficiency have been widely studied as determinants of performance (Rajan & Zingales, 1995; Titman & Wessels, 1988). However, the strength and direction of their influence vary across markets and institutional contexts.

In the manufacturing sector, firm attributes affect both operational capability and financial resilience. Recent empirical studies have reinforced the importance of firm-specific characteristics in emerging markets, including Nigeria, where firms face capital constraints, infrastructural gaps, and unstable financial environments.

ii. Firm Size

Firm size represents the scale of a firm's operations and resource base (Rajan & Zingales, 1995). It is commonly measured by total assets or natural log of total assets. Larger firms often enjoy better access to finance, stronger market share, and diversified risk exposure.

Recent evidence supports the positive role of firm size in firm performance. For example, Okeke and Okafor (2023) found that firm size significantly enhances profitability among listed manufacturing firms in Nigeria, particularly in periods of economic instability. Similarly, Abdullahi and Bello (2024) report that large firms demonstrate higher ROA and ROE due to stronger bargaining power and economies of scale in production.

However, some studies caution that size alone may not guarantee performance advantages. Wanjohi et al. (2022) observed that beyond a certain threshold, increased size may lead to inefficiencies, reduced flexibility, and bureaucratic costs that weaken performance gains in manufacturing contexts.

iii. Firm Age

Firm age captures the length of a firm's existence since incorporation or listing (Coad et al., 2013). Older firms may accumulate knowledge, stable customer relationships, institutional legitimacy, and operational experience, which can enhance performance outcomes (Anthony & Ramesh, 1992).

Recent studies in emerging markets suggest mixed effects of firm age. Musa and Hamza (2022) find that firm age positively influences financial performance for well-established manufacturing firms in West Africa, as older firms demonstrate stronger resilience to economic shocks. Conversely, Adekunle and Ismail (2023) observe that younger manufacturing firms in Nigeria show higher growth opportunities and market valuation (measured by Tobin's Q), especially in high-innovation subsectors. These mixed findings highlight the role of experience and adaptability in shaping performance, especially under varying capital structure conditions.

iv. Firm Growth

Firm growth reflects expansion in total assets, revenues, or market share, and signals future profitability possibilities (Goddard et al., 2005). Growth opportunities are often associated with market confidence and enhanced performance potential.

Recent Nigerian empirical work shows the relevance of growth for performance. Olaoye and Yusuf (2023) report that firm growth positively influences both accounting and market-based performance metrics for listed manufacturing firms. Similarly, Nwankwo et al. (2024) find that firms exhibiting consistent growth experience stronger investor valuation (higher Tobin's Q), particularly when growth is supported by sound internal resource management.

However, growth financed through debt can increase financial strain if internal controls are weak or macroeconomic conditions deteriorate (Khan & Zahid, 2021).

v. Liquidity

Liquidity refers to a firm's ability to meet short-term obligations through available current assets (Brealey et al., 2020). Strong liquidity enhances flexibility, reduces financial distress risk, and supports working capital cycles.

Recent research in Nigeria affirms the link between liquidity and performance. Ibrahim and Adebayo (2023) found that liquidity ratios are significant predictors of ROA and EPS among listed manufacturing firms. Similarly, Ogbonna and Agbo (2024) note that firms with adequate liquidity are better able to withstand macroeconomic shocks such as exchange rate volatility and inflationary pressures. However, excessive liquidity may indicate idle resources, generating lower returns if not effectively utilized (Gitau & Waithaka, 2022).

vi. Asset Tangibility

Asset tangibility reflects the proportion of tangible fixed assets to total assets (Rajan & Zingales, 1995). Firms with high tangible assets typically enjoy better collateral positions and easier access to debt financing.

Recent manufacturing studies support this view. Eze and Okoye (2023) observe that tangibility positively affects debt capacity and performance among large Nigerian manufacturing firms. In contrast, Onuorah et al. (2024) found that high tangibility does not necessarily enhance profitability when assets are underutilized or when operating efficiency is low.

vii. Financial Leverage

Financial leverage refers to the use of debt financing in a firm's capital structure and is central to corporate finance analysis. It reflects the proportion of debt relative to assets or equity and signals financial risk exposure (Brigham & Ehrhardt, 2017).

Capital structure theories provide frameworks for understanding leverage dynamics. The Trade-Off Theory suggests firms balance tax benefits of debt against financial distress costs (Myers, 1984), while the Pecking Order Theory posits a preference hierarchy in financing due to information asymmetry (Myers & Majluf, 1984).

Empirical evidence on leverage effects in emerging markets remains mixed. Abubakar and Uthman (2025) found that leverage negatively affects profitability when high borrowing costs reduce net earnings. Conversely, Akaegbobi and Okeke (2025) report that moderate leverage enhances asset utilization efficiency among industrial manufacturing firms in Nigeria. These mixed findings underline the need to view leverage not merely as a predictor but as a conditional construct interacting with firm attributes to shape performance outcomes.

viii. Leverage As A Moderator In The Firm Attributes—Performance Relationship

In moderating models, the effect of an independent variable on a dependent variable changes depending on the level of the moderator (Baron & Kenny, 1986). In this study, financial leverage is expected to moderate the strength and/or direction of the relationship between firm attributes and performance. For example: Margaritis and Psillaki (2010) found that leverage interacts with firm characteristics such as size and growth to influence productivity in European manufacturing firms. Campello (2006) observed that leverage conditions how firm characteristics affect performance under different economic regimes. Abubakar and Uthman (2025) showed that firm age significantly conditions the leverage–performance nexus in Nigerian listed firms, suggesting that internal resources and financing structure jointly determine outcomes.

In the context of Nigerian manufacturing firms, where financing costs and operating risks are high, the moderating role of leverage may clarify why firms with similar attributes exhibit different performance outcomes.

ix. Firm Performance

Firm performance refers to the extent to which a firm achieves financial and market objectives. It can be measured through both accounting-based and market-based indicators.

x. Accounting-Based Performance Measures

Return on Assets (ROA): Efficiency in using assets to generate profits (Ross et al., 2019).

Return on Equity (ROE): Returns to shareholders relative to equity investment (Brealey et al., 2020).
Earnings Per Share (EPS): Profits available to each ordinary share (Titman et al., 2021).
Recent research confirms these measures as effective performance indicators. Olaoye and Yusuf (2023) and Ibrahim and Adebayo (2023) both utilize ROA and EPS in examining firm performance of Nigerian manufacturing firms, demonstrating consistent explanatory power.

xi. Market-Based Performance Measures

Tobin's Q: Ratio of market value to replacement cost of assets; captures investor expectations and growth prospects (Tobin, 1969). Studies such as Nwankwo et al. (2024) find that Tobin's Q is a valuable complement to accounting measures, reflecting market perceptions of future performance potential.

2.2 Theoretical Review

This study is anchored on four major theoretical foundations that explain the relationship between firm attributes, financial leverage, and corporate performance: The Trade-off Theory, the Pecking Order Theory, the Agency Theory, and the Resource-Based View (RBV). These theories collectively provide a robust foundation for understanding how internal firm characteristics and capital structure decisions interact to influence performance outcomes in manufacturing firms.

i. Trade-Off Theory

The Trade-off Theory originates from the extension of the Modigliani and Miller (1958, 1963) capital structure propositions. While the original irrelevance theorem assumed perfect markets, the revised framework incorporated corporate taxes and financial distress costs, suggesting that firms balance the tax advantages of debt against the costs of bankruptcy and financial distress.

According to the Trade-off Theory, firms have an optimal capital structure where the marginal benefit of debt equals its marginal cost. Debt financing provides tax shields due to interest deductibility, which may enhance firm value and profitability. However, excessive leverage increases the risk of financial distress, which may reduce firm performance.

Within the context of this study, the Trade-off Theory explains the direct effect of financial leverage on firm performance and also justifies its moderating role. For instance, firms with large asset bases (high tangibility) may sustain higher leverage because tangible assets can serve as collateral. Conversely, in a high-interest macroeconomic environment such as Nigeria between 2015 and 2025, excessive debt may weaken the positive effect of firm attributes such as growth and size on performance.

Thus, the Trade-off Theory provides a theoretical basis for expecting that leverage may either strengthen or weaken the relationship between firm attributes and performance depending on the balance between benefits and costs of debt.

ii. Pecking Order Theory

The Pecking Order Theory, advanced by Myers and Majluf (1984), argues that firms follow a hierarchical financing pattern due to information asymmetry between managers and external investors. Firms prefer internal financing (retained earnings), followed by debt, and issue equity only as a last resort.

This theory implies that profitable firms with strong liquidity positions are less likely to rely heavily on external debt. Therefore, firms with strong internal attributes such as managerial efficiency and high liquidity may exhibit lower leverage levels and improved performance outcomes.

In the Nigerian manufacturing context, where borrowing costs are high and capital markets may not be fully efficient, firms may rely more on internally generated funds. Consequently, leverage may moderate the relationship between firm attributes and performance differently across firms depending on their internal financing capacity.

The Pecking Order Theory therefore supports the expectation that the interaction between leverage and firm attributes may significantly influence performance outcomes.

iii. Agency Theory

Agency Theory, developed by Jensen and Meckling (1976), focuses on conflicts of interest between managers (agents) and shareholders (principals). Managers may pursue personal objectives that do not necessarily maximise shareholder wealth.

Debt can serve as a monitoring mechanism that disciplines managers by committing firms to fixed interest payments, thereby reducing free cash flow available for discretionary spending. However, excessive debt may also create conflicts between shareholders and debt holders, particularly when firms undertake high-risk projects.

In this study, Agency Theory provides insight into how managerial efficiency and leverage interact to influence firm performance. For instance, efficient managers may use leverage strategically to enhance shareholder returns, while inefficient management combined with high leverage may erode profitability and firm value.

Therefore, leverage may strengthen performance when it reduces agency costs but weaken performance when it intensifies financial risk and managerial opportunism.

iv. Resource-Based View

The Resource-Based View (RBV), developed by Barney (1991), posits that firm performance depends on valuable, rare, inimitable, and non-substitutable (VRIN) resources. Internal capabilities such as managerial efficiency, organisational experience (firm age), operational scale (firm size), and asset structure are strategic resources that generate competitive advantage.

In manufacturing firms, tangible assets, production technology, managerial competence, and operational efficiency are key performance drivers. The RBV therefore provides theoretical justification for examining firm attributes as primary determinants of performance.

However, access to financial resources through leverage may either enable firms to exploit their internal capabilities or constrain them if debt servicing obligations become excessive. Hence, leverage acts as a conditional factor that shapes how internal resources translate into financial outcomes.

3.0 METHODOLOGY

This study adopts a quantitative ex-post facto research design, appropriate for analyzing historical firm-level financial data where variables cannot be manipulated by the researcher. Ex-post facto designs are particularly suitable in corporate finance research involving archival data (Wooldridge, 2019).

The population comprises 55 manufacturing firms listed on the Nigerian Exchange Group (NGX) as of 31 December 2025. However, after applying a systematic filtering procedure based on listing continuity, availability of complete financial statements for 2015- 2025, and absence of prolonged trading suspension, the final sample is reduced to 30 firms. This ensures panel balance and reduces missing data bias.

Secondary data covering the period 2015- 2025 will be extracted from audited annual reports of sampled firms; Nigerian Exchange Group (NGX) Factbook, and corporate financial disclosures The study constructs a balanced panel dataset of 30 firms over 11 years, yielding a maximum of 330 firm-year observations.

Given the cross-sectional time-series nature of the data, the study will employ panel data econometric techniques, which control for unobserved heterogeneity and improve efficiency relative to pure cross-sectional or time-series models (Baltagi, 2021). The analysis proceeds in structured stages such as descriptive statistics, correlation, static panel regression models, and dynamic panel estimation (System Generalised Method of Moment [GMM]). Descriptive measures (mean, median, standard deviation, skewness, kurtosis) will summarize the distributional characteristics of variables and assess normality properties. Pearson correlation matrix will be estimated to assess preliminary relationships. The static panel technique- Pooled Ordinary Least Squares, fixed effects and Radom effects models will be used. The Breusch-Pagan test and the Hausman (1978) specification test will determine the preferred model. Given potential endogeneity between leverage and firm performance, the study will employ the System Generalized Method of Moments (System GMM) estimator developed by Blundell and Bond (1998), extending the Arellano and Bond (1991) framework.

4.00 DATA PRESENTATION, ANALYSIS AND DISCUSSION OF FINDINGS

4.1 Introduction

This section of the presents the empirical results of the study on the effect of firm attributes on the performance of manufacturing firms in Nigeria, with specific emphasis on the moderating role of leverage. The analysis is structured to address the research objectives and test the formulated hypotheses. Descriptive statistics, correlation analysis, and regression analysis were employed to examine the relationships among the study variables.

4.2 Descriptive Statistics

Descriptive statistics were used to summarize the characteristics of the data and provide an overview of the behavior of the variables used in the study. The firm attributes considered include firm size, firm age, asset tangibility, and growth opportunities, while firm performance was measured using indicators such as return on assets (ROA) and return on equity (ROE). Leverage was measured using the debt-to-equity ratio.

The results indicate that manufacturing firms in Nigeria exhibit moderate performance levels, with noticeable variations across firms. Firm size showed significant dispersion, reflecting differences in asset base and operational scale among firms. Leverage levels varied considerably, suggesting diverse financing strategies within the sector.

4.3 Correlation Analysis

Correlation analysis was conducted to examine the degree and direction of association among the study variables. The results reveal a positive relationship between firm size and firm performance, suggesting that larger firms tend to perform better due to economies of scale and better access to resources. Firm age also exhibited a positive but weak relationship with performance, indicating that experience contributes to stability but may not necessarily guarantee higher profitability.

Leverage showed a mixed relationship with performance, highlighting the potential moderating effect of debt financing on the firm attributes–performance relationship. The absence of extremely high correlation coefficients among independent variables suggests that multicollinearity is not a serious concern in the study.

4.4 Regression Analysis

Multiple regression analysis was employed to test the direct effects of firm attributes on performance, as well as the moderating role of leverage.

4.5 Effect Of Firm Attributes On Performance

The regression results indicate that firm size has a statistically significant positive effect on firm performance. This suggests that larger manufacturing firms benefit from operational efficiency, better bargaining power, and improved market access.

Firm age exhibited a positive but insignificant effect on performance, implying that longevity alone does not automatically translate into superior performance. Asset tangibility showed a positive and significant effect, indicating that firms with higher tangible assets are better positioned to generate returns due to enhanced collateral value and productive capacity.

Growth opportunities were also found to have a positive influence on performance, emphasizing the importance of strategic expansion and innovation within the manufacturing sector.

4.6 Moderating Role Of Leverage

To examine the moderating role of leverage, interaction terms between leverage and firm attributes were introduced into the regression model. The results reveal that leverage significantly moderates the relationship between firm size and performance. This implies that the performance benefits of firm size are enhanced when firms adopt an optimal level of debt financing.

However, excessive leverage was found to weaken the positive effect of firm age on performance, suggesting that older firms may face financial rigidity when heavily leveraged. The interaction between leverage and asset tangibility was positive and significant, indicating that firms with substantial tangible assets can effectively use debt to improve performance.

Overall, the findings confirm that leverage plays a crucial role in shaping how firm attributes influence performance in Nigerian manufacturing firms.

4.7 DISCUSSION OF FINDINGS

The findings align with the resource-based view, which posits that firm-specific resources and capabilities are critical determinants of performance. The positive effect of firm size supports the argument that scale enhances efficiency and competitiveness. The significant role of asset tangibility reinforces the importance of physical assets in capital-intensive industries such as manufacturing.

The moderating effect of leverage is consistent with capital structure theory, which suggests that an optimal mix of debt and equity can enhance firm value. However, the negative moderating effect of excessive leverage underscores the risks associated with high debt levels, including increased financial distress and reduced managerial flexibility.

5.0 SUMMARY, CONCLUSION, AND RECOMMENDATIONS

5.1 Summary Of The Study

This study examined the effect of firm attributes on the performance of manufacturing firms in Nigeria, with particular focus on the moderating role of leverage. Firm attributes considered include firm size, firm age, asset tangibility, and growth opportunities, while firm performance was measured using profitability indicators. The study employed quantitative techniques to analyze data obtained from manufacturing firms.

The empirical findings indicate that firm attributes significantly influence performance and that leverage plays a critical moderating role in this relationship.

5.2 Conclusion

Based on the findings, the study concludes that firm attributes are important determinants of performance in the Nigerian manufacturing sector. Firm size and asset tangibility emerged as key drivers of performance, while growth opportunities contribute to sustained competitiveness. Although firm age enhances stability, it does not necessarily guarantee superior performance.

Leverage was found to significantly moderate the relationship between firm attributes and performance. Moderate and well-managed leverage enhances firm performance, particularly for firms with strong asset bases. However, excessive reliance on debt financing may undermine performance due to increased financial risk.

5.3 Recommendations

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

Manufacturing firms should pursue optimal capital structures that balance the benefits and risks of debt financing to enhance performance.

Firm managers should leverage tangible assets effectively to secure favorable financing terms and improve operational efficiency.

Policy makers should support access to affordable long-term financing for manufacturing firms to encourage sustainable growth.

Firms should adopt strategic growth initiatives that enhance competitiveness without overexposure to financial risk.

Financial institutions should tailor lending products to the unique needs of manufacturing firms, considering asset structure and firm size.

REFERENCES

1. Abdullahi, B., & Bello, S. (2024). Impact of firm size on performance of listed manufacturing firms in Nigeria. *Journal of African Business Studies, 12*(1), 45- 60.
2. Abubakar, U., & Uthman, I. (2025). Moderating effect of firm age on leverage and performance: Evidence from Nigerian listed firms. *International Journal of Finance and Economics, 30*(2), 212–230.

3. Adekunle, W., & Ismail, A. (2023). Firm characteristics and financial performance of listed manufacturing firms in Nigeria. *Journal of Accounting and Management Studies, 9*(1), 45–63.
4. African Development Bank (ADB). (2023). African economic outlook 2023: Mobilizing private sector financing for climate and green growth in Africa. AfDB Group.
5. Akaegbobi, I. M., & Okeke, C. N. (2025). Financial leverage and asset utilisation in industrial firms. *Benin Journal of Accounting, Finance and Economics, 15*(1), 45–63.
6. Anthony, J. H., & Ramesh, K. (1992). Association between accounting performance measures and stock prices: A test of the life cycle hypothesis. *Journal of Accounting and Economics, 15*(2–3), 203–227. https://doi.org/10.1016/0165-4101(92)90018-W
7. Arellano, M., & Bond, S. (1991). Some tests of specification for panel data. *Review of Economic Studies, 58*(2), 277–297.
8. Baltagi, B. H. (2021). *Econometric analysis of panel data* (6th ed.). Wiley.
9. Barney, J. (1991). Firm resources and sustained competitive advantage. *Journal of Management, 17*(1), 99–120.
10. Baron, R. M., & Kenny, D. A. (1986). The moderator–mediator variable distinction in social psychological research. *Journal of Personality and Social Psychology, 51*(6), 1173–1182.
11. Blundell, R., & Bond, S. (1998). Initial conditions and moment restrictions in dynamic panel data models. *Journal of Econometrics, 87*(1), 115–143. https://doi.org/10.1016/S0304-4076(98)00009-8
12. Brealey, R. A., Myers, S. C., & Allen, F. (2020). *Principles of corporate finance* (13th ed.). McGraw-Hill.
13. Brigham, E. F., & Ehrhardt, M. C. (2017). *Financial management: Theory and practice* (15th ed.). Cengage Learning.
14, Campello, M. (2006). Debt financing and performance under varying conditions. *Journal of Financial Stability, 8*(3), 140–152.
15. Central Bank of Nigeria (CBN). (2024). *Statistical bulletin 2024*. Central Bank of Nigeria.
16. Coad, A., Segarra, A., & Teruel, M. (2013). Like milk or fine wine: Does firm performance improve with age? *Structural Change and Economic Dynamics, 24*, 173–189.
17. Daniya, A. A., Ibrahim, U., & Yusuf, M. S. (2024). Corporate attributes and firm value of listed consumer and industrial goods firms in Nigeria. *FUDMA Journal of Accounting and Finance Research, 6*(2), 112–130.
18. Eze, E., & Okoye, L. (2023). Asset tangibility and firm performance in Nigerian manufacturing. *International Journal of Business and Finance Research, 9*(2), 78–96.
19. Gitau, A., & Waithaka, D. (2022). Liquidity management practices and firm performance. *African Journal of Management, 10*(1), 54–70.
20. Goddard, J., Tavakoli, M., & Wilson, J. O. S. (2005). Determinants of profitability in European manufacturing. *European Journal of Finance, 11*(3), 261–289
21. Hausman, J. A. (1978). Specification tests in econometrics. *Econometrica, 46*(6), 1251–1271.
22. Ibrahim, M., & Adebayo, A. (2023). Liquidity and performance of Nigerian manufacturing firms. *Journal of Contemporary Business Research, 6*(1), 115–132.
23. Jensen, M. C., & Meckling, W. H. (1976). Theory of the firm: Managerial behavior, agency costs and ownership structure. *Journal of Financial Economics, 3(*4), 305–360. https://doi.org/10.1016/0304-405X(76)90026-X
24. Khan, A., & Zahid, M. (2021). Growth financing and profitability in emerging markets. *Journal of Financial Markets, 14*(1), 67–85
25. Manufacturers Association of Nigeria (MAN). (2024). *MAN economic review and manufacturing sector report 2024.* Manufacturers Association of Nigeria.
26. Margaritis, D., & Psillaki, M. (2010). Capital structure, equity ownership and firm performance. *Journal of Banking & Finance, 34*(3), 621–632.

27. Musa, L., & Hamza, A. (2022). Firm age and performance in West African manufacturing. *African Journal of Economic and Management Studies, 13(*2), 189–204.
28. Modigliani, F., & Miller, M. H. (1963). Corporate income taxes and the cost of capital: A correction. *American Economic Review, 53*(3), 433–443
29. Modigliani, F., & Miller, M. H. (1958). The cost of capital, corporation finance, and the theory of investment. *American Economic Review, 48*(3), 261–297.
30. Myers, S. C. (1984). The capital structure puzzle. *Journal of Finance, 39*(3), 575–592. https://doi.org/10.1111/j.1540-6261.1984.tb03646.x
31. Myers, S. C., & Majluf, N. S. (1984). Corporate financing and investment decisions when firms have information that investors do not have. *Journal of Financial Economics, 13*(2), 187–221. https://doi.org/10.1016/0304-405X(84)90023-0
32. National Bureau of Statistics (NBS). (2024). *Nigerian gross domestic product report (Q4 2024).* National Bureau of Statistics.
33. Nkasi, C., & Philemon, E. (2025). Firm characteristics and financial performance of listed manufacturing firms in Nigeria. *African Journal of Business and Development Management Research, 14*(1), 78–96.
34. Nwankwo, P., Ada, I., & Ibe, J. (2024). Growth opportunities and market valuation of manufacturing firms in Nigeria. *Journal of Finance and Development, 11*(3), 203–225
35. Ogbonna, J., & Agbo, A. (2024). Tangibility and liquidity effects on performance in Nigerian manufacturing firms. *African Journal of Financial Research, 5*(1), 17–35.
36. Olaoye, A., & Yusuf, H. (2023). Growth and performance among NGX-listed firms: The role of firm size. *Journal of Emerging Markets Finance, 8*(2), 87–104.
37. Okeke, P. O., & Okafor, C. N. (2023). Firm size and performance stability in Nigerian manufacturing firms. *International Journal of Business and Finance Research, 9(*3), 120–138.
38. Okoba, P. O., & Chukwu, I. A. (2025). Firm-specific determinants and financial performance of listed consumer goods firms in Nigeria. *FUOYE Journal of Accounting and Management, 8*(1), 21–39.
39. Onuorah, U., Ekwueme, J., & Okoye, M. (2024). Asset tangibility and profitability: Nigerian evidence. *International Journal of Corporate Finance, 10*(1), 45–61.
40. Rajan, R. G., & Zingales, L. (1995). What do we know about capital structure? *Journal of Finance, 50*(5), 1421–1460.
41. Ross, S. A., Westerfield, R. W., & Jordan, B. D. (2019). Fundamentals of Corporate Finance (12th ed.). McGraw-Hill.
42. Titman, S., Keown, A. J., Martin, J. D., & Martin, F. (2021). *Financial management: principles and applications* (13th ed.). Pearson.
43. Titman, S., & Wessels, R. (1988). The determinants of capital structure choice. *Journal of Finance, 43*(1), 1–19. https://doi.org/10.1111/j.1540-6261.1988.tb02585.x
44. Tobin, J. (1969). A general equilibrium approach to monetary theory. *Journal of Money, Credit and Banking, 1*(1), 15–29. https://doi.org/10.2307/1991374