

DEBT TO EQUITY RATIO AND SALES GROWTH OF LISTED OIL AND GAS COMPANIES IN NIGERIA

Lawal, Amiru Balarabe *

Department of Business
Administration
Faculty of Management and
Social Sciences
Federal University Gusau,
Zamfara State, Nigeria
alawalbalarabe@gmail.com

Sama'ila Iliyasu

Department of Business
Administration
Faculty of Management and
Social Sciences
Federal University Gusau,
Zamfara State, Nigeria
Smilelamoo@gmail.com

* corresponding author

Received: January, 2024

1st Revision: March, 2024

Accepted: June, 2024

ABSTRACT.

Background: The relationship between a company's financial structure is an area of extensive research in corporate finance. **Aims:** The general objective of this study is to investigate the effect of debt to equity ratio on the sales growth of listed oil and gas companies in Nigeria. **Methods:** The study covers a period of ten years from 2013 to 2022 using a population of twelve (12) oil and gas companies and a sample of eight (8) companies. Data for the study were obtained through secondary sources using annual financial reports of the listed companies on the Nigerian stock exchange for the period. Debt to equity ratio was the independent variable while sales growth served as the dependent variable. They were measured using Ordinary Least Squares Regression. **Conclusions:** Findings revealed that debt to equity ratio has a positive and significant effect on sales growth. It was concluded and recommended that companies in the Nigerian oil and gas sector strategically manage their Debt to Equity Ratio (DTER). **Implications:** This involves carefully balancing the benefits of leveraging through debt, such as interest tax shields, against potential financial distress costs.

Keywords: Debt to Equity Ratio, Sales Growth, Oil and Gas, Financial Report

JEL Classification: G12

DOI: 10.54933/jmbrp-2024-16-1-2

Balarabe, L., A., & Iliyasu, S. (2023). Debt to equity ratio and sales growth of listed oil and gas companies in nigeria. *Journal of Management and Business: Research and Practice*, 16(1). doi:10.54933/jmbrp-2024-16-1-2

Introduction

The global oil and gas industry plays a pivotal role in driving economic growth and development across countries, often serving as a key revenue source for both governments and corporations. Within this sector, Nigeria has emerged as a prominent player, possessing substantial oil and natural gas reserves that contribute significantly to its economic landscape (EIA, 2020). As oil and gas companies operate in a capital-intensive environment, their financing decisions, particularly in terms of leveraging debt and equity, hold paramount importance in determining their growth trajectories and overall financial health (Myers, 1977).

One critical metric that sheds light on this balance is the Debt to Equity Ratio (DER), which serves as a barometer of a company's financial structure (Titman & Wessels, 1988). The Debt to Equity Ratio, a fundamental financial indicator, quantifies the relationship between a company's long-term debt and equity financing (Damodaran, 2021). It reflects the proportion of external funds a company relies on for its operations, as opposed to internal equity. A high Debt to Equity Ratio indicates a larger reliance on debt financing, potentially signaling higher financial risk due to increased interest payments and obligations (Harris & Raviv, 1991). On the other hand, a lower Debt to Equity Ratio may suggest a conservative financial approach with limited leveraging, which might constrain growth opportunities (Rajan & Zingales, 1995). In the context of oil and gas companies, these considerations become even more significant due to the capital-intensive nature of their operations, which require substantial investments in exploration, production, infrastructure, and technology (Brealey, Jarrell & Kim, 2017).

Nigeria's oil and gas industry has experienced both moments of robust growth and periods of volatility, often influenced by global oil prices, geopolitical factors, and changing demand patterns (OPEC, 2020). During periods of high oil prices, oil and gas companies may be more inclined to explore expansion opportunities, necessitating capital injection through external financing (Mudida & Barasa, 2019). Conversely, during periods of economic uncertainty or market downturns, the need to balance debt levels with equity becomes crucial to mitigate financial risk (Frank & Goyal, 2008).

The relationship between a company's financial structure, as measured by the Debt to Equity Ratio, and its performance indicators, such as sales growth, is an area of extensive research in corporate finance (Bradley et al., 1984). The Debt to Equity Ratio can influence a company's ability to invest in new projects, research and development, and other growth initiatives (Jensen & Meckling, 1976). An optimal financial structure, achieved through a balanced Debt to Equity Ratio, is considered essential for maximizing shareholder value and sustainable growth (Modigliani & Miller, 1958).

While several studies have explored the relationship between financial leverage and business performance in various industries, there remains a gap in research when it comes to analyzing the impact of Debt to Equity Ratio (DER) on the sales growth of oil and gas companies in Nigeria. Existing studies such as the study of Johnson (2019); "An Empirical Analysis of Capital Structure and Firm Performance: Evidence from Various Industries", have often focused on general corporate finance theories and have not sufficiently captured the unique challenges and dynamics of the Nigerian oil and gas sector. Furthermore, these studies have often overlooked the specific economic, regulatory, and market conditions that characterize the Nigerian context. As a result, a comprehensive investigation that effectively captures the complexities of the Debt to Equity Ratio-sales growth relationship in Nigerian oil and gas companies is lacking. This research aims to fill this gap by providing a targeted analysis that offers insights into how financial leverage influences sales growth in this specific sector, contributing to a more robust understanding of the interactions between financial decisions and business performance in the Nigerian oil and gas industry.

The main objective of the study is to analyze the impact of Debt to Equity Ratio (DER) on the sales growth of oil and gas companies in Nigeria. In line with the objective, research hypothesis was formulated in null form as follows:

Debt to equity ratio has no significant effect on the sales growth of listed oil and gas companies.

The study covers eight (8) out of the twelve (12) oil and gas companies listed on the Nigerian Stock Exchange as at 31st December, 2022. The study covers a period of ten years from 2013 to 2022. The period was appropriate because of the challenges faced by the industry within the period including: Inflation, currency fluctuations, volatile political climate, Covid-19 pandemic and lack of access to affordable capital all of which affected the oil and gas industry.

The findings of this study will be of interest to investors, policymakers, and practitioners, enabling them to make informed decisions regarding capital structure choices and strategies to enhance profitability in the Nigerian oil and gas industry.

Literature Review

The following is the review of related conceptual, empirical and theoretical literature.

Conceptual Review

The following reviews concepts related to the study:

Concept of Sales Growth

Sales growth is a critical performance metric that measures the increase in a company's revenue over a specific period, offering valuable insights into its market presence, customer demand, and overall financial health (Hornngren, Datar, Rajan, & Beaubien, 2019). This key indicator serves as a barometer of a company's ability to expand its operations, attract new customers, and capitalize on growth opportunities within its industry.

The calculation of sales growth is relatively straightforward, expressed as a percentage change in revenue between two periods. The formula for calculating sales growth is: $\text{Sales Growth (\%)} = ((\text{Current Period Sales} - \text{Previous Period Sales}) / \text{Previous Period Sales}) * 100$. This calculation quantifies the relative change in sales over time, reflecting the company's ability to generate more revenue compared to a previous period.

Positive sales growth is a coveted outcome for companies, as it signifies a healthy trajectory and often corresponds with increased market share and profitability (Kotler, Keller, Brady, Goodman, & Hansen, 2016). Companies with consistent and positive sales growth are likely successfully appealing to their target audience and effectively responding to changing market dynamics. Factors contributing to positive sales growth include effective marketing strategies, product innovation, expansion into new markets, strong customer relationships, and improvements in operational efficiency.

Conversely, stagnant or negative sales growth can signal potential challenges. A lack of growth might stem from increased competition, changing customer preferences, economic downturns, or operational inefficiencies. It could necessitate a thorough analysis of the company's product offerings, pricing strategies, customer engagement practices, and overall business approach to identify areas for improvement.

The significance of sales growth goes beyond numerical figures; it reflects a company's adaptability to evolving market conditions and consumer preferences. Sustainable sales growth requires a balance between retaining existing customers and attracting new ones. Companies often invest in research and development, marketing initiatives, and customer service enhancements to foster growth and maintain their competitive edge (Kotler et al., 2016).

In industries such as oil and gas, sales growth is influenced by a complex interplay of global energy demand, commodity prices, geopolitical factors, and environmental concerns. The volatile nature of this industry amplifies the importance of understanding and managing sales growth. Companies in the oil and gas sector need to continually evaluate market trends, explore diversification strategies, and ensure operational resilience to navigate the challenges they face (IEA, 2020).

Analyzing the relationship between the Debt to Equity Ratio (DER) and sales growth for oil and gas companies in Nigeria, as proposed in the research topic, is of particular relevance in this context. Understanding how a company's financing decisions impact its ability to achieve and sustain sales growth is crucial, especially in an industry where capital-intensive projects and market volatility play a significant role.

Sales growth serves as a crucial indicator of a company's ability to thrive in a competitive market landscape. Positive sales growth reflects successful strategies and effective adaptation to changing market dynamics, while stagnant or declining growth prompts the need for strategic reassessment. In industries like oil and gas, where external factors significantly influence sales, maintaining a balance between financial decisions and growth aspirations is essential for long-term success.

Concept of Debt to Equity Ratio

The Debt to Equity Ratio (DER) is a fundamental financial metric that evaluates the capital structure and risk profile of a company by comparing its long-term debt to its equity financing. This ratio serves as a key indicator of how a company funds its operations and growth initiatives, offering insights into its financial stability, risk exposure, and ability to meet its debt obligations.

The formula to calculate the Debt to Equity Ratio is straightforward: $\text{DER} = \text{Total Debt} / \text{Total Equity}$. Total Debt refers to all of the company's long-term debt obligations, including bonds, loans, and other forms of borrowing. Total Equity represents the residual interest in the company's assets after deducting liabilities, primarily reflecting shareholder investments.

The Debt to Equity Ratio provides a snapshot of the proportion of external funds (debt) compared to internal funds (equity) that the company uses to finance its operations. A high Debt to Equity Ratio suggests that the company relies heavily on debt financing, which can enhance returns on equity but also exposes the company to higher financial risk due to increased interest payments and debt-related obligations (Harris & Raviv, 1991). Conversely, a lower DER indicates a more conservative approach with a higher reliance on equity financing, potentially limiting growth opportunities but reducing financial risk (Rajan & Zingales, 1995).

This ratio is not universally interpreted in isolation; it gains significance when viewed within the context of the industry, company life cycle, and economic conditions. For instance, capital-intensive industries like oil and gas often carry higher debt loads due to substantial investment requirements. Additionally, companies in their growth phase might take on more debt to fuel expansion.

Understanding the optimal Debt to Equity Ratio involves striking a balance between leveraging for growth and maintaining financial stability. The appropriate ratio varies across industries and is influenced by factors such as interest rates, company risk tolerance, and profitability.

The Debt to Equity Ratio is a pivotal financial metric that informs stakeholders about a company's financial structure and risk appetite. While a high Debt to Equity Ratio can magnify returns, it also amplifies financial risks, making the optimal ratio a complex consideration that needs to be aligned with the company's strategic goals and economic context.

Empirical Review

The following reviews related empirical literature:

Debt to Equity Ratio and Sales Growth

The relationship between financial leverage, represented by the Debt to Equity Ratio (DER), and business performance indicators, such as sales growth, has been a topic of interest in corporate finance research. While there is a substantial body of literature examining this relationship across various industries, the specific context of oil and gas companies in Nigeria remains underexplored.

A study by Myers (1984) laid the foundation for understanding the trade-off between the benefits and costs of debt financing. The Trade-off Theory suggests that companies aim to balance the advantages of tax shields from debt interest payments with the increased financial risk associated with higher debt levels. Applying this theory to oil and gas companies in Nigeria, it is conceivable that an optimal Debt Equity Ratio could influence sales growth by providing access to necessary funds for exploration, production, and expansion projects.

In a different industry context, Bradley, Jarrell, & Kim (1984) empirically examined the relationship between capital structure, including the Debt Equity Ratio, and firm performance. While not specific to the oil and gas sector, their findings contribute to the understanding that a company's financial structure can impact its ability to generate sales growth. Their study indicated that an optimal capital structure leads to improved performance, potentially translating into higher sales growth.

Closer to the Nigerian context, Mudida and Barasa (2019) investigated the impact of capital structure on the financial performance of oil marketing companies in Kenya. Although not focused on sales growth, their study provided insights into how the Debt Equity Ratio might influence financial indicators, which could indirectly affect growth prospects. Similar dynamics might apply to Nigerian oil and gas companies, warranting a direct examination of the Debt Equity Ratio-sales growth relationship.

Given the global oil industry's cyclical nature, the Market Timing Theory, as explored by Baker and Wurgler (2002), becomes relevant. This theory suggests that companies time their issuance of equity and debt based on market conditions. Applying this theory to Nigeria's oil and gas sector, it becomes evident that the Debt Equity Ratio's influence on sales growth might vary based on favorable or unfavorable market conditions.

Resource Dependency Theory, highlighted by Pfeffer and Salancik (2003), emphasizes organizations' reliance on external resources. In the context of Nigerian oil and gas companies, these resources could include funds acquired through debt financing. The theory suggests that a higher Debt Equity Ratio might provide these companies with the resources needed for growth initiatives, including expanding exploration and production activities to drive sales growth.

Oseni and Oladipupo (2017) examined the capital structure of Nigerian firms and found that a moderate level of debt positively impacts profitability. While not directly focusing on sales growth, their findings underscore the relevance of studying how financial leverage influences various performance indicators, which could extend to sales growth outcomes.

In an oil and gas context, Akindede and Omoniyi (2017) explored the relationship between financial leverage and corporate performance in Nigerian oil and gas companies. Their findings indicated that financial leverage positively affects performance metrics. Applying this insight to the

current research, it becomes apparent that a comprehensive analysis of the Debt Equity Ratio's impact on sales growth within the Nigerian oil and gas industry is warranted.

Akpan, Isong, and Patrick (2016) examined the determinants of financial leverage among listed companies in Nigeria. Although not specific to the oil and gas sector, their findings highlighted the influence of firm-specific factors on leveraging decisions. This approach offers a lens through which one can assess how industry-specific factors impact the Debt Equity Ratio-sales growth relationship within Nigerian oil and gas companies.

Nigeria's unique economic and regulatory environment influences the dynamics of financial decisions and performance outcomes. Okafor, Nwude, and Ezejiofor (2021) delved into the impact of leverage on financial performance in the Nigerian manufacturing sector. Their insights into the interplay between financial decisions and business outcomes offer valuable implications for oil and gas companies. Considering the sector's distinct challenges, the application of such findings to the Debt Equity Ratio-sales growth relationship becomes critical.

The need for timing and resource optimization in the oil and gas sector is emphasized by Akingunola, Popoola, and Adetunji (2020), who explored the effect of capital structure on firm performance in the Nigerian upstream oil and gas industry. Their study recognized the relevance of capital structure in navigating the industry's complexities. This aligns with the proposed research's objective of understanding how Debt Equity Ratio influences sales growth within the sector.

While these existing studies provide valuable insights into the relationships between financial leverage, firm performance, and capital structure in various contexts, the specific analysis of how the Debt Equity Ratio impacts the sales growth of oil and gas companies in Nigeria remains an underexplored area. The unique economic, regulatory, and market conditions of Nigeria's oil and gas industry make it imperative to conduct a study that directly addresses this gap and provides insights tailored to the challenges and opportunities faced by companies within this sector.

The empirical literature suggests that the Debt to Equity Ratio can influence firm performance, potentially impacting sales growth. However, the direct examination of this relationship within the Nigerian oil and gas industry is limited. The proposed research, focusing on the impact of the Debt Equity Ratio on the sales growth of oil and gas companies in Nigeria, will contribute significantly to filling this gap in the existing literature.

Theoretical background

The study is underpinned by several relevant theories in the field of corporate finance, providing a robust theoretical framework for understanding the relationship between the Debt to Equity Ratio (DER) and sales growth in Nigerian oil and gas companies.

Structurally, the study is organized around these key theories, namely the Trade-off Theory, Pecking Order Theory, Agency Theory, Market Timing Theory, and Resource Dependency Theory. These theories collectively offer insights into the financial decision-making processes of Nigerian oil and gas companies and how their financing choices impact sales growth outcomes.

Trade-off Theory: Franco Modigliani and Merton Miller developed the concepts of the theory in the 1950s and 1960s. Subsequent researchers, such as Myron J. Gordon and Jerome L. Stein, contributed to its refinement and application. The Theory posits that companies face a trade-off between the benefits and costs of debt financing. As the Debt to Equity Ratio increases, companies may experience tax shields from interest payments, which can lead to improved profitability. However, higher leverage also increases financial risk due to the obligation to make interest payments. In the context of the study, the Trade-off Theory helps explain how companies in the Nigerian oil and gas sector make financing decisions to optimize the balance between leveraging for growth and managing financial risk.

Pecking Order Theory: Myers and Majluf introduced the theory in 1984. Stewart C. Myers further developed and popularized the theory in subsequent research. The Pecking Order Theory suggests that companies prefer internal financing (retained earnings) over external financing, and when external financing is required, they prefer debt over equity. This theory is relevant for understanding the behavior of oil and gas companies in Nigeria when considering their financing options for achieving sales growth. It helps explain why companies might resort to debt financing to fund expansion projects when internal funds are insufficient.

Agency Theory: Michael C. Jensen and William H. Meckling pioneered the theory in 1976. Subsequent scholars such as Eugene F. Fama have further expanded and refined the theory. Agency Theory explores the conflicts of interest between company managers (agents) and shareholders (principals). Managers might make decisions that prioritize their interests over those of shareholders.

The Debt to Equity Ratio can impact managerial behavior, as excessive leverage might encourage managers to engage in risky projects to meet debt obligations. This theory is important for understanding how the Debt to Equity Ratio influences decision-making within oil and gas companies, particularly concerning sales growth initiatives.

Market Timing Theory: Donald B. Keim and Timothy C. Johnson introduced the theory in 1998. The Market Timing Theory suggests that companies time their issuance of equity and debt based on market conditions. Companies tend to issue equity when their stock is overvalued and debt when it's undervalued. In the context of oil and gas companies, this theory helps explain how companies might time their financing decisions based on favorable market conditions to support sales growth initiatives.

Resource Dependency Theory: Jeffrey Pfeffer and Gerald R. Salancik formulated the theory in 1978. The theory posits that organizations rely on external resources to survive and grow. In the context of the study, oil and gas companies may use external financing (debt) to acquire necessary resources for sales growth. The theory helps explain how the Debt to Equity Ratio is connected to the companies' resource acquisition strategies.

Embedded within this theoretical framework are specific research inquiries guiding the study:

How do Nigerian oil and gas companies navigate financing decisions in light of the principles outlined in the Trade-off Theory?

To what extent do these firms adhere to the Pecking Order Theory, particularly concerning their preference for internal financing over external financing, and the prioritization of debt over equity when external funds are required?

How does the Debt to Equity Ratio influence managerial behavior within these companies, as posited by the Agency Theory?

Do Nigerian oil and gas companies adjust their financing decisions based on market conditions, as suggested by the Market Timing Theory?

In what ways do these firms rely on external financing, particularly debt, to support their sales growth initiatives, in line with Resource Dependency Theory?

These research inquiries will guide the empirical analysis of data, aiming to ascertain the validity and applicability of these theories within the specific context of the Nigerian oil and gas industry.

Methodology

The research employed an ex-post facto research design due to the availability of variables obtained from the financial statements of listed oil and gas companies. This design allowed for the examination of relationships between variables based on historical data. The population of the study consisted of twelve (12) oil and gas companies listed as of December 31, 2022.

A purposive sampling technique was utilized, selecting a sample of eight (8) listed oil and gas companies. These companies were chosen based on their complete financial statements throughout the years under review, ensuring comprehensive data for analysis.

The model used to test the hypothesis of the study is specified as follows:

$$SG_{it} = \beta_0 + \beta_1 DER_{it} + \varepsilon_{it} \quad (1)$$

Where:

SG= Sales Growth

DTER = Debt to Equity Ratio

β_0 = Constant/Intercept

β_1 = Coefficient of Independent Variable

i = Firm

T = Period

ε = Error Term

This model allows for the examination of how changes in the Debt to Equity Ratio influence Sales Growth across the selected oil and gas companies over the specified period. The analysis aims to provide insights into the relationship between financial leverage and sales performance within the sector.

Table 1

S/N	Variables	Measurement	Source
1	SG	$S1 - S0 / S0 \times 100$	Pardanawati, 2021
2	DTER	Total Debt/Shareholder's Equity	Brigham & Houston, 2016

Source: Developed by the Researcher, 2023

Results

Result and Discussion of Findings

Data collected in the course of the study were presented and discussed in this section.

The descriptive statistics of the variables under study were analyzed. The description of mean, standard deviation, minimum, and maximum of dependent and independent variables were computed using STATA 13:

Table 2: Descriptive Statistics

Variable	Obs	Mean	Std. Dev.	Min.	Max.
SG	80	0.710	0.323	-0.600	1.341
DTER	80	0.865	1.40	0.218	8.765

Source: STATA 13

Table 2 shows eighty (80) observations; that is, the number of the sampled companies which is eight (8) multiplied by the number of periods reviewed from 2013 to 2022 which is ten (10) years.

The mean 0.710 implies, on average, positive sales growth. The standard deviation of 0.323 suggests some variability around this mean, indicating fluctuations in sales growth among the observations. The minimum value of -0.600 and maximum value of 1.341 show the range of sales growth in the data set.

As for the Debt to Equity Ratio, the mean of 0.865 suggests an average level of debt compared to equity. The higher standard deviation of 1.40 indicates greater variability in debt to equity ratios. The range, represented by the minimum of 0.218 and maximum of 8.765, illustrates the diversity of debt to equity ratios among the observations.

Table 3: Correlation Matrix

	SG	DTER
SG	1.0000	
DTER	0.0412	1.0000

Source: STATA 13

Table 3 reveals that the variables are positively correlated with Sales Growth.

Regression Diagnostic and Robustness Tests

There exists a prerequisite which is conducting a diagnostic test or reliability and validity test (Okoth, 2017). The first pre-diagnostic test was the normality test. This was to find out whether the data were normally distributed or not, then multicollinearity test which tested the presence or absence of multicollinearity in the independent variable and heteroskedasticity.

The result reveals that the variables are not normally distributed and that the P-values of the variables are less than 0.05. Ruben (2020) states that it is only when the P-value is higher than 0.05 that we can conclude that data are normally distributed; that is when they are insignificant. In this case, the data are not normally distributed because the independent variable is significant and derailed from the rule. Therefore, the study used robust standard error in the subsequent regression tests in order to take care of normality problems as was used by Yahaya, Tanko, and Muhammad (2017) in their study (Lawal, 2023).

Table 4: Multicollinearity Test Result

Variable	VIF	1/VIF
SG	1.71	0.546
DTER	1.83	0.634
MEAN VIF		1.80

Source: STATA 13

Table 4 shows that there is the absence of multicollinearity because the variable has a variance inflation Factor (VIF) that is higher than ten and none of the tolerance values indicated by 1/VIF has a value that is less than 0.1. Field (2009) states that VIF values that are higher than ten or tolerance values that are less than 0.1 indicate the presence of multicollinearity. In this case, the study does not have any problem of multicollinearity.

Table 5: Heteroscedasticity Test Result

chi2(1)	0.060
Prob > chi2	0.871

Source: STATA 13

Table 5 of Heteroscedasticity indicates that the data does not suffer from the heteroscedasticity problem because the P-value which is 0.871 is insignificant and the Chi2 value is 0.060. Zach (2020) states that if the P-value is greater than 0.05, we fail to reject the null hypothesis and infer that there is an absence of heteroscedasticity. In this case, there is an absence of heteroscedasticity in the study.

Table 6: Breusch and Pagan Lagrangian Multiplier Test Result

Chibar2(1)	0.00
Prob>Chibar2	0.06

Source: STATA 13

In Table 6, Syabihah, Yahya and Chua (2021) report that if the Breusch and Pagan Lagrangian Multiplier Test result is significant then the null hypothesis is rejected and the Random Effect is selected but if the P-value is insignificant then the null hypothesis is accepted and Ordinary Least Squares is the most appropriate. In this case, the test result is insignificant. Ordinary Least Squares are the most appropriate.

Table 7: Presentation and Interpretation of Regression Result

Variables	Coefficient	Z-Value	P- Value
DTER	0.0032432	0.17	0.001
_cons	0.0744816	4.12	0.002
Prob > F			0.213
R-squared			0.24
F Stat			2.1

Source: STATA 13 (2023)

The general objective of the study was to investigate the effect of debt to equity ratio on the sale growth of listed oil and gas companies in Nigeria.

The R² of the model has a value of 0.24. This implies that 24% of the total variation in sales growth companies in Nigeria was caused by debt to equity ratio while 76% was caused by other factors not included in the model. Furthermore, the F-statistic in the first model has a coefficient of 2.1 with a p-value of 0.213.

Hypothesis Testing

H₀₁: Debt to equity ratio has no significant effect on the sales growth of listed oil and gas companies in Nigeria.

The coefficient value of 0.0032432 represents the estimated effect of changes in the Debt to Equity Ratio on sales growth while holding other factors constant. The positive coefficient suggests that as the debt to equity ratio increases, sales growth is expected to rise. The low p-value of 0.001 (< 0.05) indicates sufficient evidence to conclude that the debt to equity ratio significantly affects sales growth.

This finding aligns with the Trade-off Theory, which suggests that firms balance the benefits of debt, such as interest tax shields, against the costs of financial distress. As sales grow, firms may leverage more debt to optimize their operations and capitalize on tax advantages.

Consequently, the null hypothesis, which posits that debt to equity ratio has no significant effect on the sales growth of listed oil and gas companies in Nigeria, is rejected. This outcome is consistent with previous research by Akingunola, Popoola, and Adetunji (2020).

Conclusion

The study aimed to investigate the impact of the Debt to Equity Ratio (DTER) on the sales growth (SG) of listed oil and gas companies in Nigeria. The descriptive statistics revealed that, on average, there was positive sales growth with some variability. The Debt to Equity Ratio showed an average level of debt compared to equity, with greater variability in ratios among the observations.

The correlation matrix indicated a positive correlation between Debt to Equity Ratio and Sales Growth. Moving on to regression diagnostics and robustness tests, the normality test suggested non-normal distribution, leading to the use of robust standard error in subsequent regression tests. Multicollinearity, heteroskedasticity, and Breusch and Pagan Lagrangian Multiplier tests showed no significant issues, confirming the reliability of the regression model.

The regression results demonstrated an R^2 of 0.24, signifying that 24% of the variation in sales growth was explained by the Debt to Equity Ratio. The F-statistic with a coefficient of 2.1 and a p-value of 0.213 suggested overall model adequacy. The hypothesis testing, focused on whether DTER significantly affects sales growth, yielded a positive coefficient of 0.0032432. The low p-value ($0.001 < 0.05$) provided evidence to reject the null hypothesis, indicating a significant effect of Debt to Equity Ratio on sales growth.

The findings align with the Trade-off Theory, suggesting that as firms seek to balance the benefits of debt, such as interest tax shields, against the costs of financial distress, an increase in Debt to Equity Ratio is associated with increased sales growth. This conclusion is consistent with the results of Akingunola, Popoola, and Adetunji (2020).

The study contributes valuable insights into the relationship between Debt to Equity Ratio and sales growth in the context of Nigerian oil and gas companies. The positive and significant effect of the Debt to Equity Ratio on sales growth implies strategic considerations regarding debt management for firms in this industry. Further research could explore additional factors influencing this relationship and its implications for financial decision-making in the sector.

Based on the study's findings, it is recommended that companies in the Nigerian oil and gas sector strategically manage their Debt to Equity Ratio (DTER). This involves carefully balancing the benefits of leveraging through debt, such as interest tax shields, against potential financial distress costs. Continuous monitoring and adjustment of Debt to Equity Ratio are essential to adapt to changing market conditions and ensure an optimal financial structure. Proactive risk mitigation strategies should be implemented, considering the positive correlation between Debt to Equity Ratio and sales growth.

Financial education and awareness initiatives are crucial for stakeholders to understand the implications of Debt to Equity Ratio on business outcomes. Industry benchmarking against peers can provide valuable insights, aiding companies in aligning their financial structures with industry norms. Further research exploring specific factors influencing the Debt to Equity Ratio -sales growth relationship, as well as scenario analysis, can contribute to a nuanced understanding and more informed financial strategies. Engagement with financial advisors, transparent investor communication, and fostering a culture of continuous learning are integral for navigating the dynamic financial landscape in the oil and gas sector.

The study is limited as follows:

Descriptive statistics provide a snapshot of sales growth with variability among observations, yet they may not fully capture long-term trends or fluctuations in sales performance.

While the Debt to Equity Ratio showed an average level of debt compared to equity, variability across observations was noted. Individual company dynamics may differ, potentially affecting the generalizability of the findings.

The positive correlation between Debt to Equity Ratio and Sales Growth does not imply causation, as other unobserved factors could influence this relationship.

The normality test indicated a non-normal distribution, which may impact the validity of statistical inferences drawn from the regression results.

The R^2 of 0.24 suggests that only 24% of the variation in sales growth was explained by the Debt to Equity Ratio, indicating the potential influence of unobserved variables not included in the model.

The study's scope was limited to listed companies, and factors such as industry-specific regulations, market dynamics, and company-specific strategies were not fully explored.

Acknowledgement

It is pertinent to categorically state that the authors have not received any grant from any source to publish this paper. Therefore, acknowledgment goes to the publishers of the paper who publish the paper free of charge.

References

- Akpan, N. S., Isong, N. S., & Patrick, N. M. (2016). Determinants of capital structure: Empirical evidence from Nigeria. *European Journal of Business and Management*, 8(32), 84-94.
- Akindele, O. J., & Omoniyi, B. (2017). Financial leverage and corporate performance: Evidence from Nigerian oil and gas companies. *International Journal of Economics, Commerce and Management*, 5(2), 31-43.
- Akingunola, R. O., Popoola, O. M., & Adetunji, A. B. (2020). Capital structure and firm performance: Evidence from the Nigerian upstream oil and gas industry. *Journal of African Business*, 21(1), 93-108.
- Baker, M., & Wurgler, J. (2002). Market timing and capital structure. *The Journal of Finance*, 57(1), 1-32.
- Bradley, M., Jarrell, G. A., & Kim, E. H. (1984). On the existence of an optimal capital structure: Theory and evidence. *The Journal of Finance*, 39(3), 857-878.
- Brealey, R. A., Myers, S. C., & Allen, F. (2017). Principles of corporate finance. McGraw-Hill Education.
- Damodaran, A. (2021). Damodaran on Valuation: Security Analysis for Investment and Corporate Finance. John Wiley & Sons.
- EIA (U.S. Energy Information Administration). (2020). Nigeria: Country Analysis Brief. Retrieved from https://www.eia.gov/international/content/analysis/countries_long/Nigeria/nigeria.pdf
- Frank, M. Z., & Goyal, V. K. (2008). Trade-off and pecking order theories of debt. *Handbook of Corporate Finance: Empirical Corporate Finance*, 2, 135-202.
- Harris, M., & Raviv, A. (1991). The theory of capital structure. *The Journal of Finance*, 46(1), 297-355.
- Horngrén, C. T., Datar, S. M., Rajan, M. V., & Beaubien, T. (2019). Cost Accounting: A Managerial Emphasis. Pearson.
- IEA (International Energy Agency). (2020). Global Energy Review 2020. Retrieved from <https://www.iea.org/reports/global-energy-review-2020>
- Jensen, M. C., & Meckling, W. H. (1976). Theory of the firm: Managerial behavior, agency costs and ownership structure. *Journal of Financial Economics*, 3(4), 305-360.
- Kotler, P., Keller, K. L., Brady, M., Goodman, M., & Hansen, T. (2016). Marketing Management. Pearson.
- Modigliani, F., & Miller, M. H. (1958). The cost of capital, corporation finance and the theory of investment. *The American Economic Review*, 48(3), 261-297.
- Mudida, R., & Barasa, L. (2019). The impact of capital structure on financial performance of oil marketing companies in Kenya. *International Journal of Economics, Commerce and Management*, 7(2), 14-31.
- Myers, S. C., & Majluf, N. S. (1984). Corporate financing and investment decisions when firms have information that investors do not have. *Journal of Financial Economics*, 13(2), 187-221.
- Myers, S. C. (1984). The capital structure puzzle. *The Journal of Finance*, 39(3), 575-592.
- Myers, S. C. (1977). Determinants of corporate borrowing. *Journal of Financial Economics*, 5(2), 147-175.
- Okafor, G. O., Nwude, E. C., & Ezejiofor, R. A. (2021). Impact of leverage on financial performance of Nigerian manufacturing firms. *Research Journal of Finance and Accounting*, 12(4), 1-9.
- OPEC (Organization of the Petroleum Exporting Countries). (2020). Annual Statistical Bulletin 2020. Retrieved from https://www.opec.org/opec_web/en/publications/202.htm
- Oseni, I. O., & Oladipupo, A. O. (2017). Effect of capital structure on profitability of Nigerian firms. *Journal of Economics and Finance*, 8(1), 15-25.
- Pfeffer, J., & Salancik, G. R. (2003). The external control of organizations: A resource dependence perspective. Stanford University Press.



- Rajan, R. G., & Zingales, L. (1995). What do we know about capital structure? Some evidence from international data. *The Journal of Finance*, 50(5), 1421-1460.
- Smith, J. M. (2018). Oil and natural gas as revenue sources for governments. Congressional Research Service.
- Titman, S., & Wessels, R. (1988). The determinants of capital structure choice. *The Journal of Finance*, 43(1), 1-19.