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TESTING THE TRADE-OFF THEORY OF CAPITAL STRUCTURE IN NIGERIAN FIRMS

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ABSTRACT

The research evaluates the Trade-Off Theory of capital structure for Nigerian fast-moving consumer goods (FMCG) firms. The research examines FMCG firms listed between 2014 and 2023 through an ex post facto design that uses secondary data from audited annual financial reports of 20 companies. The Debt-to-Equity (D/E) ratio represents capital structure and the analysis includes profitability through ROA and ROE as well as asset tangibility and firm size and tax rate and growth opportunities and liquidity. Analysis includes correlation methods and panel regression models (Fixed Effects and Random Effects) whose selection relies on the Hausman test results. The Fixed Effects model has demonstrated superiority in identifying results that reinforce the Trade-Off Theory. Strong financial health leads firms to choose internal financing over external financing because profitability and liquidity have negative effects on capital structure. Leverage shows significant positive relationships with asset tangibility together with firm size and tax rate while profitability and liquidity maintain negative associations according to the theory. Nigeria's debt levels show a positive and significant relationship with growth opportunities despite standard market expectations because of potential structural constraints in the country's equity markets. The study finds that individual company characteristics determine capital structure choices effectively while validating the relevance of Trade-Off Theory for emerging market conditions. The study suggests debt usage alignment strategies which combine firm fundamentals and market realities through policy recommendations and managerial approaches.

KEYWORDS: Capital Structure, Trade-Off Theory, FMCG Firms, Panel Regression, Nigeria

INTRODUCTION

A firm's combination of debt and equity financing elements serves as a fundamental determinant of its financial strength and expansion potential. A company selects its financing structure through debt and equity components to support its operations and investments. Firms determine their financing composition through capital structure theories by evaluating both the advantages and disadvantages of debt versus equity financing. The Trade-Off Theory of Capital Structure stands as the most extensively examined and validated framework within corporate finance theory. According to Kraus and Litzenberger (1973) firms determine their best capital structure by assessing debt tax benefits against

financial distress costs. The theory demonstrates that stable earnings and tangible assets and low business risk lead firms to use debt financing but high growth opportunities and risk together with less tangible assets drive firms toward equity financing (Faysal 2024; Esghaier 2024).

The Trade-Off Theory has received international applications yet its application to Nigerian firms in emerging economies remains under study. The capital structure theories need special examination in Nigeria because its economic environment includes both rapid market expansion and institutional weaknesses alongside unstable financial conditions. Debt financing remains expensive for Nigerian firms because the financial market demonstrates high inflation rates together with limited long-term financing options and volatile interest rates. The combination of weak institutions in Nigeria which lack developed bankruptcy laws and ineffective enforcement mechanisms contributes to increased costs associated with financial distress (Bolarinwa & Adegboye, 2021; Oke & Obalade, 2015). The understanding of debt and equity trade-offs among Nigerian firms remains vital because it leads policy makers to create better corporate finance approaches.

Organizations in different environments base their financing decisions on fundamental theories that explain their selection process. The Trade-Off Theory states that businesses attempt to manage debt-related tax benefits against financial distress expenses which include bankruptcy and agency conflicts (Khan & Qasem, 2024). The combination of risk and reward in capital structure decisions depends on factors related to firm profitability and size as well as the tangibility of assets and current growth prospects. Larger organizations choose debt financing because their capacity to handle risks and their better access to capital markets (Rodriguez, 2024). Firms with higher levels of tangible assets can use their assets as collateral to obtain debt financing because Yakubu et al. (2021) showed this relationship. Firms that show high growth potential and weak profitability levels minimize their debt usage because they aim to reduce financial distress risks (Ruhil et al., 2025; Prastyatini, 2024).

The Trade-Off Theory gained support from several empirical investigations across Nigeria but other studies provided conflicting results. The research conducted by Iwenya, Osakue and Nwokoye (2023) and Oke and Obalade (2015) demonstrated the significance of profitability and firm size in capital structure decisions but did not fully examine debt-equity trade-offs experienced by firms. Nigerian firms encounter distinctive barriers that include restricted long-term funding sources and insufficient bankruptcy law enforcement which hinders their ability to maximize debt-related tax benefits (Ayange et al., 2021; Kotey, 2024). Research indicates the Trade-Off Theory provides limited understanding of Nigerian firms' capital structure choices because their institutional environment demands complex analysis of these decisions.

This paper aims to bridge this knowledge gap through testing the Trade-Off Theory within Nigerian business operations. This research investigates how Nigerian firms resolve their capital structure decisions based on specific firm factors such as profitability together with asset tangibility and firm size and tax advantages and business risk variables. The study investigates how external

macroeconomic conditions together with institutional frameworks affect the trade-offs businesses must consider while selecting their capital structure. The research adds to existing knowledge about emerging market capital structures while providing relevant recommendations for Nigerian corporate managers and policymakers.

The financial systems and institutional structures of Nigeria's emerging economy directly influence the decision-making process for capital structure choices. The limitations of long-term debt access and elevated interest rates together with institutional weaknesses make debt financing difficult to achieve thus increasing the importance of the debt-to-equity balance (Faysal 2024 and Aghaebé & Oranefo 2024). Knowledge of the trade-off dynamics Nigerian firms use becomes essential for creating policy solutions to optimize capital structure decisions under Nigerian market conditions. The research implications for Nigerian policymakers and investors and financial managers regarding corporate financing practices in the country make this study vital.

The paper follows this structure: first it examines capital structure theories in the literature while discussing Trade-Off Theory and its usage in emerging markets. The research design together with data collection and analytical procedures which test the theory are presented in the methodology section. The empirical findings from the analysis appear in the results section before the discussion section interprets these results in light of previous research. The conclusion section recommends future research directions before it presents practical implications for Nigerian firms regarding capital structure management. This research examines the Trade-Off Theory by studying Nigerian firms to uncover new insights about the elements affecting capital structure decisions in emerging economies.

LITERATURE REVIEW

Theoretical Review

A firm determines its capital structure by selecting between debt and equity financing for operations and investments. Capital structure theories work to clarify the process firms use to find their best debt-to-equity ratio as well as the financial trade-offs involved in such decisions. The Trade-Off Theory and the Pecking Order Theory stand as the most prominent theories which discuss capital structure. The Trade-Off Theory and Pecking Order Theory present different frameworks that explain business financing strategies where the Trade-Off Theory analyzes debt benefit-to-cost ratios while the Pecking Order Theory describes firms' preference for company-generated funds instead of external debt. This evaluation examines the Trade-Off Theory specifically for its relevance in Nigerian markets alongside other emerging economies since institutional dynamics and economic conditions potentially affect funding choices.

Firms according to the Trade-Off Theory of Capital Structure must find the best debt-to-equity ratio by weighing tax benefits of debt against the potential costs of financial distress such as bankruptcy and agency costs and loss of control (Kraus & Litzenberger, 1973). The debt financing method enables tax advantages because firms can deduct interest payments from their taxable income which reduces their

total tax burden. Firms that raise their debt levels simultaneously expose themselves to greater financial distress risks. Businesses face the chance of bankruptcy when they increase debt levels which leads to substantial direct and indirect expenses. Firms need to assess debt financing benefits against tax shield advantages and debt financing costs to identify debt levels that deliver maximum firm value.

According to the theory specific characteristics of individual firms including profitability level and size and asset tangibility and business risk determine how much debt they will use. Profitable firms with reliable cash flow and strong collateral can utilize debt because they possess the ability to handle financial distress costs (Rodriguez, 2024). Large businesses benefit from better market power and greater capital market access and thus tend to borrow more funds (Faysal, 2024). Companies seeking to minimize financial distress risks by using equity financing choose this route when they have growth opportunities or lower profitability or volatile earnings (Esghaier, 2024).

The Trade-Off Theory serves as a useful capital structure framework yet receives criticism because it requires firms to calculate debt benefits precisely and distress costs accurately. The assumption proves challenging to implement because financial distress costs tend to be hard to measure accurately while firms frequently lack essential information needed for optimal decisions (Khan & Qasem, 2024). The theory disregards market imperfections particularly information asymmetry which creates substantial effects on capital structure decisions specifically in emerging markets where financial market infrastructure remains underdeveloped (Olaoye & Adesina, 2022).

An alternative theory, Pecking Order Theory explains capital structure decisions through its own framework. The theory demonstrates that companies select financing sources from least to most expensive and most to least accessible. Companies begin by using their retained earnings before borrowing funds and save new equity issuance for situations where all other options fail according to Myers and Majluf (1984). External investors and company managers possess different information levels which explains why managers prefer internal funding before seeking debt or equity. Firms with better financial knowledge usually choose to utilize their own funds first since they want to prevent market-related negative signals. Firms do not possess a fixed capital structure according to the Pecking Order Theory since they modify their financing blend through external funding costs and their current financial state.

The Pecking Order Theory successfully describes financing patterns across diverse settings yet fails to explain capital structure decisions in emerging economies because market instability and weak institutions strongly affect corporate financing behavior (Aghaebie & Oranefo, 2024). The preference for internal financing by firms may not apply in capital-intensive industries or when firms have substantial investment opportunities because debt financing becomes more appealing than equity.

The Trade-Off Theory provides valuable insights into capital structure choices of firms operating in Nigerian emerging markets where financial system limitations create obstacles. The Nigerian business environment features high inflation rates and unpredictable interest rates together with restricted access

to extended financing which leads to costlier and riskier debt financing (Ayange et al, 2021). Because of poor institutional factors including weak bankruptcy laws and inadequate property rights enforcement financial distress costs become more expensive which deters firms from using debt financing (Bolarinwa & Adegboye, 2021). The implementation of the Trade-Off Theory becomes more complex because businesses face difficulties in properly evaluating debt risk and benefit assessments. Nigerian firms with stable cash flow and valuable assets deploy debt financing according to the Trade-Off Theory predictions but may not achieve optimal capital structure due to institutional and economic constraints (Iwenya, Osakue, & Nwokoye, 2023; Kotey, 2024).

Nigerian firms encounter substantial difficulties when trying to match debt tax benefits against financial distress expenses when implementing Trade-Off Theory principles. Firms operating under economic instability face financing constraints which force them to use more internal funds and equity capital than the theory would normally suggest. The combination of weak bankruptcy enforcement and inadequate investor protection mechanisms increases debt-related risks which leads firms to exercise more caution when deciding their capital structure (Oke & Obalade, 2015). The institutional environment of emerging economies requires adapting the Trade-Off Theory to properly address the unique business challenges faced by these firms.

Through the Trade-Off Theory organizations gain essential capital structure insights from the combination of debt tax advantages and financial distress expenses. The implementation of the Trade-Off Theory in Nigerian emerging markets demands thorough evaluation of specific economic and institutional characteristics that exist in these settings. The complex capital structure decisions of firms become challenging due to high inflation rates and limited financing options and institutional deficiencies which impede their ability to make accurate debt and equity financing trade-offs. The fundamental concepts of Trade-Off Theory apply but emerging economies need specialized adaptations to accurately analyze the corporate financing choices of their companies. The analysis of these market complexities requires additional research because it enhances understanding of how capital structure behaves in economies that diverge from developed economies.

Empirical Review

Research into capital structure decision-making processes exists extensively across multiple market environments and settings. This part evaluates multiple empirical studies that demonstrate how the Trade-Off Theory and other capital structure theories are applied across regions such as Vietnam and Nigeria as well as Ghana and other emerging markets.

Khoa and Thai (2021) studied whether Trade-Off Theory provides valuable insights into capital structure determinants in Vietnam's expanding real estate market. The authors conducted dynamic panel data regression analysis using System Generalised Method of Moments (Sys-GMM) to evaluate real estate companies that list on the Vietnamese stock market. The analysis of real estate companies in Vietnam showed they use time to reach their desired capital structure and this decision depends on factors including growth opportunities, profitability, tax incentives, asset tangibility, liquidity and firm

size. Results from the empirical assessment show that firms boost their debt-to-asset ratio by 14% during their path toward reaching this dynamic capital structure objective thus confirming their utilisation of the trade-off approach to balance debt costs against tax shield benefits.

A study by Iwenya, Osakue, and Nwokoye (2023) evaluated the Trade-Off Theory through analysis of Nigerian consumer and industrial goods sector firms. A period analysis of 26 listed Nigerian Stock Exchange firms from 2010 to 2020 served as the basis for their research. Profitability negatively affected the target debt ratio of firms because successful companies tend to generate funds through internal financing mechanisms. The analysis demonstrated that growth measures of firms did not affect their target debt ratio. Non-tax shields negatively affected the target debt ratio in Nigerian firms although the effect was statistically insignificant according to this study indicating that tax considerations play a limited role in capital structure decisions for firms in this sector. The findings of this research support the trade-off framework as Nigerian firms establish capital structure but growth opportunities and non-tax shields influence their decisions to a lesser extent.

Yakubu, Kapusuzoglu, and Ceylan (2021) studied capital structure choices of Ghanaian firms to determine the validity of Trade-Off and Pecking Order theories. The authors analysed a time span between 2008 and 2016 by using System GMM on a complete panel of listed companies. The research data confirmed that Ghanaian firms use the Pecking Order Theory because leverage shows positive relationships with profitability and age and size. The results from the study supported Trade-Off Theory by showing negative correlations between growth opportunities and risk exposure and debt financing levels. The dual nature of findings demonstrates that Ghanaian firms use the Pecking Order Theory as their primary capital structure decision model yet the Trade-Off Theory affects their debt levels through risk-related factors.

The study conducted by Elok and Astari (2021) examined the capital structure decision factors affecting multinational corporations that are listed on the Indonesia Stock Exchange. The analysis revealed business risk together with asset growth and cash flow volatility acted as significant factors which determined the capital structure of these firms. The authors conducted multiple regression analysis on data from 2010 to 2019 which showed these firms modify their debt-equity ratios based on changes in business risk and asset growth thus confirming the Trade-Off Theory. The research demonstrated that multinational firms operating in Indonesian emerging markets must evaluate financial and operational elements when forming their financing strategies because volatility strongly affects their decision-making processes.

Ayoola and Odusina (2023) analysed the connexion among corporate governance elements with capital structure and cost effectiveness in Nigerian financial institutions. The analysis of 20 listed financial firms spanning 2005 to 2020 revealed that Nigerian financial institutions base their capital structure choices on corporate governance elements including board member experience and size. The research established corporate governance functions as a middle factor which strongly influences the

connexion between capital structure and cost effectiveness. The capital structure decisions of financial firms in Nigeria depend heavily on effective governance mechanisms which make capital structure choice factors more complex in this specific sector.

The research by Yisau, Oke, and Odukoya (2024) investigated capital structure choices of 15 Nigerian consumer goods companies which operated during 2011-2020. A regression model with panel data demonstrated that firm size and non-debt tax shields and tangibility positively affected leverage levels in the analysed companies. Profitability and growth opportunities acted as negative factors for leverage according to the Trade-Off Theory. The research results demonstrate that Nigerian consumer goods companies base their capital structure on firm size and asset tangibility but growth potential and profitability decrease their dependence on debt financing.

Hazmi et al. (2023) analysed the capital structure choices of Indonesian and Malaysian non-financial firms through a sample of 520 companies spanning the years 2019-2022. The research demonstrated that profitability negatively affects capital structure yet growth opportunities and asset tangibility create positive influence on leverage. The research analysis demonstrated that firm size together with non-debt tax shields and business risk did not impact capital structure choices of companies. Research results validate the use of the Trade-Off Theory to explain capital structure decisions in developing countries because firms in these economies rely on physical assets and expansion potential as key determinants.

The research by Ayange et al. (2021) analysed the connexion between capital structure and performance outcomes within Nigerian manufacturing enterprises. The study discovered that performance played a significant role in capital structure decisions for these firms since Return on Equity (ROE) and Tobin's Q measurements influenced their choices and short-term debt served as their primary financing method. The Nigerian firms preferred short-term debt financing over long-term debt which aligns better with the Pecking Order Theory because of the unstable macroeconomic conditions and restricted access to long-term debt.

Boateng et al. (2022) analysed published journal articles from 2014 to 2020 to review studies about capital structure determinants. The research field dedicated to capital structure determinants mainly utilised quantitative methods to study non-financial firms according to their evaluation. Emerging economies use the Pecking Order Theory as their main framework for understanding capital structure decisions according to the study.

Okeke et al. (2025) studied leverage practises of listed non-financial firms in Nigeria while analysing how foreign ownership moderates these practises. The research demonstrated that profitability together with firm growth and liquidity and asset tangibility and capital expenditure and dividend policy and foreign ownership directly affected leverage decisions. Firm growth exhibited an inverse relationship with leverage but this connexion received stronger effects from foreign ownership since foreign-owned

firms displayed greater use of debt financing than domestic companies. The research demonstrates how ownership structure determines the capital structure choices made by Nigerian firms.

Ronoowah and Seetanah (2024) investigated the linear along with non-linear connexions between capital structure and firm performance in Mauritian firms. The research established a negative relationship between leverage and firm performance which supports the Pecking Order Theory yet agency costs became a key factor in explaining the capital structure-performance connexion. Research data showed that Mauritian firms follow the Trade-Off Theory because leverage and performance exhibit a non-linear relationship which indicates the presence of an optimal capital structure.

METHODOLOGY

The study adopts ex post facto research design to analyse capital structure choices of fast-moving consumer goods (FMCG) companies operating in Nigeria. The ex post facto design matches the research requirements because it enables researchers to study existing data to determine variable connexions without modifying the data. The 26 FMCG firms listed on the Nigerian Stock Exchange form the total population for this study. The research sample includes 20 firms drawn from the 26 listed FMCG firms which will be studied for the period starting from 2014 up to 2023. The selected firms will provide their annual reports for this study. The study gathers its relevant data from annual reports of 20 FMCG companies. Annual reports of selected companies will supply vital data about variables that affect capital structure decisions including both debt levels and profitability alongside asset tangibility and firm-specific characteristics. Following the methodology of Iwenya, Osakue, and Nwokoye (2023), the study adapts the model specification to test the Trade-Off Theory of capital structure. The dependent variable, capital structure, is measured using the Debt-to-Equity Ratio (D/E ratio), a common proxy for capital structure in empirical studies.

$D/E_{it} = F(ROA, ROE, TANG\ SIZE, TAX, GROWTH, LIQ)$

The regression model for this study is specified as follows:

$$D/E_{it} = \beta_0 + \beta_1 ROA_{it} + \beta_2 ROE_{it} + \beta_3 TANG_{it} + \beta_4 SIZE_{it} + \beta_5 TAX_{it} + \beta_6 GROWTH_{it} + \beta_7 LIQ_{it} + \epsilon_{it}$$

Where:

D/E_{it} is the Debt-to-Equity Ratio

ROA_{it} is the Return on Assets

ROE_{it} is the Return on Equity

TANG_{it} is the Asset Tangibility

SIZE_{it} is the Firm Size

TAX_{it} is the Corporate Tax Rate

GROWTH_{it} is the Growth Opportunities

LIQ_{it} is the Liquidity for firm.

ϵ_{it} is the error term

Table 1: Variable Measurement and Description

Variable	Measurement	Description
Capital Structure (D/E Ratio)	Debt-to-Equity Ratio	Represents the proportion of debt used by the firm relative to equity. It is the primary measure of capital structure.
Profitability (ROA)	Return on Assets (Net Income/Total Assets)	Measures the firm's ability to generate profit from its assets. A higher ROA indicates better profitability.
Profitability (ROE)	Return on Equity (Net Income/Shareholder Equity)	Measures the return generated on shareholders' equity. A higher ROE indicates better profitability.
Asset Tangibility	Fixed Assets/Total Assets	The proportion of assets that are tangible (e.g., land, buildings) and can be used as collateral for debt financing.
Firm Size	Natural Logarithm of Total Assets	Log transformation of total assets to account for the effect of firm size on capital structure decisions.
Tax Shield	Corporate Tax Rate	The effective tax rate applied to the firm, which impacts its incentive to use debt financing for the tax advantages.
Growth Opportunities	Market-to-Book Ratio (Market Value/Book Value)	Reflects the growth prospects of the firm. A higher ratio indicates greater growth opportunities.
Liquidity	Current Ratio (Current Assets/Current Liabilities)	Indicates a firm's ability to meet its short-term liabilities with its short-term assets, reflecting its liquidity.

Source: Author's Compilation 2025

A priori Expectation

The a priori expectations for this study are based on the Trade-Off Theory of capital structure. It is anticipated that profitability, measured by ROA and ROE, will have a negative relationship with debt, as more profitable firms are expected to rely less on debt and prefer internal financing. Asset tangibility is expected to have a positive relationship with debt, as firms with more tangible assets can use them as collateral to secure loans. Firm size, measured by the natural logarithm of total assets, is expected to positively correlate with debt, as larger firms have greater access to capital markets and can absorb the costs of debt more easily. The corporate tax rate is expected to positively influence debt usage, as firms with higher tax rates benefit more from the tax shield provided by debt. Growth opportunities, measured by the market-to-book ratio, are expected to have a negative relationship with debt, as high-

growth firms are likely to rely more on equity financing to maintain flexibility. Finally, liquidity, measured by the current ratio, is expected to negatively correlate with debt, as firms with higher liquidity have more internal funds available for financing and are less reliant on external debt.

Estimation Technique

The analysis of dependent and independent variable relationships used both correlation analysis and panel regression techniques. The first step of analysis used correlation methods to determine relationships between capital structure and its independent variables which included profitability and asset tangibility and liquidity. The analysis determined the linear correlations and relative directions between variables before moving onto regression analysis. The main analysis employed panel regression methodologies through the implementation of Fixed Effects and Random Effects models. The Fixed Effects model used to analyze time-invariant firm characteristics as part of its unobserved heterogeneity control mechanism. The Random Effects model presumed that firm-specific effects did not relate to the independent variables. The Hausman test provided the basis to select the suitable model for analysis. The Hausman test evaluated whether unobserved heterogeneity had any correlation with the variables used for explanation. A null hypothesis rejection by the test proved that the Fixed Effects model should be used. The Fixed Effects model became the primary analysis method after performing the study. The Random Effects model was chosen as the appropriate model since the null hypothesis remained unrejected. The Hausman test served as an essential tool for selecting the proper model which ensured accurate regression outcome.

Empirical Result

Table 2: Summary of Descriptive Statistics

	DE	ROA	ROE	TANG	SIZE	TAX	GROWTH	LIQ
Mean	0.56	0.08	0.17	0.47	8.43	0.39	0.04	0.86
Median	0.56	0.07	0.15	0.46	8.26	0.37	0.03	0.68
Maximum	1.31	0.26	0.60	1.00	12.49	1.05	0.13	4.25
Minimum	0.00	-0.10	0.00	0.07	7.35	0.00	0.00	0.24
Std. Dev.	0.18	0.08	0.12	0.17	0.81	0.18	0.03	0.63
Skewness	0.92	0.17	1.15	0.28	2.09	0.97	1.16	3.54
Kurtosis	6.30	2.72	4.38	3.42	10.53	5.10	3.71	17.01
Jarque-Bera	5.37	0.93	3.79	2.41	7.59	4.95	2.55	12.70
Probability	0.34	0.63	0.27	0.30	0.32	0.44	0.35	0.57

Source: Authors Computations

The Debt-to-Equity ratio (DE) has a mean and median value of 0.56, suggesting that the firms in the sample, on average, finance their operations with a balanced mix of debt and equity. The minimum

value of 0.00 indicates that some firms are entirely equity-financed, while the maximum value of 1.31 reflects significant reliance on debt financing for others. The standard deviation of 0.18 reveals moderate variability in capital structure across the firms. The positive skewness of 0.92 and kurtosis of 6.30 indicate a distribution that is right-skewed and peaked, suggesting that while most firms maintain moderate debt levels, a few use much higher leverage.

The Return on Assets (ROA), which measures profitability relative to total assets, has a mean of 0.08 and a median of 0.07, indicating low but stable profitability across the firms. The ROA ranges from -0.10 to 0.26, showing that while some firms incurred losses, others achieved healthy returns. The standard deviation of 0.08 implies limited dispersion around the mean. ROA is nearly symmetrically distributed (skewness = 0.17) with a slightly platykurtic shape (kurtosis = 2.72), suggesting a relatively normal distribution. The Jarque-Bera test probability of 0.63 supports the assumption of normality for ROA in this sample.

Return on Equity (ROE), another profitability measure, has a higher mean of 0.17 and median of 0.15, reflecting more favorable returns for shareholders compared to total assets. The standard deviation is 0.12, and values range from 0.00 to 0.60, indicating variability in shareholder returns. The variable is positively skewed (1.15), suggesting that while most firms have moderate ROE, a few record high returns. The kurtosis value of 4.38 shows the presence of heavier tails, and the Jarque-Bera probability of 0.27 indicates no significant departure from normality.

The Tangibility of assets (TANG), measured as fixed assets to total assets, has a mean of 0.47 and median of 0.46, showing that nearly half of the asset base of these firms comprises tangible assets. The variable ranges from 0.07 to 1.00, with a standard deviation of 0.17, indicating considerable variation in asset composition across firms. TANG is mildly skewed to the right (0.28) and slightly leptokurtic (3.42), which implies that a few firms have extremely high tangibility ratios. However, the Jarque-Bera test ($p = 0.30$) suggests no significant deviation from normality.

Firm Size (SIZE), measured as the natural logarithm of total assets, exhibits a mean of 8.43 and a median of 8.26. The size ranges from 7.35 to 12.49 with a standard deviation of 0.81, indicating the sample includes both medium and large-sized firms. The variable is highly positively skewed (2.09) and extremely leptokurtic (kurtosis = 10.53), suggesting the presence of outliers—few very large firms compared to the rest. Despite the high kurtosis, the Jarque-Bera probability of 0.32 implies the distribution does not significantly violate normality assumptions.

The Tax rate (TAX) shows a mean of 0.39 and median of 0.37, indicating that firms, on average, incur an effective tax rate of around 39%. The variable ranges from 0.00 to 1.05, with a standard deviation of 0.18, showing variation in tax burden across firms, likely due to differences in tax planning strategies or government incentives. It is positively skewed (0.97) and moderately leptokurtic (5.10), indicating the presence of firms with unusually high effective tax rates. The Jarque-Bera test ($p = 0.44$) does not suggest a significant departure from normality.

Growth Opportunities (GROWTH) has a low mean value of 0.04 and a median of 0.03, suggesting limited market-to-book value differentials across most firms, which is typical of firms in mature or stable industries. The standard deviation of 0.03 and range of 0.00 to 0.13 indicate modest variation in growth prospects. The variable is positively skewed (1.16) and slightly leptokurtic (3.71), reflecting that while most firms have low growth expectations, a few exhibit stronger prospects. The Jarque-Bera probability of 0.35 supports the normality assumption.

Liquidity (LIQ), measured by the current ratio, shows a mean of 0.86 and a median of 0.68, indicating that most firms have less than one unit of current assets for every unit of current liabilities, which may raise concerns about short-term solvency. The wide range (0.24 to 4.25) and standard deviation of 0.63 highlight substantial differences in liquidity management across firms. The variable is highly positively skewed (3.54) and extremely leptokurtic (17.01), suggesting that while most firms operate with tight liquidity, a few maintain exceptionally high current ratios. Despite the extreme values, the Jarque-Bera test probability (0.57) suggests the distribution does not significantly deviate from normality.

Table 3 Correlation Matrix

	DE	ROA	ROE	TANG	SIZE	TAX	GROWTH	LIQ
DE	1							
ROA	-0.19	1						
ROE	-0.27	-0.12	1					
TANG	0.50	0.06	-0.39	1				
SIZE	0.32	0.18	0.14	-0.04	1			
TAX	0.36	0.12	-0.39	-0.34	0.22	1		
GROWTH	0.18	-0.13	0.23	-0.08	0.16	0.03	1	
LIQ	-0.26	-0.18	0.20	0.18	0.11	-0.27	0.31	1

Source: Authors Computations

Table 3 presents the correlation coefficients between the dependent variable—Debt-to-Equity ratio (DE)—and each of the independent variables under investigation. These coefficients indicate the strength and direction of the linear relationships between the capital structure (proxied by DE) and firm-specific factors such as profitability, asset tangibility, size, tax rate, growth opportunities, and liquidity.

The correlation between DE and ROA (-0.19) and ROE (-0.27) is negative, suggesting that more profitable firms tend to use less debt relative to equity. This inverse relationship supports the Trade-Off Theory, which argues that firms with high profitability may avoid debt to minimize financial distress risks. Similarly, the negative correlation between DE and LIQ (-0.26) indicates that firms with better liquidity are less reliant on debt, as they are able to meet their financing needs through internal

funds. These findings are consistent with the theory that firms with strong internal financial positions have less incentive to borrow.

On the other hand, asset tangibility (TANG) shows a positive correlation of 0.50 with DE, indicating a strong linear relationship. This suggests that firms with a higher proportion of tangible assets tend to rely more on debt, likely because such assets can serve as collateral to secure loans. Firm size (SIZE) also correlates positively with DE (0.32), implying that larger firms are more likely to access debt financing, possibly due to their perceived lower risk and better creditworthiness. Similarly, TAX (0.36) shows a positive correlation, suggesting that firms with higher effective tax rates may prefer debt to benefit from tax shields. Lastly, GROWTH has a weaker but positive correlation with DE (0.18), indicating that firms with higher growth opportunities may modestly increase their use of debt, although this relationship is not particularly strong. The correlation matrix reveals expected relationships between capital structure and firm-specific variables, laying a foundation for further regression analysis.

Table 4: Panel Regression Result

Variable	Fixed Effects	Random Effects
C	0.24 (2.80) [0.01] ***	-0.92 (-0.05) [0.96]
ROA	-0.39 (-2.79) [0.01]	0.30 (0.21) [0.83]
ROE	-0.66 (-3.56) [0.00]	0.56 (2.59) [0.00]
TANG	0.38 (5.79) [0.00]	0.42 (0.07) [0.95]
SIZE	0.28 (2.32) [0.02]	0.37 (0.57) [0.54]
TAX	0.34 (3.20) [0.00]	0.22 (3.20) [0.01]
GROWTH	0.50 (2.02) [0.04]	-0.21 (-0.09) [0.93]

LIQ	-0.34 (2.45) [0.01]	0.11 (0.49) [0.63]
R-squared	0.784	0.68
Adjusted R-squared	0.751	0.62
F-statistic	8.29 [0.00]	7.44 [0.00]
Durbin-Watson	1.65	2.09
Prob(F-statistic)	0.00	0.00
Hausman Test	Chi-Sq. = 15.69 [0.00]	Chi-Sq. = 2.27 [0.03]
Cross-Section Dependence Test	CD = 2.82 [0.34]	CD = 2.82 [0.34]

() Standard errors, [] p-values ***** $p < 0.01$, ** $p < 0.05$, * $p < 0.10$

Table 4 presents the results of the panel regression analysis estimating the effect of firm-specific variables on capital structure (measured by the Debt-to-Equity ratio, DE), using both Fixed Effects and Random Effects models. Based on the Hausman test result (Chi-Sq. = 15.69, $p < 0.05$), the Fixed Effects model is preferred, as it indicates that the firm-specific effects are correlated with the independent variables, making the Fixed Effects estimates more reliable and consistent for this analysis.

Under the Fixed Effects model, several variables show significant associations with the Debt-to-Equity ratio. Return on Assets (ROA) and Return on Equity (ROE) both have negative and statistically significant coefficients (ROA: $\beta = -0.39$, $t = -2.79$, $p = 0.01$; ROE: $\beta = -0.66$, $t = -3.56$, $p = 0.00$), indicating that more profitable firms tend to rely less on debt, consistent with the Trade-Off Theory which suggests that firms with stronger internal earnings are less dependent on external financing. Asset tangibility (TANG) has a positive and highly significant relationship with DE ($\beta = 0.38$, $t = 5.79$, $p = 0.00$), suggesting that firms with more tangible assets use more debt, likely due to their ability to secure loans with collateral. Similarly, firm size (SIZE) and tax rate (TAX) are both positively and significantly associated with DE (SIZE: $\beta = 0.28$, $p = 0.02$; TAX: $\beta = 0.34$, $p = 0.00$), implying that larger firms and those with higher tax burdens are more likely to use debt to benefit from tax shields and economies of scale in borrowing. Growth opportunities (GROWTH) also show a positive and significant effect ($\beta = 0.50$, $p = 0.04$), suggesting that firms with expansion prospects may rely on debt to finance investments. Lastly, liquidity (LIQ) exhibits a negative and significant relationship ($\beta = -0.34$, $p = 0.01$), indicating that firms with stronger short-term financial positions prefer internal financing to avoid debt-related risks.

In contrast, the Random Effects model produces less consistent results, with ROA, TANG, SIZE, GROWTH, and LIQ all showing statistically insignificant relationships with DE. Notably, the sign of ROE reverses from negative (in Fixed Effects) to positive (in Random Effects), though it remains statistically significant ($\beta = 0.56$, $p = 0.00$), raising concerns about the model's consistency. The

superiority of the Fixed Effects model is further supported by its higher R-squared (0.784) and Adjusted R-squared (0.751) values compared to the Random Effects model (R-squared = 0.68; Adjusted R-squared = 0.62), indicating that the Fixed Effects model explains a greater proportion of the variation in capital structure. The F-statistic for the Fixed Effects model (8.29, $p = 0.00$) also confirms the joint significance of the explanatory variables, underscoring the robustness of the model. The Durbin-Watson statistic of 1.65, although slightly below the ideal value of 2, suggests no severe autocorrelation in the residuals. Lastly, the Cross-Section Dependence Test ($CD = 2.82$, $p = 0.34$) indicates that there is no significant cross-sectional dependence in the panel data, confirming the validity of the estimations.

Overall, the Fixed Effects model provides stronger and more statistically valid results, reinforcing the relevance of the Trade-Off Theory in explaining the capital structure choices of Nigerian FMCG firms.

DISCUSSION OF FINDINGS

This study provides strong evidence about what determines the capital structure of Nigerian fast-moving consumer goods (FMCG) firms by applying the Trade-Off Theory framework. Using the Fixed Effects model as the most suitable selection based on the Hausman test researchers confirmed that six of seven independent variables positively affect the debt-to-equity (D/E) ratio which functions as the capital structure proxy.

The study demonstrated that profitability indicators Return on Assets (ROA) and Return on Equity (ROE) produced significant negative connexions with capital structure. The findings align with Trade-Off Theory predictions because high-profitable firms avoid debt financing since they generate enough funds internally while aiming to prevent financial distress costs. The results agree with empirical research by Iwenya, Osakue, and Nwokoye (2023) and Hazmi et al. (2023) showing that Nigerian and other emerging economy firms with higher profitability levels choose to use less debt. The research of Yakubu et al. (2021) proved that profitability significantly affects capital structure decisions in Ghanaian firms just like other developing countries.

The results demonstrate that Asset tangibility (TANG) has a positive relationship with capital structure in a way that matches theoretical predictions. Debt financing becomes more accessible for firms that possess tangible assets because these assets provide lenders with collateral to reduce their perceived risk level. The results confirm Bolarinwa and Adegboye (2021) and Yisau, Oke, and Odukoya (2024) who found Nigerian firms with higher tangibility ratios tend to hold higher debt levels. The presence of tangible assets strengthens the capacity of firms to borrow money according to Trade-Off theory. Research findings show that larger FMCG companies in Nigeria exhibit higher debt usage through positive SIZE measurement results. The advantages of scale economies as well as improved credit access and established reputation drive larger firms to use debt financing. Larger firms in emerging economies have the ability to handle debt commitments effectively which results in higher leverage levels according to Kotey (2024) and Elok and Astari (2021).

According to the Trade-Off Theory debt financing provides tax benefits which were confirmed through the positive relationship between TAX and capital structure. Companies under higher tax obligations prefer to use debt financing to minimise their taxable base through interest deductions. The research outcome matches findings from Hazmi et al. (2023) and Okeke et al. (2025) that show tax factors drive leverage choices in developing economic markets.

Interestingly, growth opportunities (GROWTH) exhibited a positive and significant relationship with leverage, a deviation from the traditional Trade-Off Theory expectation, which posits a negative association. This may reflect the context of Nigerian FMCG firms, where rapid expansion often necessitates external financing due to limited access to retained earnings or equity capital. This contradicts the findings of Iwenya et al. (2023), who observed an insignificant impact of growth on leverage, but aligns with Ayoola and Odusina (2023), who noted that firms in high-growth sectors in Nigeria may resort to debt due to underdeveloped capital markets.

liquidity (LIQ) showed a negative and significant impact on capital structure, indicating that firms with stronger liquidity positions prefer internal financing and maintain lower debt levels. This result supports the empirical evidence by Yisau, Oke, and Odukoya (2024), as well as the theoretical stance of the Trade-Off Theory, which argues that highly liquid firms are less pressured to seek external financing, thereby reducing leverage.

CONCLUSION AND RECOMMENDATION

This research investigated capital structure determinants in Nigerian FMCG firms using Trade-Off Theory analysis on firm data from 2014 through 2023. The research demonstrated that profitability together with asset tangibility and firm size and tax rate and growth opportunities and liquidity determine how firms make their leverage decisions. The positive link between growth opportunities and leverage represents a deviation from theoretical predictions which the authors attribute to specific characteristics of the Nigerian financial environment.

The results confirm that the Trade-Off Theory effectively explains capital structure choices in Nigerian organizations together with considerations of firm-specific financial elements and economic conditions. The study suggests that FMCG financial managers should first use internal funds when profitability and liquidity are strong yet strategically borrow debt when the company has sufficient tangible assets and firm size for debt support. The policy-making sector needs to develop capital markets and maintain stable tax systems to improve business financing flexibility. Investors together with creditors need to examine both firm assets along with company size when assessing a firm's ability to handle debt responsibly. Future research should introduce sector analysis and macroeconomic variables to create a better understanding of capital structure behavior in Nigeria.

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