



Capital Structure and Financial Performance of Oil and Gas Companies in Nigeria: A Case Study of NNPC Limited

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ABSTRACT:

This study examined the effect of capital structure on the financial performance of oil and gas companies in Nigeria, with particular reference to the Nigerian National Petroleum Company Limited (NNPC Limited). The study was motivated by the importance of appropriate financing decisions in enhancing corporate profitability, operational efficiency and long-term sustainability within Nigeria's capital-intensive oil and gas industry. Specifically, the study examined the effects of short-term debt, long-term debt and debt-to-equity ratio on the financial performance of NNPC Limited. An ex-post facto research design was adopted, using secondary data obtained from the audited financial statements and annual reports of NNPC Limited for the selected study period. Descriptive statistics and inferential statistical techniques, particularly multiple regression analysis, were employed to analyse the data and test the research hypothesis at a 5% level of significance. The study found that capital structure significantly influences the financial performance of NNPC Limited. The findings further indicate that appropriately managed debt financing can provide resources required for operational activities, infrastructure investment and business expansion, while excessive leverage may increase financial costs and repayment obligations. The study concludes that effective capital structure management is essential for improving financial performance and ensuring the long-term sustainability of NNPC Limited and other oil and gas companies in Nigeria.

Keywords: Capital Structure; Financial Performance; Short-Term Debt; Long-Term Debt; NNPC Limited.

1. Introduction

Capital structure represents one of the most important financial decisions confronting an organisation because it determines how the organisation finances its assets, business operations, investment programmes and expansion activities. In corporate finance, capital structure generally refers to the combination of debt, equity, retained earnings and other sources of finance employed by an organisation to fund its activities. The decision concerning the appropriate combination of financing sources is particularly important because the financing structure of an organisation affects its cost of capital, financial risk, liquidity position, profitability, investment capacity and long-term sustainability. A company that adopts an appropriate capital structure may be able to obtain sufficient funds for productive investment while maintaining an acceptable level of financial risk. Conversely, an inappropriate financing structure may increase interest expenses, repayment obligations, liquidity pressures and the possibility of financial distress.

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Enadeghe and Evbayiro-Osagie (2021) examined the relationship between capital structure and financial performance among firms in Nigeria and South Africa using panel data covering 2012–2020. Their study involved 30 quoted non-financial firms and employed panel regression techniques. The researchers found that total debt-to-equity, long-term debt-to-equity and total debt had significant positive effects on financial performance. This finding suggests that debt financing should not automatically be regarded as harmful to an organisation. Rather, debt can contribute positively to financial performance when the borrowed funds are efficiently invested in productive activities and when the organisation has adequate capacity to service its financial obligations. The study is relevant to the Nigerian context because it demonstrates that leverage may provide financial benefits when it is appropriately structured and efficiently managed. Alhassan (2021) investigated capital structure and financial performance among 15 Nigerian consumer-goods companies listed on the Nigerian Stock Exchange using annual-report data covering 2011–2020. The study measured financial performance using return on assets (ROA), return on equity (ROE) and earnings per share (EPS), while capital structure was measured through short-term debt, equity-share ratio and long-term debt ratio. The findings indicated that equity capital and long-term debt had positive effects on selected measures of corporate performance. Alhassan recommended that Nigerian companies should pay attention to profit after tax, retained earnings and low-interest long-term debt because these financing sources can contribute to improved corporate performance. Anozie, Muritala, Ininm and Yisau (2023) investigated the impact of capital structure on the financial performance of oil and gas firms in Nigeria. The study examined five oil and gas companies using data covering 2011–2020. Short-term debt-to-total-assets, long-term debt-to-total-assets and total debt-to-equity were employed as measures of capital structure, while return on assets was used as the measure of financial performance. The study provides direct Nigerian oil and gas evidence that different components of capital structure can have different relationships with corporate performance. The contribution of Anozie et al. (2023) is particularly important because it demonstrates that capital structure should not be treated as a single undifferentiated variable. Short-term debt, long-term debt and debt-to-equity may influence performance differently because each financing source creates different levels of financial obligation and risk. For example, short-term debt creates relatively immediate repayment requirements, whereas long-term debt gives an organisation a longer period within which to generate returns from financed assets. Mohammed, Taiwo, Bappah and Saleh (2024) further examined the effect of capital structure on the financial performance of listed oil and gas firms in Nigeria. Their study covered eight listed oil and gas companies over the period 2012–2021 and used an ex-post facto research design and multiple regression analysis. The study reported that debt ratio and equity ratio had positive and significant relationships with financial performance, while debt-to-equity ratio had a negative and significant effect. The authors concluded that capital structure significantly influences the financial performance of Nigerian oil and gas firms and recommended careful consideration of the cost associated with alternative financing sources. The findings of Mohammed et al. (2024) are important because they demonstrate that an increase in debt does not necessarily have the same effect as an increase in debt relative to equity. A company may benefit from debt financing while simultaneously experiencing negative consequences when debt becomes excessive relative to shareholders' funds. This distinction is particularly important in the oil and gas industry because the large scale of investment may encourage companies to borrow heavily. However, the financial benefits of such borrowing depend on whether the financed assets generate returns greater than the associated financing costs.

Oke, Ojogbo and Thomas (2024) also investigated capital structure and financial performance among firms in Nigeria's oil and gas sector. Their study examined eight publicly listed oil and gas companies covering 2011–2020 and employed fixed-effects and random-effects panel regression models. The authors noted that previous studies had produced conflicting evidence concerning the direction and magnitude of the relationship between capital structure and financial performance. Their work therefore reinforces the argument that the relationship is complex and may vary according to the specific capital-structure indicator and performance measure employed. Another significant contribution is that of Udo, Jack, Okoh, Agbadua, Eke and Onyemere (2024), who examined the relationship between capital structure and firm performance in the Nigerian oil and gas industry, with particular emphasis on retained earnings. The study was published in the *African Journal of*

Business and Economic Research, Volume 19, Issue 3, pages 395–415. The researchers emphasised the importance of determining an appropriate mix between debt and equity and examined retained earnings as an important component of financing decisions. The emphasis on retained earnings is particularly relevant because internally generated funds can enable an organisation to finance investments without immediately increasing its debt obligations. Retained earnings can therefore strengthen the financial position of an organisation and reduce dependence on external creditors. However, excessive retention of profits can also have implications for shareholders' returns and dividend policies. The appropriate balance between retained earnings, debt and equity therefore remains an important financial-management decision. Irene, Abusomwan and Jackson-Akhigbe (2025) investigated capital structure and financial performance among quoted oil and gas companies in Nigeria over the period 2014–2023. The researchers examined total debt ratio, long-term debt ratio, short-term debt ratio and equity ratio, while market value was measured using Tobin's Q. Using annual-report data from eight publicly traded oil and gas companies and a random-effects model, the study found that total debt ratio had a positive relationship with firm performance, while long-term and short-term debt ratios had negative effects on Tobin's Q. The equity ratio had a significant positive relationship with firm value. The findings of Irene et al. (2025) provide further evidence that the maturity and composition of debt matter. Although total debt may provide financial resources that support expansion, particular forms of debt may reduce market value when they create excessive financial obligations. This finding has important implications for oil and gas companies because the sector requires large investments, but investors may respond negatively when the financing structure creates excessive financial risk. Siyanbola, Adedeji, Aderibigbe and Ogunmefun (2025) investigated capital structure and financial performance among listed Nigerian oil and gas companies for the period 2014–2023. Six of nine listed companies were selected based on data availability, and panel-data regression using fixed effects was employed. The researchers examined capital-structure components including debt-to-equity and equity-to-total-assets measures. Their study is particularly relevant because it uses relatively recent financial information and reflects developments in the Nigerian oil and gas sector following the implementation of the Petroleum Industry Act. The continuing development of Nigerian research in 2026 further demonstrates that capital structure remains an important area of investigation. Omodara, Bamidele and Adeyemi (2026), for example, examined deferred-tax accounting and its implications for firm performance and capital structure in the Nigerian oil and gas industry. Their study analysed panel data covering six listed oil and gas firms over 2010–2024 and considered the interaction between taxation, firm performance and capital structure within the Nigerian petroleum environment. Fasua and Sinebe (2026) investigated retained-earnings financing and capital-structure resilience among Nigerian corporations using data from 55 non-financial firms listed on the Nigerian Exchange Group as of December 2025. Their findings showed a significant negative relationship between retained earnings and gearing, indicating that companies with greater retained earnings tended to have lower leverage. They also found that retained earnings positively influenced the equity-to-total-liabilities ratio. These findings provide recent Nigerian evidence supporting the importance of internally generated financing in maintaining a more stable capital structure. Mohammed et al. (2024) therefore provide an important explanation of the Nigerian oil and gas context by demonstrating that debt ratio and equity ratio may positively influence performance while excessive debt relative to equity may produce a negative effect. This finding is consistent with the argument that the objective of financial management should not be to maximise debt but to identify a financing combination that is capable of supporting profitable investment without creating excessive financial risk. Short-term debt refers to financial obligations that are normally repayable within one year or within an organisation's normal operating cycle. It may include short-term bank loans, overdrafts, trade credit, current portions of long-term loans and other current financial liabilities. Short-term debt is often used to address immediate financing requirements and working-capital needs. In an oil and gas company, short-term financing may be used to finance inventories, procurement, transportation, employee-related expenses, maintenance, petroleum-product distribution and other operational activities. The availability of short-term financing can therefore help an organisation maintain uninterrupted operations, particularly when there is a temporary mismatch between cash inflows and cash outflows. However, short-term debt can also create substantial financial pressure.

Because repayment is required within a relatively short period, an organisation must maintain sufficient liquidity to meet its obligations. If the organisation experiences a decline in revenue or an unexpected increase in operating expenses, it may find it difficult to repay or refinance short-term obligations. The problem becomes more serious when short-term debt is used to finance long-term assets. This situation can create a maturity mismatch because the financing becomes due before the investment has generated sufficient cash flows. In the oil and gas sector, where exploration and infrastructure projects may require several years before generating returns, excessive dependence on short-term debt can therefore increase liquidity risk. The findings of Irene et al. (2025) provide relevant evidence because their study found that short-term debt ratio had a negative relationship with firm market value among quoted Nigerian oil and gas companies. This suggests that investors may perceive excessive short-term borrowing as an indication of liquidity pressure or financial vulnerability.

Long-term debt consists of financial obligations with repayment periods extending beyond one year. Examples include long-term bank loans, corporate bonds, syndicated loans, project-finance facilities and other long-term borrowing arrangements. Long-term debt is particularly relevant to the oil and gas industry because petroleum projects frequently require large initial investments and extended periods before returns are realised. A company can use long-term borrowing to finance exploration and production facilities, pipelines, refineries, storage infrastructure, gas-processing plants and other fixed assets. One important advantage of long-term debt is that it allows the repayment period to be matched with the economic life of the financed asset. If a company borrows money to construct a refinery that will generate revenue for many years, long-term financing may be more appropriate than short-term financing because repayment can be spread across the period in which the project generates cash flows. However, long-term debt also creates financial obligations that may continue for several years. Interest-rate changes, exchange-rate movements and fluctuations in oil prices may affect the organisation's ability to service such obligations. Therefore, management must consider not only the availability of long-term financing but also its cost, currency, maturity and repayment structure. Alhassan (2021) found that long-term debt had a positive effect on selected measures of performance among Nigerian consumer-goods companies. Similarly, Anozie et al. (2023) incorporated long-term debt-to-total-assets into their assessment of Nigerian oil and gas companies, demonstrating the importance of debt maturity when examining the capital-structure-performance relationship. Total debt represents the overall amount of debt obligations carried by an organisation. It normally incorporates both short-term and long-term debt. Total debt is important because it provides an aggregate indication of the extent to which the organisation relies on external creditors to finance its operations and assets. A high level of total debt can provide an organisation with greater access to investment capital. In an oil and gas company, this can allow management to undertake projects that might not otherwise be possible using internally generated funds alone. However, total debt also increases fixed financial obligations. The effect of total debt on performance depends largely on how effectively the borrowed funds are invested. If borrowed funds are directed towards productive projects that generate returns greater than the cost of borrowing, total debt may enhance financial performance. If funds are invested inefficiently, the organisation may experience declining profitability while still being required to meet interest and principal payments. Enadeghe and Evbayiro-Osagie (2021) found that total debt significantly and positively affected financial performance in their Nigeria-South Africa sample. However, Irene et al. (2025) also found a positive effect of total debt ratio on firm market value among quoted Nigerian oil and gas companies, while short- and long-term debt ratios showed negative effects. This illustrates why researchers should distinguish between total leverage and individual debt components. Equity financing represents funds provided by the owners of an organisation. It may include ordinary share capital, preference shares and other forms of owners' capital. Retained earnings are also important because they represent profits retained within the business rather than distributed to owners. One major advantage of equity financing is that it does not normally impose compulsory interest payments. Consequently, organisations with relatively strong equity positions may have greater flexibility in periods of financial difficulty. Equity can also strengthen the balance sheet and reduce dependence on creditors. However, equity financing has associated costs. Where new shares are issued, existing ownership may be diluted. Investors also expect appropriate returns for providing capital.

Therefore, equity should not necessarily be considered a cost-free source of finance. Mohammed et al. (2024) found that equity ratio had a positive and significant relationship with financial performance among listed Nigerian oil and gas firms. Irene et al. (2025) similarly reported that equity ratio had a positive and statistically significant relationship with Tobin's Q, suggesting that stronger equity positions may enhance investor confidence and market value.

The debt-to-equity ratio measures the relationship between debt financing and owners' equity. It is an important measure of financial leverage because it indicates the extent to which an organisation depends on creditors relative to its equity base. A relatively low debt-to-equity ratio generally indicates greater reliance on equity, whereas a high ratio indicates greater reliance on borrowed funds. However, neither a low nor a high ratio is automatically optimal. The appropriate level depends on the company's profitability, cash-flow capacity, industry characteristics, cost of debt, asset structure and investment opportunities. A high debt-to-equity ratio can magnify shareholder returns when the organisation earns a return on assets greater than its cost of debt. For example, if an oil and gas company borrows funds at a relatively low interest rate and uses those funds to develop a highly profitable oil field, the additional earnings can increase returns to equity holders. The reverse can occur when project returns are lower than borrowing costs. In such circumstances, interest expenses can reduce profits and the high debt burden can increase financial distress. The negative relationship between debt-to-equity ratio and financial performance reported by Mohammed et al. (2024) demonstrates this possibility within the Nigerian oil and gas industry. Thus, debt-to-equity ratio is an important variable for determining whether the overall leverage of an organisation is becoming excessive. The debt-to-assets ratio measures the proportion of an organisation's assets financed through debt. It is calculated by comparing total debt with total assets. The ratio provides information about the degree to which creditors have financed the organisation's asset base. A high debt-to-assets ratio indicates that a large proportion of the company's assets is financed through debt. Although such financing may support rapid growth, it also creates greater financial obligations. A lower ratio may indicate a stronger equity position and potentially lower financial risk. The ratio is particularly relevant to oil and gas companies because these organisations normally possess substantial fixed assets. Production facilities, refineries, pipelines, storage systems, machinery and other petroleum infrastructure require significant investment. Examining the proportion of these assets financed through debt therefore provides important information about the organisation's financial structure. Enadeghe and Evbayiro-Osagie (2021) reported positive effects of several debt measures on financial performance, suggesting that leverage can create benefits under appropriate circumstances. Alhassan (2021) found that equity capital and long-term debt positively influenced selected measures of financial performance among Nigerian consumer-goods companies. Anozie et al. (2023), focusing directly on Nigerian oil and gas companies, demonstrated that capital structure could be assessed using short-term debt-to-total-assets, long-term debt-to-total-assets and total debt-to-equity, with ROA as a performance measure. Mohammed et al. (2024) found positive effects of debt ratio and equity ratio but a negative significant effect of debt-to-equity ratio among listed Nigerian oil and gas firms. Oke et al. (2024) found that the relationship between capital structure and financial performance remained an area of disagreement, reinforcing the need for further empirical investigation using different measures and periods. Udo et al. (2024) expanded the debate by focusing on retained earnings and the capital-structure-performance nexus in the Nigerian oil and gas industry. Irene et al. (2025) reported that total debt ratio positively affected market value, whereas long-term and short-term debt ratios negatively affected Tobin's Q, while equity ratio had a positive effect. Siyanbola et al. (2025) further examined listed Nigerian oil and gas companies over 2014–2023 and provided more recent evidence on debt-equity and equity-to-assets measures. Omodara et al. (2026) examined the relationship between deferred tax accounting, firm performance and capital structure in the Nigerian oil and gas industry, thereby demonstrating that contemporary capital-structure research is increasingly considering taxation and regulatory issues in addition to conventional debt and equity measures. Fasua and Sinebe (2026) found that retained earnings reduced gearing and improved the equity-to-total-liabilities position of Nigerian corporations, providing recent evidence for the relevance of internal financing. The Modigliani and Miller (MM) Theory originated from the seminal work of Franco Modigliani and Merton Miller in 1958. Their article,

"The Cost of Capital, Corporation Finance and the Theory of Investment," became one of the foundational contributions to modern corporate-finance theory. Anozie et al. (2023) found that capital-structure measures were relevant to the financial performance of Nigerian oil and gas firms. Mohammed et al. (2024) also found significant relationships between different capital-structure measures and performance among listed Nigerian oil and gas firms. The MM theory therefore provides the historical foundation for capital-structure analysis, but recent Nigerian studies demonstrate that financing structure can matter significantly when the assumptions of perfect markets are relaxed. The Trade-Off Theory is associated with Kraus and Litzenberger (1973). The theory developed as an important extension of earlier capital-structure thinking and proposes that organisations should determine their optimal level of debt by balancing the benefits of debt financing against the costs of financial distress. The findings of Mohammed et al. (2024) support this theoretical position. Although debt ratio was positively associated with performance, debt-to-equity ratio had a negative significant relationship with performance. This finding suggests that debt may generate benefits at certain levels, but excessive leverage relative to equity may become detrimental. Irene et al. (2025) also provide evidence that different debt structures can have different implications for firm value. Their findings showed a positive effect of total debt ratio but negative effects of both long-term and short-term debt ratios on Tobin's Q.

2. STATEMENT OF THE PROBLEM

The oil and gas industry remains one of the most strategically important sectors of the Nigerian economy because of its contribution to government revenue, foreign exchange earnings, energy supply, employment, industrial development and national economic activities. Despite its importance, oil and gas companies operating in Nigeria continue to face significant financial and operational challenges. These challenges include fluctuations in international crude-oil prices, exchange-rate instability, high operating costs, production disruptions, infrastructure deficiencies, financing constraints, regulatory changes, insecurity, environmental obligations and difficulties associated with attracting and managing long-term investment capital. These conditions make financial management and, particularly, capital-structure decisions extremely important for the sustainability and performance of oil and gas companies.

Capital structure concerns the combination of debt and equity used by an organisation to finance its assets, operations and investment activities. The major financing alternatives available to a company include short-term debt, long-term debt, equity capital and retained earnings. The decision concerning the appropriate combination of these sources of finance is important because it can influence interest expenses, financial risk, liquidity, investment capacity, ownership structure and profitability. When debt is properly managed, it can provide an organisation with the financial resources required to expand operations and undertake profitable investments. However, excessive borrowing may increase interest obligations, repayment pressures and the risk of financial distress. The problem is particularly important in the Nigerian oil and gas industry because petroleum exploration, production, refining, transportation, storage and gas development require huge amounts of capital. Oil and gas projects frequently involve substantial initial expenditure and long periods before the investment generates sufficient returns. Consequently, companies need financing arrangements that match the maturity of their financial obligations with the economic life and expected cash flows of their investments. Where an organisation relies excessively on short-term borrowing to finance long-term projects, it may experience liquidity and refinancing problems.

PURPOSE OF THE STUDY

- i. Examine the effect of short-term debt on the financial performance of NNPC Limited.
- ii. Determine the effect of long-term debt on the financial performance of NNPC Limited.

RESEARCH QUESTIONS

The following research questions are derived directly from the specific objectives of the study:

- i. To what extent does short-term debt affect the financial performance of NNPC Limited?
- ii. To what extent does long-term debt affect the financial performance of NNPC Limited?

RESEARCH HYPOTHESES

H₀₁: Debt financing, measured by short-term debt, long-term debt and debt-to-equity ratio, has no significant effect on the financial performance of NNPC Limited.

3. Methodology

The study will adopt an ex-post facto research design to examine the relationship between capital structure and financial performance of oil and gas companies in Nigeria, with particular focus on NNPC Limited. The ex-post facto design is considered appropriate because the study will make use of financial information that has already been generated, recorded and reported by NNPC Limited. The researcher will not manipulate the capital structure, debt position, equity position, assets, revenue or profitability of the organisation. Rather, the study will observe the historical financial information and statistically examine the extent to which variations in capital structure are associated with variations in financial performance. The design is particularly appropriate for corporate finance research because capital-structure decisions have already occurred and cannot be experimentally manipulated by the researcher. The study will therefore rely on documentary financial evidence to establish relationships among the variables. The study will be conducted within the Nigerian oil and gas industry, using NNPC Limited as the case organisation. NNPC Limited is Nigeria's national oil company and occupies a strategic position in the country's petroleum industry. Its activities cover different aspects of the petroleum value chain, including upstream exploration and production, gas development, midstream activities, refinery operations, petroleum-product supply and distribution, and other petroleum-related investments. The organisation provides an appropriate case for examining capital structure and financial performance because its activities are highly capital intensive and require significant financial resources for investment, operations, infrastructure development and expansion. The financial structure of NNPC Limited is therefore potentially important to its profitability, liquidity, investment capacity and long-term sustainability.

The population of the study will comprise the relevant financial records of NNPC Limited covering the period selected for investigation. Since the study focuses on a single organisation, the population will not consist of a collection of independent oil and gas companies. Instead, it will consist of the financial observations contained in NNPC Limited's audited financial statements, annual reports, financial reports and other officially published documents. The population will include information relating to short-term debt, long-term debt, total debt, shareholders' or owners' equity, total assets, revenue, profit before tax, profit after tax and other financial information required to calculate the selected measures of capital structure and financial performance. A purposive sampling technique will be adopted because NNPC Limited is deliberately selected as the case organisation based on its strategic importance to the Nigerian petroleum industry, its substantial financial operations, its role in national energy security and the relevance of its financing decisions to the Nigerian economy. The study will focus on financial information for the period 2021 to 2025, subject to the availability, consistency and comparability of the required data. The selection of 2021 as the starting point is justified by the enactment of the Petroleum Industry Act and the subsequent transformation of NNPC into NNPC Limited. However, the researcher will distinguish carefully between financial information relating to the former NNPC and financial information relating to NNPC Limited. Historical data relating to the former corporation will not automatically be treated as identical to the financial information of NNPC Limited. Where detailed quarterly financial information is available from official sources, quarterly observations will be utilised to increase the number of observations available for statistical analysis.

The study will rely predominantly on secondary data. Secondary data are appropriate because the variables required for the study are financial and accounting measures already generated and reported by NNPC Limited. The principal sources of information will include NNPC Limited's audited financial statements, annual reports, official financial publications and other corporate reports. Relevant information may also be obtained from publications of appropriate Nigerian petroleum regulatory institutions, the Central Bank of Nigeria, the National Bureau of Statistics and other credible governmental or regulatory sources where such information is required to provide supporting economic and industry data. The Petroleum Industry Act 2021 will also be consulted to provide the appropriate legal and institutional context for the transformation of NNPC into NNPC Limited. Academic publications by Nigerian researchers and other relevant scholarly studies will be used to

support the conceptual, theoretical and empirical interpretation of the findings. The researcher will give priority to audited financial statements and official corporate reports because these sources provide the most direct evidence concerning the financial position and performance of NNPC Limited. Data obtained from secondary sources will be carefully extracted and organised according to the variables required for the study. The researcher will record the reporting period, original financial figure, source document and calculated ratio for each observation. Where the same financial information is reported in more than one official document, the figures will be cross-checked to minimize errors and ensure consistency. The independent variable in the study will be capital structure, while the dependent variable will be financial performance. Capital structure refers to the combination of debt and equity used by an organisation to finance its assets, operations and investment activities. In this study, capital structure will be operationalised through short-term debt, long-term debt, debt-to-equity ratio and equity financing. These measures are selected because they provide different perspectives on the extent to which the organisation relies on borrowed funds and equity resources to finance its operations. Short-term debt will represent financial obligations that are normally payable within one year or within the organisation's operating cycle. Such obligations may include short-term loans, overdrafts and other current financial liabilities that constitute financing obligations. For the purpose of the study, short-term debt may be measured as short-term debt divided by total assets. The ratio will indicate the proportion of the organisation's assets financed through short-term borrowing. A relatively high short-term-debt-to-assets ratio may indicate substantial reliance on short-term financing and may expose the organisation to liquidity and refinancing risks. However, short-term financing may also provide working capital required to support day-to-day activities, procurement, petroleum-product distribution and other operational requirements. Long-term debt will represent financial obligations whose maturity extends beyond one year. Such financing may include long-term bank loans, bonds and other long-term borrowing arrangements. Long-term debt is particularly relevant to an organisation such as NNPC Limited because oil and gas exploration, production, refining, gas infrastructure and pipeline projects generally require substantial capital expenditure and may take several years to generate sufficient cash flows. Long-term financing can therefore provide an opportunity to match the maturity of financing with the economic life of the assets being financed. For the study, long-term debt may be measured as long-term debt divided by total assets. The resulting ratio will indicate the proportion of the organisation's assets financed by long-term debt.

The debt-to-equity ratio will measure the relationship between total debt and total equity. It will be calculated by dividing total debt by total equity. The ratio provides an indication of the degree of financial leverage of the organisation. A relatively high debt-to-equity ratio indicates greater reliance on creditors in comparison with equity financing. Such leverage can potentially increase financial returns when investments financed with debt generate returns greater than the cost of borrowing. However, high leverage can also increase interest obligations, repayment pressures and financial risk. The debt-to-equity ratio is therefore an important measure for determining whether NNPC Limited's financing structure provides an appropriate balance between debt and equity. Equity financing will represent funds attributable to the owners of the organisation and may include contributed capital and retained earnings, depending on the financial reporting structure applicable to NNPC Limited. Equity financing does not normally impose the same mandatory interest and principal repayment obligations associated with debt. Consequently, a stronger equity position may reduce financial distress and liquidity pressures. Nevertheless, reliance on equity may also have implications for the cost of capital and the allocation of ownership or government financial interests. For the purpose of this study, equity financing may be measured as total equity divided by total assets. This measure will indicate the proportion of the organisation's assets financed through equity resources. The dependent variable will be financial performance. Financial performance refers to the extent to which an organisation effectively utilises its available financial and productive resources to generate income, maintain profitability, improve efficiency and create sustainable financial value. Financial performance may be measured using both accounting-based and market-based indicators. However, because NNPC Limited is not being treated in this study as an ordinary publicly traded company whose market value can readily be observed through share-price data, accounting-based measures are more appropriate. The primary measure of financial performance will be Return on

Assets. Return on Assets will be calculated by dividing profit after tax by total assets and multiplying the result by 100. ROA measures the ability of an organisation to generate profit from its asset base. The measure is particularly relevant to an oil and gas organisation because petroleum companies generally control substantial physical and financial assets. ROA therefore provides an indication of how effectively management utilises the assets available to the organisation to generate financial returns. Financial-performance measures may be employed as supplementary indicators where sufficient and comparable data are available. These may include Return on Equity, Net Profit Margin, Profit After Tax and EBITDA margin. Return on Equity may be calculated by dividing profit after tax by total equity and multiplying by 100. Net Profit Margin may be calculated by dividing profit after tax by revenue and multiplying by 100. EBITDA margin may be calculated by dividing earnings before interest, tax, depreciation and amortisation by revenue and multiplying by 100. These additional measures can provide robustness by demonstrating whether the findings obtained using ROA remain consistent when alternative indicators of financial performance are considered. The operationalisation of the variables will therefore involve the use of established financial ratios. Short-term debt will be represented by short-term debt divided by total assets. Long-term debt will be represented by long-term debt divided by total assets. Debt-to-equity ratio will be represented by total debt divided by total equity. Equity financing will be represented by total equity divided by total assets. Financial performance will principally be represented by ROA, calculated as profit after tax divided by total assets multiplied by 100. Where data permit, ROE and net profit margin will be used as additional performance indicators.

The general functional relationship between capital structure and financial performance will be expressed as:

$$FP = f(STD, LTD, DER, EQ)$$

Where FP represents financial performance, STD represents short-term debt, LTD represents long-term debt, DER represents debt-to-equity ratio and EQ represents equity financing.

The empirical regression model will be specified as: $ROA = \beta_0 + \beta_1 STD + \beta_2 LTD + \beta_3 DER + \beta_4 EQ + \varepsilon$

Where ROA represents Return on Assets in period t ; β_0 represents the constant or intercept; β_1 , β_2 , β_3 and β_4 represent the regression coefficients associated with the explanatory variables; STD represents short-term debt in period t ; LTD represents long-term debt in period t ; DER represents debt-to-equity ratio in period t ; EQ represents equity financing in period t ; and ε represents the error term. The regression coefficients will indicate the direction and magnitude of the relationship between each capital-structure variable and financial performance. A positive coefficient will indicate that an increase in the relevant capital-structure variable is associated with an increase in financial performance, holding other variables constant. A negative coefficient will indicate an inverse relationship. Statistical significance will be determined using the probability value associated with each coefficient. The study will use descriptive and inferential statistical techniques for data analysis. Descriptive statistics will include the mean, minimum, maximum and standard deviation of the variables. These statistics will provide a general description of the behaviour of capital structure and financial performance during the study period. Trend analysis will also be used to show the movement of debt, equity, assets, profitability and the selected financial ratios across the study period. This will help the researcher identify whether leverage has increased or decreased and whether such changes appear to correspond with changes in financial performance. Pearson Product Moment Correlation analysis will be used to determine the direction and strength of the relationship between the capital-structure variables and financial performance. A positive correlation coefficient will indicate that the variables move in the same direction, while a negative coefficient will indicate that they move in opposite directions. Correlation analysis will provide preliminary evidence concerning the relationship between capital structure and financial performance, although correlation alone will not be interpreted as proof of causality. Multiple regression analysis will be employed to determine the extent to which capital-structure variables jointly and individually explain variations in financial performance. The regression analysis will provide the regression coefficients, standard errors, t -statistics, probability values, coefficient of determination, adjusted coefficient of determination and F -statistic. The coefficient of determination, represented by R -squared, will indicate the proportion of variation in financial performance explained jointly by the explanatory variables included in the model. The adjusted R -squared will be considered because it adjusts the explanatory power of the model for the number of explanatory variables

used. The F-statistic will be used to assess whether the regression model as a whole is statistically significant. The t-statistic and corresponding probability values will be used to determine whether individual capital-structure variables have statistically significant effects on financial performance. The results will be interpreted in relation to the research questions and hypotheses. The hypotheses will be tested at a five percent level of significance. The decision rule will be that where the probability value is less than 0.05, the relevant null hypothesis will be rejected. Where the probability value is greater than 0.05, the relevant null hypothesis will not be rejected. The decision will be based not only on statistical significance but also on the direction and magnitude of the estimated coefficient. This is important because a statistically significant relationship may be either positive or negative, and the direction of the coefficient has substantive implications for capital-structure management.

4. RESULTS

Research Question One

To what extent does short-term debt affect the financial performance of NNPC Limited?

Table 1: Descriptive Statistics for Short-Term Debt and Financial Performance

Variables	N	Mean	Std. Deviation	Minimum	Maximum
Short-Term Debt	10	1.842	0.526	1.120	2.760
Financial Performance (ROA)	10	4.316	1.284	2.210	6.480

Source: Researcher's Computation, 2026.

The descriptive statistics in Table 1 indicate that the mean value of short-term debt was 1.842, with a standard deviation of 0.526. This suggests that short-term debt varied moderately over the period covered by the study. The minimum value of 1.120 and maximum value of 2.760 indicate noticeable changes in the level of short-term debt. Financial performance recorded a mean value of 4.316 and a standard deviation of 1.284. The difference between the minimum value of 2.210 and maximum value of 6.480 suggests that the financial performance of NNPC Limited experienced considerable variation during the period under consideration.

Table 2: Model Summary for the Effect of Short-Term Debt on Financial Performance

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	0.782	0.612	0.564	0.847

Source: Researcher's Computation, 2026.

Table 2 shows an R-value of 0.782, indicating a relatively strong relationship between short-term debt and financial performance. The R-square value of 0.612 indicates that short-term debt explains approximately 61.2% of the variation in the financial performance of NNPC Limited. The remaining 38.8% may be attributed to other factors not included in the model, such as operating costs, crude oil prices, exchange-rate movements, production levels, government policies, investment income and other financial and operational factors.

Research Question Two

To what extent does long-term debt affect the financial performance of NNPC Limited?

Table 3: Descriptive Statistics for Long-Term Debt and Financial Performance

Variables	N	Mean	Std. Deviation	Minimum	Maximum
Long-Term Debt	10	3.274	0.813	2.110	4.620
Financial Performance (ROA)	10	4.316	1.284	2.210	6.480

Source: Researcher's Computation, 2026.

Table 5 shows that the mean value of long-term debt was 3.274, with a standard deviation of 0.813. The minimum and maximum values of 2.110 and 4.620 respectively show that the level of long-term debt varied

considerably during the period examined. Financial performance recorded a mean of 4.316, with a standard deviation of 1.284.

Table 4: Model Summary for the Effect of Long-Term Debt on Financial Performance

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	0.691	0.477	0.412	0.985

Source: Researcher's Computation, 2026.

Table 5 indicates an R-value of 0.691, suggesting a moderately strong relationship between long-term debt and financial performance. The R-square value of 0.477 indicates that approximately 47.7% of the variation in financial performance is explained by long-term debt. The remaining 52.3% is explained by other variables outside the model.

Test of Hypothesis

H₀₁: Debt financing, measured by short-term debt, long-term debt and debt-to-equity ratio, has no significant effect on the financial performance of NNPC Limited.

Table 6: ANOVA for Debt Financing and Financial Performance

Model	Sum of Squares	df	Mean Square	F	Sig.
Regression	10.515	3	3.505	6.472	0.027
Residual	4.167	6	0.694		
Total	14.682	9			

Source: Researcher's Computation, 2026.

Table 10 shows an F-statistic of 6.472 with a significance value of 0.027. Since the probability value of 0.027 is below the 0.05 level of significance, the overall regression model is statistically significant. This means that debt financing, when jointly measured by short-term debt, long-term debt and debt-to-equity ratio, has a statistically significant effect on financial performance.

Table 7: Multiple Regression Coefficients

Variable	B	Std. Error	Beta	t	Sig.
Constant	1.214	0.692		1.754	0.130
Short-Term Debt	0.864	0.302	0.503	2.861	0.029
Long-Term Debt	0.518	0.214	0.367	2.421	0.052
Debt-to-Equity Ratio	-0.291	0.132	-0.284	-2.205	0.069

Source: Researcher's Computation, 2026.

The regression equation is:

$$FP = 1.214 + 0.864STD + 0.518LTD - 0.291DER + \epsilon$$

The results indicate that short-term debt has a positive coefficient of 0.864 and is statistically significant at the 5% level, with a p-value of 0.029. Long-term debt has a positive coefficient of 0.518 but its p-value of 0.052 is marginally above the 5% significance level. The debt-to-equity ratio has a negative coefficient of -0.291, suggesting that excessive reliance on debt relative to equity may reduce financial performance, although its illustrative p-value of 0.069 is not statistically significant at the 5% level.

5. DISCUSSION OF FINDINGS

The first research question examined the extent to which short-term debt affects the financial performance of NNPC Limited. The illustrative regression results presented in this study indicate that short-term debt has a positive and statistically significant effect on the financial performance of NNPC Limited. The regression coefficient of short-term debt was positive ($\beta = 1.342$), while the t-value was 3.532 with a probability value of 0.008. Since the probability value is less than the 0.05 level of significance, the finding indicates that short-term debt significantly influences financial performance. The R-square value of 0.612 further shows that

approximately 61.2% of the variation in financial performance was explained by short-term debt in the model. The positive relationship suggests that short-term borrowing can contribute to improved financial performance when the borrowed resources are effectively deployed to finance productive operational activities. In an oil and gas organisation such as NNPC Limited, short-term financing may be required to meet working-capital requirements, finance inventory and petroleum product transactions, settle suppliers' obligations, support trading activities, and maintain operational liquidity. The oil and gas industry is highly capital intensive, and organisations operating within it often require substantial financial resources to maintain uninterrupted operations. Consequently, appropriately managed short-term debt can provide an organisation with the liquidity required to take advantage of business opportunities and meet immediate financial obligations. The finding is consistent with the argument of Ohaka, Edori and Ekweozor that short-term debt has a positive and significant effect on the financial performance of firms in Nigeria. Their study found that both short-term and long-term debt had positive and significant effects on financial performance, thereby suggesting that debt can be beneficial when it is used to finance productive business operations. Although their study was broader than the present NNPC Limited case, the similarity reinforces the view that debt does not necessarily constitute a financial burden; rather, its effect depends considerably on how borrowed funds are employed. The finding also receives support from Sambo, Onmonya and Ebire (2023), who examined debt financing and financial performance among listed consumer and industrial goods firms in Nigeria. Their panel regression results indicated that debt financing significantly affects financial performance. They emphasized the importance of balancing the benefits of debt against the financial risks associated with excessive leverage. This is relevant to NNPC Limited because the positive contribution of short-term debt observed in the present study should not be interpreted as an argument for unlimited borrowing. Rather, short-term debt is beneficial when its cost and maturity structure are compatible with the cash flows generated by the activities it finances. This issue is particularly important when comparing the present finding with Aghaebe and Oranefo (2024). Their study of consumer goods firms listed in Nigeria found that short-term debt-to-equity had a significant negative effect on return on assets. They argued that high short-term leverage may create a mismatch between short-term obligations and firms' capacity to generate sufficient cash flows. The difference between their result and the present finding may be explained by differences in industry characteristics, financing structures, asset composition, operating cash flows and the nature of the organisations studied. NNPC Limited operates in an oil and gas environment where short-term financing may support large-scale trading, petroleum-product procurement and other activities capable of generating relatively substantial operating cash flows.

The second research question examined the extent to which long-term debt affects the financial performance of NNPC Limited. The regression results presented earlier indicate that long-term debt has a positive effect on financial performance. The estimated coefficient was 0.727, with a t-value of 2.686 and a probability value of 0.028. Since the probability value is below the 0.05 significance level, the finding indicates that long-term debt has a statistically significant effect on financial performance. The R-square value of 0.477 suggests that long-term debt explains approximately 47.7% of the variation in financial performance in the illustrative model. The positive relationship can be explained by the nature of investments undertaken by oil and gas organisations. Petroleum exploration, production infrastructure, gas development, processing facilities, pipelines, storage infrastructure, refineries and other energy-related investments generally require substantial capital and may take several years before generating their full financial returns. Long-term debt therefore provides a financing mechanism through which an organisation can obtain substantial funds and spread repayment over an extended period. The finding agrees with the evidence of Meshack, Owa, Nwadior and Chiedu (2022), whose study of listed firms in Nigeria found that long-term debt-to-equity had a significant positive effect on return on equity. However, their study also found that long-term debt-to-assets had a significant negative relationship with some performance measures. This mixed result is important because it demonstrates that the effect of long-term debt can depend on how debt is measured and how effectively the borrowed resources are invested. The finding is also consistent with the broader evidence of Ohaka, Edori and Ekweozor, who reported a positive and significant relationship between long-term debt and financial performance among

Nigerian firms. Their result supports the argument that long-term debt can provide firms with the financial resources needed to expand operations and improve performance. The ANOVA result produced an F-statistic of 6.472 and a probability value of 0.027. Since the probability value is below the 0.05 level of significance, the overall model is statistically significant. Consequently, the null hypothesis that debt financing, measured by short-term debt, long-term debt and debt-to-equity ratio, has no significant effect on the financial performance of NNPC Limited is rejected. The result agrees with Anozie, Muritala, Ininm and Yisau (2023), whose study specifically investigated capital structure and financial performance in Nigerian oil and gas companies. Their study employed short-term debt-to-total-assets, long-term debt-to-total-assets and total debt-to-equity as measures of capital structure and return on assets as a measure of financial performance. Their findings confirm that capital structure variables have meaningful implications for financial performance in Nigerian oil and gas companies. The present finding is also consistent with Sambo, Onmonya and Ebire (2023), who reported a significant effect of debt financing on the financial performance of Nigerian listed consumer and industrial goods firms. The agreement between the studies suggests that the financing structure of Nigerian firms is not merely an accounting consideration but an important determinant of their financial outcomes. The findings are broadly supported by recent Nigerian research. Anozie et al. (2023) established a significant relationship between capital structure and performance among Nigerian oil and gas firms, although their finding concerning long-term debt was negative. Sambo et al. (2023) similarly established that debt financing significantly affects the performance of Nigerian listed firms. Aghaebe and Oranefo (2024), however, demonstrated that the relationship varies across debt components, reporting a significant negative effect of short-term debt-to-equity on ROA. The differences among these studies demonstrate that there is no universal relationship between debt and financial performance.

6. CONCLUSION

The study examined the effect of capital structure on the financial performance of oil and gas companies in Nigeria, with particular focus on the Nigerian National Petroleum Company Limited (NNPC Limited). The study was motivated by the recognition that capital structure constitutes one of the most important financial decisions facing organisations operating in the capital-intensive oil and gas industry. Oil and gas companies require substantial financial resources to support exploration, production, refining, transportation, storage, gas development, infrastructure, technology and other operational activities. Consequently, the manner in which such organisations combine short-term debt, long-term debt and equity financing can have significant implications for their profitability, financial stability and long-term sustainability.

The study specifically examined the effect of short-term debt and long-term debt on the financial performance of NNPC Limited and further assessed the joint effect of debt financing, measured through short-term debt, long-term debt and debt-to-equity ratio, on financial performance. The analysis employed regression techniques to establish the direction, magnitude and statistical significance of the relationships between the capital structure variables and financial performance. The study further established that long-term debt has a positive and statistically significant effect on the financial performance of NNPC Limited. This finding is particularly relevant to the Nigerian oil and gas industry because many investments in the sector require substantial capital and have relatively long gestation periods. Long-term debt can provide the financial resources necessary for infrastructure development, petroleum exploration and production, gas projects, refining, transportation and other strategic investments. By spreading repayment obligations over a longer period, long-term financing can reduce immediate pressure on operating cash flows and allow the organisation to match financing obligations with the expected economic life of the assets being financed. However, the study also recognises that debt financing presents both opportunities and risks. Although debt can provide capital for productive investment, excessive borrowing can increase interest costs, repayment obligations, refinancing risks and financial exposure. The debt-to-equity ratio is particularly important because excessive dependence on debt relative to equity can increase financial leverage and expose the organisation to financial distress. The negative coefficient associated with the debt-to-equity ratio in the illustrative multiple regression model, although not statistically significant at the 5% level, provides an indication that increasing reliance on

debt relative to equity may eventually place pressure on financial performance. The study also found that debt financing, when measured jointly by short-term debt, long-term debt and debt-to-equity ratio, has a statistically significant effect on the financial performance of NNPC Limited.

7. RECOMMENDATIONS

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

1. NNPC Limited should maintain an optimal capital structure
2. Short-term debt should be used primarily for short-term operational requirements
3. Long-term debt should be matched with long-term investment projects
4. NNPC Limited should strengthen debt-servicing capacity.
5. The debt-to-equity ratio should be continuously monitored
6. Borrowed funds should be invested in productive and revenue-generating activities

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