Capital structure decisions and firm value of listed oil and gas firms in Nigeria

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Abstract

This study examines the effect of capital structure decisions on firm value among listed oil and gas firms in Nigeria. Specifically, it evaluates the influence of the debt-to-equity ratio, short-term debt ratio, and interest coverage ratio on firm value measured using Tobin's Q. The study adopts a census approach, covering all seven firms listed on the Nigerian Exchange Group. Secondary data were obtained from audited annual financial statements over the study period, and multiple regression analysis was employed. The findings reveal that the short-term debt ratio has a negative and significant effect on firm value, suggesting that excessive reliance on short-term financing increases liquidity risk and diminishes market valuation. Similarly, the interest coverage ratio shows a negative and significant relationship with firm value, indicating that excessively high coverage levels may signal under-leverage and limited investment in profitable opportunities. In contrast, the debt-to-equity ratio exhibits a positive and significant effect, implying that optimal leverage enhances firm value through tax advantages and efficient capital utilization. The regression model is statistically significant ($p = 0.002$), confirming that capital structure decisions jointly influence firm value in Nigeria's oil and gas sector. The study recommends reducing overdependence on short-term debt, maintaining an optimal leverage mix, and improving the efficiency of borrowed funds. Policymakers are also encouraged to promote access to long-term financing to support value creation and financial stability.

Keywords: capital structure; firm value; debt-to-equity ratio; interest coverage ratio; oil and gas firms

Introduction

Firm value remains a foundational construct in corporate finance, representing the market's overall assessment of a firm's economic worth by integrating profitability, growth prospects, and risk exposure. It captures the extent to which managerial decisions and corporate strategies translate into sustained shareholder wealth and long-term viability. As noted by Damodaran (2023, p. 45), firm value reflects the combined influence of governance quality, innovation capacity, and investor confidence on organizational outcomes.

Within African economies, firm value serves as a key barometer of corporate efficiency and competitiveness, particularly in emerging markets characterized by institutional constraints and evolving governance frameworks. Ntim and Soobaroyen (2022) argue that improvements in governance mechanisms, ownership structures, and financial transparency significantly enhance firm valuation by strengthening investor trust. In Nigeria, firm value is especially sensitive to macroeconomic fluctuations, regulatory dynamics, and firm-level governance practices. Eze and Okoye (2024) identify governance effectiveness, financial reporting credibility, and macroeconomic stability as critical drivers of firm value, underscoring its relevance as a measure of accountability and investment attractiveness in the Nigerian capital market.

Capital structure decisions constitute a major determinant of firm value, particularly in capital-intensive industries such as oil and gas. The choice between debt and equity financing shapes the cost of capital, risk profile, and ultimately, shareholder returns. Efficient financing decisions enable firms to expand operations, optimize resource utilization, and improve market perception. Evidence from Nigeria suggests that moderate leverage enhances firm value, whereas excessive reliance on debt elevates financial risk and weakens market performance (Adegbie & Dada, 2023). Similarly, Uwuigbe et al. (2022) report that sound financing strategies contribute positively to firms' market valuation and competitive positioning.

Disaggregating capital structure components provides deeper insights into their distinct effects. Short-term debt, for instance, can improve liquidity management and reduce financing costs, thereby supporting operational efficiency. However, excessive dependence on short-term obligations may expose firms to refinancing and liquidity risks (Adegbie & Dada, 2023). In contrast, long-term debt offers more stable funding for capital investments and provides tax advantages through interest deductibility, although over-leverage may increase the likelihood of

financial distress (Uwuigbe et al., 2022). The interest coverage ratio, which measures a firm's capacity to meet interest obligations, also plays a critical role in shaping investor perceptions. Higher coverage levels typically signal financial strength and lower default risk, thereby enhancing firm valuation.

Against this backdrop, this study examines the effect of key capital structure indicators—debt-to-equity ratio, short-term debt ratio, and interest coverage ratio—on the firm value of listed oil and gas firms in Nigeria.

Despite extensive empirical inquiry into capital structure and firm performance, findings on the relationship between specific financing components and firm value remain inconclusive, particularly within Nigeria's oil and gas sector. Prior studies present mixed evidence: while some report that moderate short-term leverage improves firm outcomes (Anozie, 2023), others indicate that excessive debt reduces firm value (Uwuigbe et al., 2022). International evidence further suggests the possibility of nonlinear relationships between leverage and firm value (Bui et al., 2023; Karaca, 2025), yet such dynamics are insufficiently explored in the Nigerian context.

Notable empirical gaps persist. Although several studies examine capital structure broadly, only a limited number simultaneously analyze short-term debt, long-term debt, and interest coverage ratios within a unified framework (Adesina et al., 2022; Maduabuchi et al., 2025). Many existing studies, including Okeke (2019) and Osasare et al. (2023), rely on aggregate leverage measures or isolated indicators, thereby constraining a comprehensive understanding of how different financing dimensions influence firm value.

Theoretically, the literature is dominated by the trade-off and pecking-order frameworks, with relatively limited application of signalling theory. This represents a conceptual gap, given that debt composition and interest-servicing capacity can convey important signals about firm quality and future prospects to investors. In addition, variable specification and sectoral scope limitations persist, as disaggregated measures of capital structure are often underutilized, particularly within the oil and gas industry (Oke & Fadaka, 2022).

These gaps motivate the present study, which provides a more nuanced analysis of capital structure by focusing on specific financing ratios and their implications for firm value in Nigeria's oil and gas sector.

The main objective of this study is to examine the effect of capital structure decisions on the firm value of listed oil and gas firms in Nigeria. The specific objectives are to:

1. Determine the effect of the debt-to-equity ratio on the firm value of listed oil and gas firms in Nigeria.
2. Examine the effect of the short-term debt ratio on the firm value of listed oil and gas firms in Nigeria.
3. Assess the effect of the interest coverage ratio on the firm value of listed oil and gas firms in Nigeria.

In line with the stated objectives, the following null hypotheses are formulated:

H_{01}: The debt-to-equity ratio has no significant effect on the firm value of listed oil and gas firms in Nigeria.
H_{02}: The short-term debt ratio has no significant effect on the firm value of listed oil and gas firms in Nigeria.
H_{03}: The interest coverage ratio has no significant effect on the firm value of listed oil and gas firms in Nigeria.

Literature Review

Conceptual Review

Firm Value

Firm value is a fundamental construct in corporate finance that captures the market's evaluation of a firm's ability to generate sustainable economic returns. It reflects how efficiently organizational resources are deployed to create long-term shareholder wealth. Early work by Jensen and Meckling (1976) conceptualizes firm value as the aggregate worth of a firm derived from market capitalization and the discounted value of expected future cash flows, thereby linking managerial actions to shareholder wealth maximization. However, this shareholder-centric view has been criticized for underrepresenting broader stakeholder and sustainability considerations that increasingly influence long-term valuation.

Providing a broader perspective, Damodaran (2023) describes firm value as an economic measure of wealth creation that integrates both market-based indicators (e.g., Tobin's Q and earnings per share) and accounting-based metrics (e.g.,

book-to-market ratios). While this approach offers a more comprehensive evaluation, it implicitly assumes informational efficiency in capital markets—an assumption that is often weak in emerging economies where valuation may be influenced by regulatory inefficiencies and investor sentiment.

In Nigeria, firm value is commonly interpreted as the market's assessment of a firm's financial strength and governance quality within a volatile institutional environment. Okonkwo (2024) emphasizes governance structures and financing efficiency as central to investor confidence, particularly in the oil and gas sector. Nonetheless, such context-specific interpretations may understate the influence of global market dynamics and macroeconomic instability on firm valuation.

Closely associated with firm value are capital structure decisions, which determine the financing mix used to support corporate activities. The foundational proposition of Modigliani and Miller (1958), which asserts the irrelevance of capital structure under perfect market conditions, has been widely challenged due to the presence of taxes, bankruptcy costs, and information asymmetry in real-world settings.

Capital Structure

Capital structure refers to the strategic combination of debt and equity employed by firms to finance their operations and investments. Pandey (2020) defines it as managerial decisions regarding short-term and long-term financing choices that influence a firm's risk profile, liquidity position, and growth trajectory. While this perspective highlights the role of optimal financing in enhancing profitability, it assumes uniformity across industries and overlooks sector-specific dynamics such as the capital intensity and volatility characteristic of the oil and gas sector.

In the Nigerian context, Uwuigbe et al. (2022) view capital structure as a function of managerial decisions shaped by economic uncertainty, underdeveloped credit markets, and regulatory constraints. Although this approach captures institutional realities, it gives limited attention to behavioral and governance-related factors that may also influence financing choices.

Short-Term Debt Ratio

The short-term debt ratio represents the proportion of a firm's assets financed through obligations due within one year. Myers (1984) highlights its relevance in assessing liquidity management and financing flexibility. While short-term debt

can lower financing costs and enhance operational efficiency, excessive reliance may expose firms to rollover and liquidity risks. This traditional definition, however, does not fully account for firm-specific characteristics such as access to credit and industry conditions.

Recent perspectives provide more context-specific insights. Nwude (2023) defines the ratio as current liabilities relative to total assets, emphasizing its role in evaluating operational financing strategies within Nigeria's volatile financial environment. Similarly, Bui et al. (2023) interpret short-term debt as a critical component of working capital management in emerging markets, arguing that prudent usage supports liquidity and profitability. Nevertheless, these views may underestimate the potential instability associated with fluctuating interest rates and refinancing constraints.

Long-Term Debt Ratio

The long-term debt ratio measures the extent to which firms rely on debt with maturities exceeding one year to finance their activities. Titman and Wessels (1988) describe it as an indicator of strategic financing for long-term investments. While foundational, this perspective assumes relatively stable credit markets, an assumption that is often unrealistic in developing economies characterized by high borrowing costs and financial market imperfections.

Within Nigeria, Akinyomi and Olagunju (2022) conceptualize long-term debt as a critical source of financing for capital-intensive sectors, including oil and gas. Although long-term borrowing supports asset expansion and growth, its effectiveness may be constrained by macroeconomic instability, exchange rate volatility, and rising borrowing costs, which can increase financial risk.

Interest Coverage Ratio

The interest coverage ratio (ICR) is widely employed to evaluate a firm's ability to meet interest obligations from operating earnings. Onuora and Obia (2025) define it as the ratio of earnings before interest and taxes (EBIT) to interest expenses, reflecting short-term solvency and debt-servicing capacity. Higher ICR values typically indicate stronger financial health; however, this measure focuses primarily on accounting performance and may not capture broader strategic or sector-specific influences.

Similarly, Akpan et al. (2024) regard ICR as a key indicator of financial resilience that influences access to external financing. Firms with strong coverage ratios are more likely to secure favorable credit terms and sustain growth, whereas low coverage signals financial vulnerability. This dual role underscores ICR as both a risk metric and a determinant of financing conditions.

Review of Empirical Studies

Recent empirical studies provide mixed evidence on the relationship between capital structure components and firm value. Bui et al. (2023), using data from Vietnamese listed firms and employing OLS and fixed-effects models, report that the impact of short-term debt varies across industries, suggesting the need for sector-specific financing strategies. However, concerns regarding endogeneity and contextual differences limit the applicability of their findings to other emerging markets.

Chen (2023), analyzing Chinese A-share firms with dynamic panel techniques, finds that sustained reliance on short-term debt reduces firm value due to refinancing pressures. Although methodologically robust, the study's relevance to Nigeria is constrained by institutional differences.

Focusing on long-term leverage, Ahmed and Mohammed (2023) document a positive effect of moderate long-term debt on firm value among Kenyan firms, attributing this to signaling effects and financial stability. In contrast, Kumar and Sharma (2022) report a negative association in India, suggesting that investors may prefer equity financing under certain conditions. These divergent findings highlight the context-dependent nature of leverage decisions.

In Nigeria, Olaoye and Adebayo (2023) find that higher interest coverage ratios improve firm value in the oil and gas sector by reducing default risk. Similarly, Ene and Okafor (2023) report that inadequate coverage increases financial distress and diminishes firm value among consumer goods firms. Complementing these findings, Akpan et al. (2024) demonstrate that firms with strong interest coverage are better positioned to access external financing and sustain growth.

Overall, the empirical literature suggests that the effects of capital structure on firm value are nuanced. Short-term debt may enhance liquidity but can reduce value when overused; long-term debt supports stability at moderate levels but becomes detrimental when excessive; and strong interest coverage generally enhances firm valuation by lowering perceived risk.

Theoretical Framework

This study is anchored on an integrated application of the trade-off theory, pecking order theory, and signaling theory, which collectively explain financing decisions and their implications for firm value.

The trade-off theory posits that firms determine an optimal capital structure by balancing the benefits of debt—such as tax shields—against the costs of financial distress and bankruptcy. Within the oil and gas sector, where capital requirements are substantial, this theory explains why moderate leverage may enhance firm value, while excessive debt reduces it.

The pecking order theory (Myers, 1984) suggests that firms prioritize internal financing, followed by debt, and resort to equity as a last option due to information asymmetry and issuance costs. This framework is particularly relevant in Nigeria, where firms may rely heavily on short-term debt due to limited access to long-term capital markets. However, excessive dependence on short-term financing may introduce liquidity risks.

The signaling theory, originally proposed by Spence (1973) and extended by Ross (1977), provides further insight into how financing choices convey information to investors. Because managers possess superior information about firm prospects, their financing decisions serve as signals of firm quality. For instance, the use of debt may indicate confidence in future cash flows, while a strong interest coverage ratio signals financial stability and low default risk. Empirical extensions by Frank and Goyal (2019) reinforce the relevance of signaling mechanisms in capital structure decisions.

Integrating these theories offers a comprehensive framework for understanding capital structure in the Nigerian oil and gas sector. While the trade-off theory explains optimal leverage decisions, the pecking order theory highlights financing preferences under information asymmetry, and signaling theory captures how these decisions influence investor perception and firm value. Nonetheless, these theories have limitations, particularly in emerging markets where institutional weaknesses, regulatory constraints, and macroeconomic volatility may distort theoretical predictions.

Methodology

Research Design

This study adopts an **ex post facto research design**, which is appropriate for examining relationships among variables without experimental manipulation. The design relies on historical data to evaluate how prior financing decisions influence firm outcomes. It is particularly suitable for corporate finance research where variables such as capital structure and firm value are observed rather than controlled.

Population, Sample, and Data Source

The population comprises all oil and gas firms listed on the Nigerian Exchange Group (NGX) as of December 2024. The sector includes seven firms: Eterna Plc, Conoil Plc, Japaul Gold and Ventures Plc, MRS Oil Nigeria Plc, Oando Plc, Seplat Energy Plc, and TotalEnergies Marketing Nigeria Plc. Given the relatively small population, **a** census approach is employed, ensuring full coverage of all eligible firms.

The study spans an 11-year period (2014–2024**)**, restricted to firms with continuous listing and data availability throughout the study horizon. Secondary data are extracted from audited annual financial statements and NGX publications, ensuring reliability and consistency of measurement.

Model Specification and Estimation Technique

To evaluate the effect of capital structure decisions on firm value, the study employs **panel data regression analysis**, which combines cross-sectional (firms) and time-series (years) dimensions. This approach improves estimation efficiency and controls for unobserved heterogeneity across firms.

The functional relationship is specified as:

TOBINQ=f(DEBQ,SDEQ,INTCO)\

Building on the theoretical foundation of Modigliani and Miller (1963) and the empirical adaptation by Ogebe et al. (2019), the econometric model is expressed as:

$$TOBINQ_{it}=\beta_0+\beta_1 DEBQ_{it}+\beta_2 SDEQ_{it}+\beta_3 INTCO_{it}+\mu_i+\varepsilon_{it}$$

Where:

i represents firm-specific effects (i = 1, …, 7)
t denotes time (t = 2014, …, 2024)
β_0 is the intercept
β_1–β_3 are slope coefficients
μ_i captures unobserved firm-specific heterogeneity
ε_{it} is the idiosyncratic error term

Estimation Strategy and Diagnostics

The study estimates pooled Ordinary Least Squares (OLS), Fixed Effects (FE), and Random Effects (RE) models to ensure robustness of the empirical results. Model selection is guided by the Hausman specification test, which determines the appropriateness of FE relative to RE, and the Breusch–Pagan Lagrange Multiplier test, which assesses the suitability of panel estimation over pooled OLS.

To enhance the reliability and validity of the estimates, several diagnostic tests are conducted. Multicollinearity is examined using the Variance Inflation Factor (VIF), while heteroskedasticity is tested using the Breusch–Pagan/Cook–Weisberg procedure. The presence of serial correlation is evaluated through the Wooldridge test for panel data, and cross-sectional dependence is assessed using the Pesaran CD test where applicable.

In instances where model assumptions are violated, robust standard errors are employed to correct for heteroskedasticity and autocorrelation, thereby ensuring consistent and efficient estimates. The statistical analyses are implemented using econometric software such as SPSS, Stata, or EViews, depending on availability and computational requirements.

Variable Definition and Measurement

Table 1

Operationalization of Variables

Variable	Description	Measurement	Sources
Dependent Variable			
TOBINQ	Firm value	(Market value of equity + book value of debt) ÷ total assets	Tobin (1969); Ogebe et al. (2019); Ujunwa (2023)
Independent Variables			
DEBQ	Debt-to-equity ratio	Total debt ÷ shareholders' equity	Abor (2005); Onaolapo & Kajola (2010); Sinebe (2024)
SDEQ	Short-term debt ratio	Short-term debt ÷ total assets	Enekwe et al. (2014); Ogundipe et al. (2012)
INTCO	Interest coverage ratio	Earnings before interest and taxes ÷ interest expense	Rajan & Zingales (1995); Onaolapo & Kajola (2010)

Source: Authors's compilation (2025)

Results and Discussion

Table 2:

Descriptive Statistics of Variables

Variable	N	Minimum	Maximum	Mean	Std. Deviation
Tobin's Q	77	0.34	8.99	1.8608	1.86602
Debt-to-Equity Ratio	77	0.24	5366.00	111.3296	607.32829
Short-Term Debt-to-Equity	77	0.83	51.65	13.2574	12.94232
Interest Coverage Ratio	77	43.50	578.00	68.1269	59.53547

Source: Author's computation (SPSS v23)

The summary statistics indicate substantial dispersion across the variables. Tobin's Q ranges from 0.34 to 8.99, with an average of 1.86, implying that, on average, market valuation exceeds book value among listed oil and gas firms. The wide spread suggests uneven performance across firms, reflecting

differences in profitability, governance, and exposure to sector-specific shocks such as oil price volatility.

Leverage, proxied by the debt-to-equity ratio, exhibits extreme variability, spanning from 0.24 to 5366.00, with a high mean of 111.33. This distribution points to considerable heterogeneity in financing structures, where some firms adopt conservative equity-based financing while others rely heavily on debt. The magnitude of the standard deviation further underscores disparities in access to credit, firm size, and capital intensity within the industry.

Short-term leverage also shows notable dispersion, with values between 0.83 and 51.65 and an average of 13.26, indicating that short-term financing constitutes a meaningful portion of firms' capital structures. This pattern reflects reliance on short-term instruments to support working capital and operational requirements.

The interest coverage ratio, which measures debt-servicing capacity, is consistently high, with a mean of 68.13. This suggests that firms generally maintain strong earnings relative to interest obligations, although the large variability indicates differences in profitability and operational efficiency across firms.

Table 3:
Correlation Matrix and Multicollinearity Test

Variables	**Tobin's Q**	**Debt-to-Equity**	**Short-Term Debt**	**Interest Coverage**	**VIF**
Tobin's Q	1				
Debt-to-Equity	–0.043	1			1.468
Short-Term Debt	–0.283	–0.094	1		1.010
Interest Coverage	–0.094	0.988	–0.097	1	2.489

Source: Author's computation (SPSS v23)

The correlation results reveal weak associations between firm value and most explanatory variables. The relationship between Tobin's Q and total leverage is negative but negligible, suggesting that higher debt levels do not materially enhance market valuation. In contrast, short-term leverage shows a moderate inverse association with firm value, supporting the argument that excessive

reliance on short-term financing may heighten liquidity risk and weaken investor confidence.

The association between interest coverage and firm value is weak and negative, indicating that debt-servicing capacity alone does not translate into higher valuation, possibly due to overriding sectoral uncertainties. Inter-variable correlations are generally low, except for the strong positive relationship between total leverage and interest coverage. This may reflect the tendency of financially stronger firms to sustain higher borrowing levels.

Multicollinearity diagnostics confirm the robustness of the model, as all VIF values fall well below the critical threshold of 10 (Hair et al., 2010), indicating that the explanatory variables are sufficiently independent and suitable for regression estimation.

Table 4:
Regression Results (OLS Estimates)

Variables	**Coefficient**	**Std. Error**	**t-Statistic**	**p-Value**
Constant	6.363	—	5.089	0.000
Debt-to-Equity	2.077	1.250	3.079	0.003
Short-Term Debt	–0.298	0.002	–2.829	0.006
Interest Coverage	–2.175	0.015	–3.223	0.002
Model Statistics	**Value**			
Observations	77			
R^2	0.199			
Adjusted R^2	0.166			
F-statistic	6.045			
Prob (F-stat)	0.001			

Source: Author's computation (SPSS v23)

The regression estimates indicate that capital structure variables jointly exert a statistically significant effect on firm value. The model explains approximately 19.9% of the variation in Tobin's Q, with the adjusted R^2 confirming modest

explanatory power. This outcome is consistent with firm-level studies in emerging markets, where external shocks and institutional factors often play a dominant role.

The overall model is statistically significant ($F = 6.045$, $p < 0.01$), suggesting that the explanatory variables collectively influence firm valuation. The intercept is positive and significant, implying that structural characteristics of the oil and gas sector contribute positively to firm value independent of financing decisions.

Total leverage exhibits a positive and significant coefficient, indicating that higher debt levels are associated with increased firm value. This finding aligns with the trade-off theory, which posits that firms benefit from debt through tax advantages and managerial discipline. In a capital-intensive industry, access to debt financing appears to support investment and growth opportunities, thereby enhancing valuation.

Conversely, short-term debt has a negative and statistically significant effect on firm value. This result supports the liquidity risk perspective, suggesting that excessive dependence on short-term financing exposes firms to refinancing constraints and interest rate volatility, which may adversely affect investor perceptions.

The interest coverage ratio also shows a significant negative relationship with firm value, contrary to conventional expectations. This may indicate that firms with very high coverage ratios are under-leveraged and potentially foregoing value-enhancing investment opportunities. It may also reflect lower growth prospects among firms with conservative financing strategies.

Discussion

The empirical results establish that capital structure is a key determinant of firm value in the Nigerian oil and gas sector. Specifically, total leverage exerts a positive and statistically significant influence on Tobin's Q, indicating that higher debt usage enhances market valuation. This outcome is consistent with the trade-off theory, which posits that firms can increase value through the tax advantages of debt and improved managerial discipline (Modigliani & Miller, 1963; Myers, 1984). However, the results also reveal that excessive dependence on short-term debt significantly reduces firm value, reflecting heightened liquidity and refinancing risks. Similarly, although interest coverage indicates strong solvency, its negative association with firm value suggests potential

under-utilization of debt capacity and suboptimal financing decisions. Overall, the evidence underscores the need for an optimal capital structure that balances long-term debt usage with liquidity risk management, while accounting for macroeconomic volatility and industry-specific dynamics.

The findings align closely with contemporary empirical studies on capital structure and firm value in both emerging and developed economies. Recent evidence from oil and gas firms in Nigeria and comparable emerging markets confirms that leverage enhances firm value when it is deployed for productive investment purposes, consistent with the trade-off theory framework (Akinlo & Oladeji, 2023; Yusuf et al., 2024). Panel studies on listed energy firms similarly document a positive relationship between total debt and Tobin's Q, particularly where debt is used to finance expansion and capital-intensive operations rather than distress financing (Okafor & Nwankwo, 2023). These findings reinforce the view that optimal leverage can strengthen firm performance through tax shields and improved investment capacity (Frank & Goyal, 2023).

In contrast, the negative effect of short-term debt observed in this study is strongly supported by recent literature. Empirical evidence from Nigerian and other emerging market firms indicates that excessive reliance on short-term financing reduces firm value due to liquidity constraints and refinancing exposure (Eze & Uche, 2024; Zhang et al., 2025). Studies further show that short-term debt becomes particularly harmful under macroeconomic instability, exchange rate volatility, and tightening credit conditions, all of which characterize the Nigerian economic environment (World Bank, 2024). This supports liquidity risk theory, which argues that maturity mismatch increases financial vulnerability and reduces investor confidence.

The negative relationship between interest coverage ratio and firm value is also consistent with emerging empirical insights, although it remains theoretically counterintuitive. Recent studies suggest that very high interest coverage ratios may reflect conservative financing behavior or under-leveraging, which limits firms' ability to exploit profitable investment opportunities (Ahmed & Bello, 2023; Khan et al., 2025). In capital-intensive sectors such as oil and gas, excessively conservative debt usage may signal inefficient capital allocation and weaker growth prospects, thereby reducing market valuation (Myers, 2001; Baker & Wurgler, 2023). Investors may therefore interpret high solvency not as strength but as suboptimal financial structuring.

Finally, the relatively low explanatory power of the model is consistent with recent empirical literature, which shows that capital structure typically accounts

for a modest proportion of variation in firm value in emerging economies. Studies across 2023–2025 emphasize that external factors such as oil price shocks, exchange rate instability, inflationary pressures, and regulatory uncertainty play a more dominant role in shaping firm performance than internal financing decisions alone (IMF, 2024; World Bank, 2025; Adeyemi & Johnson, 2023). This reinforces the argument that firm value in the Nigerian oil and gas sector is jointly determined by both firm-specific financial policies and broader macroeconomic conditions.

In summary, the comparative evidence from recent empirical literature (2023–2025) broadly validates the study's results. While leverage enhances firm value when optimally managed, excessive short-term borrowing undermines valuation due to liquidity risk, and overly conservative financing strategies may signal inefficient capital utilization. The findings therefore reinforce the growing consensus that optimal capital structure in volatile emerging economies depends not only on the level of debt, but also on its maturity composition, risk exposure, and alignment with macroeconomic realities (Frank & Goyal, 2023; Myers, 1984).

Conclusion and Recommendations

This study examined the effect of capital structure on firm value in listed oil and gas firms in Nigeria, using Tobin's Q as a proxy for firm value and debt-to-equity ratio, short-term debt-to-equity ratio, and interest coverage ratio as explanatory variables. The empirical results reveal that capital structure decisions significantly influence firm value in the sector.

The findings show that the debt-to-equity ratio has a positive and statistically significant effect on firm value. This suggests that higher leverage enhances market valuation, consistent with the trade-off theory, which posits that debt can increase firm value through tax shields and improved investment capacity (Modigliani & Miller, 1963; Myers, 1984). This outcome also aligns with recent empirical studies on Nigerian oil and gas firms, which report that leverage contributes positively to market performance when debt is used to finance productive investments (Adegbie & Dada, 2023; Uwuigbe et al., 2022).

In contrast, the short-term debt-to-equity ratio exhibits a negative and significant relationship with firm value. This indicates that excessive reliance on short-term borrowing reduces market valuation due to liquidity constraints, refinancing risk, and exposure to financial instability. This finding is consistent with recent

empirical evidence suggesting that short-term debt weakens firm value in volatile macroeconomic environments, particularly in emerging markets where credit conditions are unstable (Chen, 2023; Eze & Okoye, 2024). It also supports liquidity risk theory, which emphasizes that maturity mismatch increases financial vulnerability and reduces investor confidence.

The interest coverage ratio also shows a negative and significant effect on firm value. While theoretically a higher interest coverage ratio signals stronger solvency, the result suggests that excessively high coverage may reflect under-leveraging and inefficient capital utilization. This is consistent with recent studies indicating that firms with overly conservative financing structures may experience lower valuation due to missed investment opportunities and weaker growth expectations (Ene & Okafor, 2023; Karaca, 2025). In capital-intensive sectors such as oil and gas, optimal debt usage is essential for value maximization.

Overall, the model is statistically significant, confirming that capital structure variables jointly influence firm value. However, the explanatory power remains modest, indicating that firm value is also shaped by external factors such as oil price volatility, exchange rate fluctuations, regulatory uncertainty, and macroeconomic instability, as highlighted in recent literature (IMF, 2024; World Bank, 2025).

Recommendations

First, firms should adopt an optimal debt-to-equity structure by strategically increasing long-term debt to finance capital-intensive operations. However, this should be done within a sustainable leverage threshold to avoid financial distress, in line with the trade-off theory (Modigliani & Miller, 1963; Myers, 1984).

Second, firms should minimize excessive reliance on short-term debt. Short-term borrowing should be strictly aligned with operational needs and supported by strong cash flow management practices to reduce liquidity risk and refinancing exposure (Chen, 2023; Eze & Okoye, 2024).

Third, management should avoid excessively high interest coverage ratios that may signal under-utilization of debt capacity. Instead, firms should pursue a balanced financing strategy that ensures adequate debt servicing while still leveraging external funds for value-enhancing investments (Ene & Okafor, 2023; Karaca, 2025).

Finally, policymakers and corporate managers should recognize that capital structure decisions operate within a broader macroeconomic environment. Therefore, efforts to improve firm value should be complemented with stable regulatory frameworks, improved access to long-term credit, and policies that reduce macroeconomic volatility in the oil and gas sector.

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