FIRMS ATTRIBUTES AND FINANCIAL PERFORMANCE OF LISTED OIL AND GAS COMPANIES IN NIGERIA

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Abstract: The study investigates the impact of firm attributes on the financial performance of listed oil and gas companies in Nigeria. Many of these firms have experienced fluctuating profitability, low returns on investment, and earnings volatility due to various operational and economic challenges. This situation raises concerns about whether specific firm attributes contribute to poor or improved financial performance. Factors such as unstable profitability, fluctuating crude oil prices, exchange rate volatility, inflation, and uncertainties in the global energy market significantly affect these companies. The research covers a ten-year period from 2015 to 2024 and includes all five firms listed on the Nigerian Exchange (NE) as of December 31, 2024. Given the available data, the study employed a census sampling approach, examining all five firms in the population. Multiple regression analysis was conducted on the panel data to determine the effects and relationships between the variables. Additionally, correlation and descriptive statistics were utilized. The study recommends that firms enhance their internal financial management practices. While factors such as firm size, growth, capital adequacy, and liquidity exhibited insignificant negative effects on financial performance, it is still essential for firms to maintain adequate liquidity and sound capital structures to ensure operational efficiency and financial sustainability. Regulatory authorities should also promote corporate governance policies. Government agencies and industry regulators should establish policies that strengthen corporate governance and transparency. Moreover, managers should prioritize the efficient utilization of resources instead of merely focusing on expansion, as firm size did not significantly impact financial performance. Emphasizing operational efficiency and productivity improvements is crucial for long-term success.

Keywords: *Firm Attributes, Firm age, Firm size, firm Growth rate, Sales growth rate, Capital Adequacy, Leverage and Financial Performance.*

1. Introduction

The performance of a company is crucial for shareholders and institutional investors (Ahmed & Hadi, 2017). Therefore, it is the responsibility of business managers to optimize corporate resources to ensure adequate returns. The oil and gas sector play's a significant role in the Nigerian economy through revenue generation, foreign exchange earnings, job creation, and industrial development. However, many listed oil and gas companies in Nigeria continue to experience fluctuating financial performance due to factors such as economic instability, volatile crude oil prices, operational inefficiencies, exchange rate fluctuations, and poor financial management practices. These challenges have raised concerns among investors, regulators, policymakers, and researchers regarding the factors that influence firm performance within the sector (Aribaba, Ahmodu, Afolabi, Egbewole, & Salaam, 2022). Firms may source funds internally or externally, but the utilization of these funds often comes with the expectations of the

providers. As the literature indicates, the composition of a company's financing, known as ownership structure, is important for management decisions (Arikewuyo, Adio & Quadri, 2023).

Firm characteristics significantly influence a Firm's financial performance. These characteristics refer to various factors that help explain a firm's performance over time (Shehu & Musa, 2014). They impact the Firm's decisions both internally and externally (Shehu, 2012). Key firm characteristics include liquidity, firm size, firm age, capital adequacy, leverage, firm growth, sales growth, and operating expenses (Tita & Lionel, 2015; Samuel & George, 2016; Robert & Mohamed, 2015). These characteristics are crucial internal factors that affect an organization's financial success. They determine a firm's operational strength, financial stability, competitiveness, and sustainability. For example, liquidity indicates a company's ability to meet its short-term obligations, while leverage shows how much a firm relies on debt financing. Additionally, firm size and age can provide competitive advantages through economies of scale, market experience, and operational efficiency, which are vital for shaping profitability and overall financial results.

Leverage refers to how a corporation finances its assets by using a combination of equity, debt, or hybrid securities to enhance its financial performance (Ubesie, 2016). The responsibility of determining the optimal mix of debt and equity to maximize shareholders' wealth falls on financial managers (Maina and Kondongo, 2013). Additionally, Bhutta and Hasan (2013) found an insignificant negative relationship between a firm's debt-to-equity ratio and its profitability. This indicates that high levels of debt can negatively impact a firm's liquidity, as companies may prioritize debt repayment over maintaining cash reserves. Sales growth is the increase in sales or revenue of a firm over time (Samuel, Amos & George, 2016). Firm growth acknowledges that various factors, both external and internal, can drive a company's expansion (Samuel, Amos & George, 2016). Research by Husna & Desiyanti (2016) indicates that growth does not significantly influence performance, as measured by Net Profit Margin (NPM). However, Lazăr (2016) found that sales growth has a statistically significant and positive effect on the financial performance of companies. Consequently, an increase in sales can provide a firm with the resources needed to support its growth.

Capital adequacy plays a crucial role in determining the financial strength and risk-bearing capacity of firms. In contrast, firm growth and sales growth are indicators of expansion opportunities and market performance. Operating expenses affect the efficiency and profitability of business operations. The interaction among these firm-specific variables significantly influences whether a company achieves improved returns on assets, returns on equity, and other financial performance indicators (Abdullah & Tursoy, 2021).

Many listed oil and gas companies in Nigeria have faced fluctuating profitability, low returns on investment, and earnings volatility due to various operational and economic challenges. This situation raises concerns about the extent to which firm-specific attributes impact financial performance, whether positively or negatively. Specifically, many oil and gas firms in Nigeria experience unstable profitability stemming from volatile crude oil prices, exchange rate fluctuations, inflation, and uncertainties in the

global energy market. Some companies report substantial profits in one period but suffer losses in another (Ibrahim, Mohammed, Agbi, Kaoje, & Abdulkarim, 2021). Poor governance structures, such as ineffective boards, weak internal controls, managerial inefficiencies, and a lack of transparency, have adversely affected the performance of numerous Nigerian oil and gas companies. Instances of financial mismanagement and accountability challenges are not uncommon. Additionally, these firms are burdened by rising operational costs due to issues like pipeline vandalism, oil theft, insecurity in the Niger Delta, and high energy and logistics costs, as well as aging infrastructure (Onmonya, Ebire & Lawal, 2024).

Hassan and Farouk (2014) note that many publicly listed oil and gas companies heavily rely on external borrowing to finance their operations and expansion efforts. High levels of leverage increase financial risk, as they lead to greater interest obligations and a heightened likelihood of bankruptcy, which ultimately affects financial performance. Additionally, the industry is heavily dependent on imported technology, machinery, and expertise. The continuous depreciation of the Nigerian Naira raises operational costs and impacts the financial sustainability of these firms. Some firms may have substantial asset bases but fail to utilize them efficiently for profit generation. This inefficient asset management reduces returns on assets and diminishes shareholders' wealth. Salawu, Mamman, Dahiru, Ado, and Yunusa (2020) also highlight these issues.

Frequent changes in petroleum regulations, taxation, subsidy policies, and licensing systems create uncertainty in the sector. The implementation of the Petroleum Industry Act (PIA) has also introduced structural adjustments that impact firm operations and profitability. Issues such as oil spills, gas flaring, environmental degradation, and increasing pressure for sustainability have created both reputational and financial challenges for companies (Ndah, Nkechukwu, Alajekwu, & Onyenwe, 2025). Compliance with environmental standards can significantly affect a firm's profitability. Furthermore, financial scandals, inconsistent dividend policies, and poor market performance have diminished investor confidence in some listed oil and gas companies on the Nigerian Exchange Group. Firms are linked to various attributes that can influence their financial performance, either negatively or positively. These attributes include characteristics such as firm age, size, growth rate, capital adequacy, sales growth rate, leverage, and asset structure, among others (Anozie, Muritala, Ininm, & Yisau, 2023).

Existing studies on firm Attributes and financial performance in Nigeria have produced mixed and inconsistent results. Some studies indicate positive relationships, while others report negative or insignificant ones. This inconsistency highlights a research gap that requires further investigation. Despite the strategic importance of the oil and gas sector to the Nigerian economy, many listed firms struggle with poor and fluctuating financial performance. Contributing factors include operational inefficiencies, weak governance structures, excessive leverage, and unstable economic conditions. Additionally, prior empirical research on the relationship between firm characteristics and financial performance has yielded inconsistent findings, making it challenging to identify clear determinants of performance in this sector. Therefore, it is essential to examine how firm-specific attributes influence the financial performance of listed oil and gas firms in Nigeria.

2.0 Literature Review

2.1 Firm Size

Firm size refers to the ideal speed and extent of growth for a specific company. Most businesses seek to expand their operations to increase revenue, profit, number of employees, or size of facilities (Pervan & Visic, 2012). Many companies operate in rapidly changing industries where expanding manufacturing capacity, geographical presence, and market share is crucial for survival (Dogan, 2013). According to Junaidi and Hartono (2010), firm size can also be assessed through a company's financial condition, such as its total assets. Larger firms typically exhibit better financial management and are more capable of producing high-quality financial statements than smaller firms. Ajao and Ogieriakhi (2018) argued that firm size encompasses the amount and variety of production capacity and services that a firm can provide simultaneously to its customers.

2.2 Firm Age

Firm age refers to how long a company has been in existence, and it can be measured by either establishment age or listing age (Ilaboya & Ohioka, 2016). Similar to living organisms, a company's age can influence its competitiveness and performance (Loderer & Waelchli, 2010). The effect of firm age on financial performance is an area of interest for researchers across various fields, leading to discussions about the most appropriate way to measure this age. Ilaboya and Ohioka (2016) advocate for using listing age as the preferred metric, emphasizing the importance of the year of incorporation in a firm's life cycle.

2.3 Firm Growth Rate

Firms in the growth stage are typically older and larger than those in the birth stage. They tend to make long-term, large-scale investments and experience higher sales growth rates compared to firms in the mature and declining stages. Additionally, they benefit from lower costs when raising external capital compared to those in the birth stage (Akbar et al., 2019). During this phase, firms establish formal structures, expand through innovation and diversification, and develop distinct competencies. They prioritize rapid sales growth, delegate some authority to middle managers, and broaden their product lines (Habib & Hasan, 2019).

2.4 Capital Adequacy

Capital adequacy refers to having sufficient capital to ensure the operational viability of an organization. It is crucial for the overall soundness and economic performance of any business. The key question that arises is how much capital is necessary for achieving business success (Lekaaso et al., 2020). Sufficient capital is required to absorb operational losses or unexpected expenses, maintain confidence in the ongoing viability of the business, and prevent insolvency. This highlights that a critical aspect of any organization is the availability and adequacy of capital to effectively run its operations. Companies that do not manage their capital effectively risk going out of business (Melani et al., 2019).

2.5 Sales Growth

Sales growth refers to the changes in sales figures reported annually in financial statements. Generally, sales growth that exceeds industry standards indicates rapid expansion, which is often driven by investment opportunities that generate returns higher than the cost of capital (Husna & Desiyanti, 2016). Firms experiencing significant growth are typically those that can capitalize on these abundant opportunities. Sustainable growth, on the other hand, is defined as the annual percentage increase in sales that aligns with the firm's financial policies (Pandey, 2005). Positive sales growth is crucial for a company's survival and profitability, potentially leading to increased dividends for shareholders and/or a rise in stock prices (Farlex Financial Dictionary, 2012).

2.6 Leverage

Leverage refers to the extent to which a company borrows money (debt financing) to enhance profits. It is measured by the ratio of total liabilities to equity. This debt-to-equity ratio, featured in a company's statement of financial position, is known as leverage. The decision regarding financing or leverage is a crucial managerial choice because it affects shareholder returns, risk levels, and the market value of the firm (Omondi & Muturi, 2013). According to Deste (2020), leverage indicates how much a firm uses equity and debt to fund its assets. It arises from events that influence a firm's financing sources for managing operations. This borrowing can come in various forms, such as loans and other debt instruments, and is measured by the total debt-to-equity ratio. Leverage financing specifically refers to a bank's debt-to-equity capital ratio. A significant portion of the bank's cash flow may be diminished due to the need to pay interest and repay the principal amount of the debt (Deste, 2020).

According to Magpayo (2011), the use of debt to acquire new assets is commonly known as financial leverage, which can be categorized into financial or operational leverage. Leverage involves borrowing money to increase a firm's production volume, sales, and profitability, ultimately enhancing its overall performance. It is typically measured by a firm's total debt-to-equity ratio (Jang and Yoon, 2005). A higher financial leverage indicates that a firm has more debt. Since interest is a fixed expense that can be subtracted from earnings, taking out a loan enables a firm to generate greater profits without needing to increase its equity capital. This is significant because increasing equity would result in higher dividend payments, which cannot be deducted from profits (Magpayo, 2011).

2.7 Liquidity

Liquidity refers to a firm's ability to meet its debt obligations without incurring significant losses. It is a measure of a bank's capacity to fulfill its short-term financial commitments using available liquid assets as they come due. The liquidity ratio can be calculated to provide insights for various stakeholders in a bank (Onyekwelu, Chukwuani & Onyeka, 2018). Furthermore, liquidity is the ability to satisfy both expected and unexpected cash demands through ongoing cash flow or by selling an asset at its fair market value. Liquidity risk arises when an entity does not have sufficient cash or liquid assets to fulfill its financial commitments. To survive and continue its operations, a business must maintain liquidity and ensure it can meet its cash obligations as they arise (Sani, Abdulsalam & Yunusa, 2021).

2.8 Financial Performance

The performance of firms is crucial for investors, stakeholders, and the overall economy. Investors seek returns on their investments, and well-performing businesses tend to deliver higher returns. A company's strong financial performance can lead to increased income for its employees, provide high-quality products for its customers, and foster a more positive relationship with its operating environment (Mirza and Javed, 2013).

2.9 Empirical Review

Abraham, Celestine, Lucky, and Yemisi (2024) explored the relationship between firm characteristics and the profitability of listed industrial goods companies in Nigeria. In their study, firm characteristics were represented by liquidity, leverage, and firm age, while profitability was measured using return on assets. The data were collected from ten listed industrial goods firms that consistently published their audited annual financial reports from 2013 to 2022. To analyze the data, the researchers employed a panel-corrected standard error for the random effects model. Their findings indicated that liquidity has a negative and significant impact on profitability. In contrast, leverage and firm age exhibited a positive but insignificant effect on profitability. Additionally, when assessing the moderating effect of firm size, the panel regression results suggested that firm age could reduce profitability. However, the analysis also demonstrated that liquidity has a positive but insignificant effect on profitability when moderated by firm size, while leverage shows a negative and insignificant effect in the same context. Importantly, the study concluded that firm size significantly moderates the relationship between firm characteristics and profitability. The authors recommend that younger listed industrial goods firms should not be disheartened by the negative impact of their age on profitability; instead, they may become profitable as they mature.

Nangih, Turakpe, and Effe-Nnamdi (2023) investigated the impact of firm characteristics on the financial performance of listed companies, focusing specifically on consumer goods firms in Nigeria. The study utilized an ex post facto design and was based on Dynamic Capability Theory. A purposive sampling technique was employed to select 16 firms from the population, which served as the sample for the research. Data were collected from the annual financial reports of these firms spanning from 2013 to 2022 and were analyzed using descriptive statistics, correlation, and panel regression techniques. The findings revealed that firm age had a negative, albeit insignificant, effect on earnings per share (EPS). Additionally, firm age was found to significantly and negatively affect the return on assets (ROA) of the consumer goods firms. In contrast, firm size (FSIZ) demonstrated a positive and significant effect on EPS. However, it also had a significant negative effect on the ROA of consumer goods firms in Nigeria. Based on these findings, the study made several recommendations. First, consumer goods firms should not prioritize firm age, as it had an insignificant effect on EPS. Second, while firm age does impact profitability (as indicated by ROA), firms should recognize the potential benefits of increased age on profitability. Lastly, managers of consumer goods firms are encouraged to focus on increasing their firm size, as it was found to significantly contribute to both measures of financial performance.

Grace and James (2022) examined how various attributes of firms affect the financial performance of manufacturing, allied, and construction companies listed on the NSE. This research reviewed theories such as liquidity preference, trade-off, and pecking order. A descriptive research design was employed to characterize the phenomenon being

studied. The target population included nine manufacturing firms and five construction and allied firms listed on the NSE. Financial statements were obtained from the respective company websites and the NSE website. Descriptive statistical analysis was conducted using regression models, which helped to assess the correlations among the study variables. Prior to data analysis, diagnostic testing was performed to ensure the reliability and validity of the data. The results indicated that asset structure had a significant negative correlation with the financial performance of manufacturing and allied firms. In contrast, for construction and allied firms, asset structure showed an insignificant positive correlation with financial performance. Additionally, the study found that the leverage ratio had a significant negative correlation with the financial performance of manufacturing and allied firms, while financial leverage showed an insignificant positive correlation for construction and allied firms. Liquidity was associated with an insignificant negative correlation with the performance of manufacturing and allied firms; however, for construction and allied firms, the correlation with liquidity was positive and significant. The study recommended further research within the same sectors and in other listed firms to better understand the effects of firm attributes on financial performance, particularly by comparing data from the pre-Covid and post-Covid periods.

Mohammed and Mohammed (2022) investigated the impact of specific attributes of firms on the financial performance of publicly listed conglomerate companies in Nigeria. They sourced secondary data from the published annual reports of the selected companies for the period from 2015 to 2021. The extracted panel data were analyzed using multiple regression techniques, following several robustness checks to ensure the validity of the results. The findings of the study indicate that firm size has a positive and significant effect on financial performance. In contrast, liquidity has a positive but insignificant effect on financial performance, while leverage has a negative but insignificant effect. The study recommends that management should focus on increasing their total asset levels, as this could enhance their ability to generate future economic benefits. Additionally, management should monitor their leverage levels and maintain them at an optimal point, as the findings suggest that high leverage negatively influences performance for conglomerate firms in Nigeria during the reviewed period.

Aribaba et al. (2022) investigated the effect of firm characteristics on the financial performance of oil and gas companies listed on the Nigerian Stock Exchange (NSE). The study analyzed data from twelve oil and gas companies covering the period between 2015 and 2019, which includes both before and after the economic downturn experienced in Nigeria. The data collected were analyzed using pooled and cross-sectional methods. Descriptive statistics were utilized to examine the characteristics of the variables, while the pooled least squares technique was employed to explore the empirical relationships among them. The regression results indicated that approximately 69% of the variation in financial performance is explained by the independent variables: Firm Size, Financial Leverage, Ownership Structure, and Firm Age. Additionally, the findings revealed some negative relationships; specifically, Firm Size and Ownership Structure negatively impacted financial performance, while both Financial Leverage and Firm Age exhibited a positive relationship with financial performance among the listed oil and gas companies in Nigeria. Based on these findings, the study recommends that businesses cultivate a practice of capitalizing and reporting all expenditures related to their products.

Efuntade and Akinola (2020) investigate how various firm characteristics affect the financial performance of publicly listed manufacturing firms in Nigeria. They employed a descriptive and cross-sectional research design to explore the relationship between these firm characteristics and financial performance over a span of 14 years. Secondary data were collected from the annual reports of five selected manufacturing firms. A panel least squares regression model was utilized to test the hypotheses. The findings indicate that all the independent variables have a significant and strong impact on the financial performance of manufacturing firms in Nigeria, as measured by return on assets (ROA). Specifically, the study concluded that the explanatory variables Firm Age, Firm Size, Sales Growth, Liquidity, and Leverage were significantly associated with the dependent variable (Return on Assets). Based on these results, the study recommends that the management of manufacturing companies should focus on improving and optimizing their asset utilization. Additionally, maximizing the use of resources during production and distribution processes can help enhance profitability.

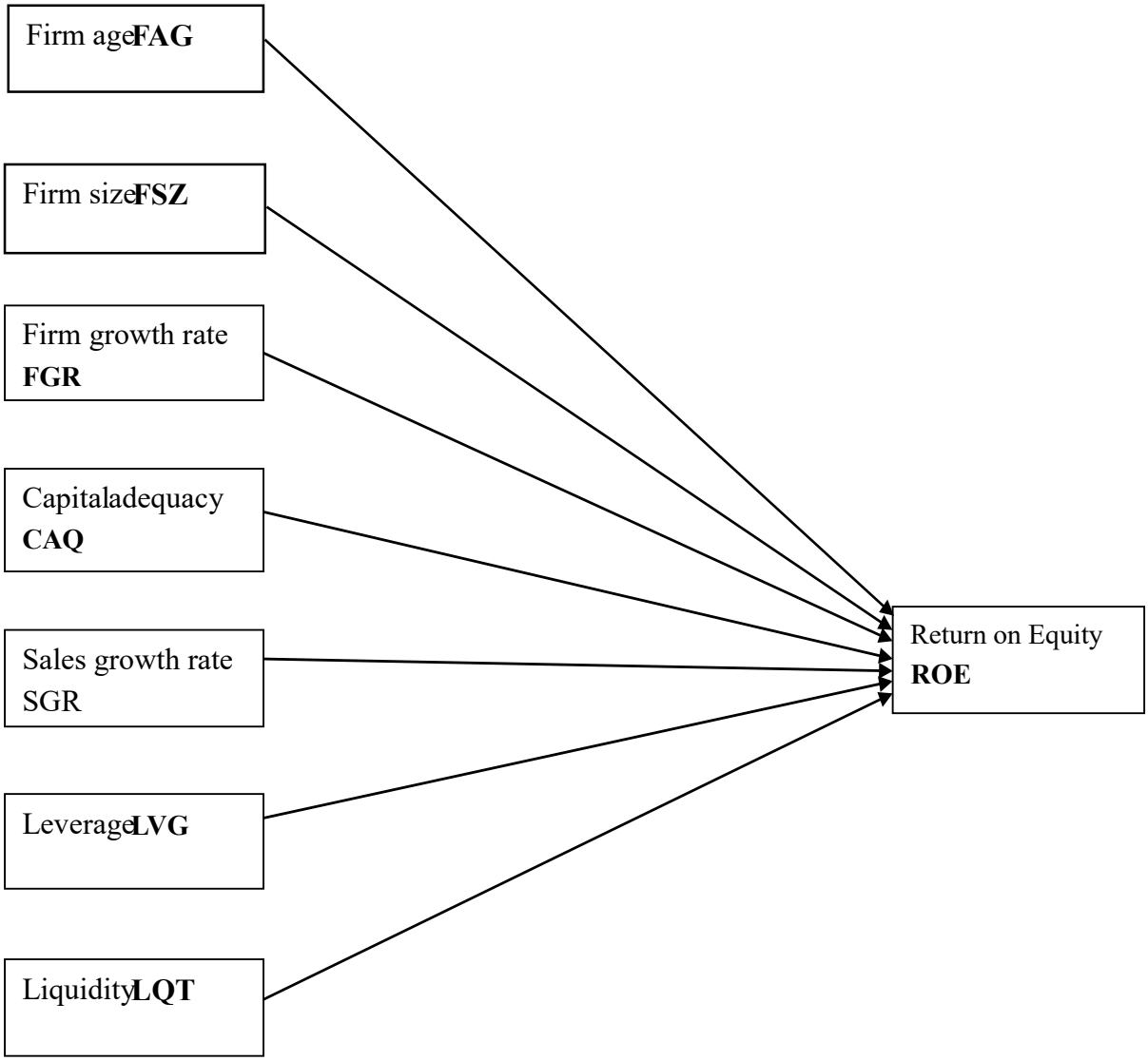
Etukudo et al. (2022) conducted a study to examine the impact of firm characteristics on the financial performance of publicly listed consumer goods firms. The research utilized secondary data sourced from the annual reports and accounts of the selected companies. The collected data were analyzed through multiple regression analysis. The findings revealed that, firm characteristics such as leverage, firm size, liquidity, and operating expenses significantly influence the profit after tax of listed consumer goods firms in Nigeria; these firm characteristics also have a significant effect on the return on assets of listed consumer goods firms in Nigeria; however, firm characteristics do not significantly impact the return on equity of listed consumer goods firms in Nigeria.

Olayiwola (2022) conducted a study examining the impact of firm-specific variables on financial performance within the Nigerian manufacturing sector. This research utilized secondary data obtained from the annual reports of twenty manufacturing companies spanning from 2008 to 2017. The firm-specific variables analyzed included Sales Growth (SG), Age of the Firm (AF), Tangibility (TAN), Firm Size (FS), and Leverage (LEV). Financial performance was measured using Return on Assets (ROA). To determine the effects of SG, AF, TAN, FS, and LEV on ROA, the study employed Pooled Ordinary Least Squares (POLS) regression analysis at a significance level of 0.05. The findings indicated that SG, AF, TAN, FS, and LEV all have a positive and significant influence on ROA. The study concluded that firm-specific variables play a significant role in affecting the financial performance of the companies analyzed.

Olayiwola (2022) investigated the impact of firm-specific variables on financial performance within the Nigerian Manufacturing Sector by analyzing secondary data derived from the Annual Reports of twenty manufacturing companies covering the period from 2008 to 2017. The study focused on several variables, including Sales Growth (SG), Age of the Firm (AF), Tangibility (TAN), Firm Size (FS), and Leverage (LEV). Financial performance was assessed using Return on Assets (ROA). To determine the effects of SG, AF, TAN, FS, and LEV on ROA, Pooled Ordinary Least Squares (POLS) regression analysis was conducted at a significance level of 0.05. The findings indicated that SG, AF, TAN, FS, and LEV had a positive and significant influence on ROA. The study concluded that firm-specific variables significantly affect the financial performance of the sampled companies.

2.10 Conceptual Model

The figure below illustrates the conceptual model adopted for this study, highlighting the relationships among the variables. In this model, the independent variables firm age, firm size, firm growth rate, capital adequacy, sales growth rate, leverage, and liquidity are shown to influence the dependent variable, which is financial performance. This framework clearly delineates how the independent variables interact with financial performance, allowing for a comprehensive understanding of their impact.



3.0 Methodology

An ex post facto research design is adopted for this study, which utilizes panel data to examine the effect of firm attributes on the financial performance of listed oil and gas firms in Nigeria from 2015 to 2024. The research relies on secondary data, fitting within a quantitative research paradigm. Panel data is extracted from the annual reports and accounts of the firms, with data sourced from the Nigerian Exchange's online annual report statements. The sample comprises five listed oil and gas firms on the Nigerian Exchange (NE) as of December 31, 2024.

Given the availability of data, a census sampling approach was taken, focusing on these five (5) firms as the study's population. Two main criteria guided the selection: first, the firms must have continuously traded on the NE during the 2015 to 2024 period; second, they must have readily available data for the key variables of interest. Consequently, five firms meeting these criteria were chosen, and data were primarily collected from published annual reports. For data analysis, multiple regressions were employed to assess the relationships and effects among the study variables. Multiple regression, correlation, and descriptive statistics were deemed appropriate because they facilitate establishing relationships and identifying cause-and-effect dynamics. To ensure the reliability of results, robustness tests including the multicollinearity test, Hausman test, heteroscedasticity test, and normality test were conducted. Data analysis will be performed using STATA13 software. This choice is based on STATA13's reputation for statistical reliability in quantitative research, especially when dealing with secondary data obtained from company annual reports and related sources. As a parametric analysis tool, STATA13 can effectively manage complex datasets while ensuring that all data is complete and properly formatted, thus making it a reliable option for analyzing secondary data.

3.1 Population and Sample Size

The population of this study will consist of all the ten (5) Oil and gas firms listed.

Table 3.1 List of oil and gas companies operating in Nigeria

S/N	NAME OF BANKS
1	Conoil Plc
2	Eternaoil Plc
3	Oando Plc
4	Seplat Energy Plc
5	Total Nigeria Plc

Sources: (NE, 2026).

3.2 Technique of Data Analysis

The data was analyzed using STATA 13 software. To establish the effects and relationships among the variables of the study, multiple regression techniques was employed in the panel data analysis. Multiple regression, correlation, and descriptive statistics are deemed appropriate as they not only help in identifying relationships between variables but also in determining the cause-and-effect dynamics of those relationships. STATA 13 was selected due to its proven statistical reliability for quantitative research, particularly when working with secondary data derived from annual reports of companies and other related sources. As a parametric analysis tool, STATA 13 effectively handles complex data and does not accept incomplete data presented in units and decimals, making it a dependable choice for analyzing secondary data.

3.3 Model Specification and Variables Definition and Measurement

To analyze the impact of firm attributes on the financial performance of listed oil and gas companies in Nigeria, a multiple linear regression model has been developed. This model examines the contributions of various factors, including firm attributes such as firm age, firm size, growth rate, capital adequacy, sales growth rate, leverage, and liquidity, on financial performance.

The Following models will be used to empirically test the hypotheses formulated as follows:

MODEL 1 = ROE_{it}= β_{0it} + $\beta_1 FAG_{it}$+ $\beta_2 FSZ_{it}$ β_3FGRit+ $\beta_4 CAP_{it}$ + $\beta_5 SGR_{it}$ + $\beta_6 LVG_{it}$+ β7LQTit+ εit

Where,
FAG = Firm age
FSZ = Firm size
FGR = Firm growth rate
CAP = Capital Adequacy
SGR = Sales Growth Rate

Variables Acronym		Variables Name	Variables Measurement and Sources
ROE		**Return on Equity**	Measured as banks' profit after tax divided by the firms' total equity Omaliko and Okpala (2020), Omaliko, Okeke and Obiora (2021), Omaliko, Nwadialor and Nweze (2020).
FAG		**Firm Age**	Measured as Log of the number of years since listening (Mule el al, 2020).
FSZ		**Firm Size**	Firm size is measured by the value of total asset of the firm. (Natural Log of Total Asset) (Hamza, 2017)
FGR		**Firm Growth rate**	Measured as the total growth of current year minus total growth of previous year divide by the previous year total growth
LVG		**Leverage**	Measured as firm total Debt divide by shareholders equity (Oyekwelu, Nwajei, Ugwu, 2017)
SGR		**Sales Growth Rate**	Measured as the Current period Net sales minus previous year Net sales divide by the previous year Net sales (Oyekwelu, Nwajei, Ugwu, 2017)
CAP		**Capital Adequacy**	Measured by shareholders fund divided by the total assets (Ikpefan, 2013)
LQT		**Liquidity**	Measured as ratio of total liquid assets

LVG = Leverage

LQT = Liquidity

FOS= Foreign Ownership Structure (moderating variable) i= number firm observation, t= measure of time, E= error term, U= random effect for subject it, and β0 = Intercept of the model "Constant"

The dependent variable and independent variables used in the model are explained in.

Table 3.2 below Variables definition and measurement

Source: ***compiled by the authors from various literature, 2026***

4.0 Data Presentation and Analysis

Table 4.1 Descriptive Statistics

Variables	Observation	Mean	Standard Dev	Min	Max
ROE	50	0.1423649	0.1597609	-0.10213	0.61474

FSIZE	50	0.929414	1.3707	9.35436	5.2107
FAG	50	0,28458	13.11657	1	45
FWR	50	0.1244	0.0485361	-0.03	0.21
CAQ	50	0.4699	0.1263357	0.25	0.65
SGR	50	0.0976	0.054979	-0.06	0.19
LQT	50	10.2496	14.24323	0.11	35
LEV	50	0.37498	0.1937	0.00445	0.627023

Sources: Output generated using STATA 13 (2026).

ROE has minimum value of -0.10213and maximum value of 0.61474 This signifies that, sampled banks incurred losses while others made profits within the period of the study. In addition. The average value of Bank Financial Performance 0.1423649 with the standard deviation of 0.1597609. This signifies that the data is not widely dispersed.
The Firm size of Banks has a minimum value of 9.35436 and a maximum value 5.2107 respectively. This implied that within the periods of the study. The Firm with the lowest firm size quantum of Capital adequacy is sufficient. The average Firm size is 0.929414 with standard deviation of 1.3707 which signifies average level of dispersion in the data of the study. This implies low chances of having normal distribution problem associated with the data of the study.

In addition, Firm Age has minimum value of 1 and a maximum value 45 respectively. This implies that older firms are shown to perform more than the younger ones. This is a feature of the disadvantage that comes with the passage of time despite that age could mean more experience. On average, the Firm have 0,28458, which indicates the average firm age. The standard deviation of 13.11657 which is not largely dispersed from the mean value data. This signifies less likelihood having non-normally distributed data for the study. Firm growth rate has minimum value of -0.03 and a maximum value 0.21 respectively. This implies that Firm with lowest earnings from Firm growth rate loses 0 percent from Firm growth rate and the Firm with the highest earning from, generate 21 percent from Firm growth rate within the period of the study. On average, the Firm have 0.1244, which indicates the average Firm growth rate of the Firms. The standard deviation of 0.0485361 which is not largely dispersed from the mean value data. This signifies less likelihood having non-normally distributed data for the study. The Firm capital adequacy has minimum and maximum values of 0.25 and 0.65 respectively. This implies that some firms have meet up with the capital adequacy requirement of 25 percent and 65 percent. However, based on the maximum value of 0.65 of capital adequacy of the firms, it signifies that some firms have enough capital adequacy to absorb all the possible losses that may occur within the period of their operation beyond the requirements. The mean and standard deviation value of the banks' capital adequacy are 04699 and 0.1263357. This implies that on average, the Nigerian listed oil and gas firms meet up with the capital adequacy requirements. The standard deviation of 0.1263357 signifies that the capital adequacy data of the study deviated from the mean at lower level of dispersion. This signifies that there is low possibility of having normality distribution problem in the data of the study.

Sales growth rate has minimum value of -0.06 and a maximum value 0.19 respectively. This implies that Firm with lowest earnings from sales growth rate loses 0 percent from sales growth rate and the Firm with the highest earning from, generate 19 percent from sale growth rate within the period of the study. On average, the Firm have 0.0976, which indicates the average Sales growth rate of the Firms. The standard deviation of 0.054979 which is not largely dispersed from the mean value data. This signifies less likelihood having non-normally distributed data for the study.

Similarly, Leverage has minimum value of 0.0044515 and a maximum value 0.627023 respectively. This implies that within the period of the study the firms with the lowest earning from Leverage generate 0.044 percent of the total Leverage of firms. The Firms with the highest earnings from Leverage 62 percent. Leverage has an average score of 0.3744983. The standard deviation of 0.1937902 which is not largely dispersed from the mean value data, this signifies average level of dispersion in the data of the study. This implies average chances of having normality distribution problem associated with the data of the study.

The liquidity of oil and Gas firms in Nigeria has minimum and maximum values of 0.11 and 35 respectively. This signifies that some Nigerian oil and Gas Firms have 11 percent of their liquidity ratio as the lowest liquidity while others have the highest liquidity ratio. The average liquidity of Nigerian Oil and Gas Firms is 10.2496 and standard deviation of 14.24323. This implies low level of dispersion in liquidity data of the study. This signifies low likelihood of having non-normally distribution in the data of the study.

4.1 Correlation Matrix

The correlation matrix is used to determine the degree of association between dependent variable and independent variables. It is also used to identify whether there is relationship among the independent variables themselves, to be able to detect if multicollinearity problem exists.

Table 4.2 Correlation Matrix

Variables	ROE	FSZ	FAG	FWR	CAQ	SGR	LEV	LQT
ROE	1							
FSZ	0.1410	1						
FAG	0.0222	-0.0458	1					
FWR	-0.0815	-0.1295	0.1262	1				
CAQ	-0.4814	-0.6148	-0.1229	0.3059	1			
SGR	0.1257	0.0759	-0.1517	0.5088	0.1614	1		
LEV	0.6074	0.0252	-0.1414	-0.0672	-0.6012	-0.0866	1	
LQT	-0.4618	-0.1910	-0.5512	0.1376	0.5196	0.1815	-0.4052	1

Sources: Stata Output, 2026.

The data presented indicates a positive association between firm size, firm age, sales growth, and the financial performance of listed oil and gas firms in Nigeria. This is supported by the computed correlation coefficients of 0.1410, 0.0223, and 0.1257. These values suggest that firm size, as one of the independent variables in this study, aligns positively with the financial performance of oil and gas firms in Nigeria. Conversely, the correlation matrix results show that the firm growth rate, capital adequacy, and liquidity are negatively associated with the financial performance of these firms. The negative associations for these independent variables can be observed through the computed correlation coefficients of -0.095, -0.005, -0.128, -0.0815, -0.4814, -0.4618, and -0.5758, respectively. This indicates that these variables do not move in the same direction as the financial performance of listed oil and gas firms in Nigeria, implying an inverse relationship with their financial outcomes.

Also, from Table 4.2 The analysis of the independent variables indicates that firm size is negatively associated with firm age, firm growth rate, capital adequacy, and liquidity. Additionally, firm size shows a positive correlation with sales growth and leverage. On the other hand, firm age is negatively associated with capital adequacy, sales growth, leverage, and liquidity. Furthermore, firm growth rate is positively correlated with capital adequacy, sales

growth, and liquidity. The computed correlation matrix coefficients are all below 0.8, suggesting a low likelihood of multicollinearity issues within the study's data. These results demonstrate that the independent variables can coexist in the same regression model, as none of the correlation coefficients have an absolute value exceeding 1, indicating that multicollinearity is not a concern (Gujarati, 2004).

4.2 Robustness Test

The study conducted a diagnostic test which include Multicolinearity test, Heteroscedasticity test and Hausman specification tests in order to ascertain the reliability of the statistical regression result. The results from the diagnostics tests are presented below

4.2.1 Multicollinearity Test

Table 4.3: Multicollinearity Test Result

Variables	VIF	Tolerance
FSZ	3.08	0.324719
FAG	2.80	0.357083
FWR	1.93	0.617572
CAQ	5.72	0.174735
LQT	2.59	0.385378
SGR	1.51	0.662389
LEV	3.90	0.256313
Mean VIF	3.08	

Sources: Stata Output, 2026

This study utilized a panel multiple regression model to examine the relationship between independent and dependent variables. A strong correlation between these variables may indicate the presence of multicollinearity. To investigate this, the study conducted tests for multicollinearity using the variance inflation factor (VIF) and tolerance value. If the VIF is less than 10 and the tolerance value is greater than 0.1, this indicates that there is no multicollinearity problem in the data. Conversely, if these thresholds are not met, it suggests that multicollinearity may be present in the dataset.

4.2.2 Heteroskedasticity Test

Table 4.4 Robustness Test for Model

Variables	Statistics	P-Values
Model		
Hausman Test	14.54	0.0242
R^2	0.4939	
F-Statistic (Wald)	40.99	0.0000
Hettest	25.57	0.0006
Mean VIF: Chi2		

Sources: Output generated using STATA 13 (2026)

The presence of heteroskedasticity in the panel models was assessed using the Breusch-Pagan/Cook-Weisberg test. The test yielded a Chi-squared value of 25.57 with a p-value of 0.0006, which is significant at the 1% level. Consequently, we do not reject the null hypothesis, which states that the residuals have constant variance and a zero mean. To address this issue, a post-estimation test was conducted to identify and correct for heteroskedasticity.

The results from the Hausman test for fixed and random effects indicated a Chi-squared value of 14.54 and a p-value of 0.0242, both statistically significant at the 1% level. This suggests

that the fixed effects model is the most appropriate for the study. The R-squared value of 0.4939, or the coefficient of determination, explains approximately 49% of the total variation in the dependent variable. This means that 49% of the variation in financial performance, as measured by Return on Equity (ROE), can be attributed to factors such as firm size, firm age, growth rate, sales growth, capital adequacy, liquidity, and leverage. An R-squared value between 0.10 and 0.50 is considered acceptable when several explanatory variables are statistically significant (Ozili, 2023).

Regression results and hypotheses testing table 4.5

Variables	Coefficient	Z-Value	P-Value	Hypothesis
FSZ	-1.4410	-0.06	0.949	Fail to reject
FAG	-0.030301	-0.05	0.960	Fail to reject
FWR	-0.4746311	-0.95	0.345	Fail to reject
CAQ	-0.0855902	-0.26	0.797	Fail to reject
LQT	-0.0031251	-1.58	0.115	Fail to reject
SGR	0.873948	2.22	0.026	Reject
LEV	0.389088	2.16	0.030	Reject

Sources: Output generated using STATA 13 (2026)

***** p<0.01, ** p<0.05, * p<0.1, Denotes Significance at 1%, 5% & 10%**

4.3 Testing of Hypotheses

Ho_1: Firm size has no significant influence on the Financial Performance of Listed Oil and Gas Firms in Nigeria.

Firm size has a negative and statistically insignificant effect on the financial performance of listed oil and gas firms. The beta coefficient (β) for firm size is -1.4410, with a p-value of 0.960, indicating that the result is not significant. Consequently, the null hypothesis cannot be rejected, leading to the conclusion that firm size has an insignificant negative effect on financial performance. This suggests that an increase in firm size does not lead to an improvement in the financial performance of the firm.

Ho_2: Firm Age has no significant effect on the Financial Performance of Listed Oil and gas in Nigeria.

The beta coefficient (β) for firm age is -0.030301, with a p-value of 0.960, indicating significance at the 1% level. As a result, we accepted the null hypothesis, concluding that firm age has a significant negative effect. The relationship between firm age and financial performance appears to be influenced by the firm's age, regardless of its size; the correlation between age and returns on invested capital remains unchanged.

Ho_3: Firm Growth rate has no significant influence on the Financial Performance of Listed Oil and Gas Firms in Nigeria.

The beta coefficient (β) for the firm growth rate is -0.4746311 with a p-value of 0.345. This indicates that the relationship is negative and statistically insignificant. As a result, the null hypothesis was accepted, leading to the conclusion that the firm growth rate has an

insignificant positive effect on the firm's financial performance. This suggests that an increase in firm performance can lead to an increase in both firm growth and overall financial performance.

Ho_4: Capital Adequacy has no significant influence on the Financial Performance of Listed Oil and Gas Firms in Nigeria.

The beta coefficient (β) for Capital Adequacy is -0.0855902, with a p-value of 0.797. This coefficient is negative and statistically insignificant. Therefore, we accepted the null hypothesis, concluding that Capital Adequacy has an insignificant positive effect on the financial performance of firms. This suggests that an increase in Capital Adequacy is associated with an improvement in the financial performance of oil companies.

Ho_5: Liquidity has no significant influence on the Financial Performance of Listed Oil and Gas Firms in Nigeria.

The beta coefficient (β) for Liquidity is -0.0031251, with a p-value of 0.115. This indicates that the relationship is negative and statistically insignificant. Consequently, the null hypothesis was accepted, leading to the conclusion that Liquidity has an insignificant negative effect on the financial performance of oil and gas firms. This suggests that as Liquidity increases, it is likely to enhance the financial performance of these companies.

Ho_6: Sales Growth has no significant influence on the Financial Performance of Listed Oil and Gas Firms in Nigeria.

The beta coefficient (β) for Sales Growth is 0.873948, with a p-value of 0.026, indicating a positive and statistically significant relationship. As a result, we reject the null hypothesis and conclude that sales growth has a significant positive effect on bank financial performance. This suggests that as sales growth increases, the financial performance of banks, measured by return on equity (ROE), also improves. Conversely, fluctuations in sales will directly impact financial performance (ROE). Additionally, the study highlights that high production costs negatively affect selling prices, which can lead to a decrease in turnover and, consequently, impact financial performance. This finding is supported by the theory of firm growth. Moreover, the results align with those of Nousheen and Arshad (2013), but contradict the findings of Mohamed (2014), who suggested that sales growth has a negative and significant effect on ROE. Therefore, we have sufficient evidence to accept the null hypothesis that sales growth does not significantly impact return on assets. This conclusion is consistent with Ogundu (2022), who reported a positive relationship between sales growth and financial performance, as well as Saidu and Abdallah (2018). However, it contradicts the study by Desta (2020), which found a negative and insignificant relationship with performance.

Ho_7: Leverage has no significant influence on the Financial Performance of Listed Oil and Gas Firms in Nigeria.

The beta coefficient (β) for Leverage is 0.389088, with a p-value of 0.030, indicating a positive and statistically significant relationship. The null hypothesis was rejected, leading to the conclusion that Leverage has a positive effect on the financial performance of Oil and Gas firms. This means that as Leverage increases, the financial performance of these firms is likely to improve. This finding aligns with Ogundu (2022), who reported a positive relationship between Leverage and performance, as well as Saidu and Abdallah (2018), who

also found a positive correlation. However, it contradicts the study by Desta (2020), which reported a negative, insignificant relationship with performance.

4.4 Summary of Findings and Policy Implications

The findings suggest that profitable listed oil and gas firms primarily rely on internally generated funds and equity capital for financing, rather than on debt financing. Additionally, equity financing tends to increase the size of these firms. Evidence indicates that older firms are more likely to exhibit inefficient financial performance, characterized by larger board sizes and higher compensation for top management. These results carry important implications for investors and listed oil and gas companies in Nigeria. Specifically, it is predicted that the performance of highly leveraged listed oil and gas firms in Nigeria will adversely affect their profitability, indicating that debt financing may not be suitable for these firms.

Moreover, the findings show that the sales growth rate has a positive and significant impact on return on equity (ROE). This implies that lower sales growth can lead to liquidity shortfalls, ultimately decreasing ROE. The analysis also indicates that bank size has a negative and insignificant effect on the financial performance of the listed oil and gas firms, as measured by ROE. It is predicted that high-growth firms within this sector will see an increase in profitability. Furthermore, the results indicate that both firm growth rate and liquidity have a negative and insignificant effect on ROE, suggesting that lower growth rates and liquidity slightly diminish return on equity.

5.0 Conclusion, Recommendations and Suggestions for Further Research

The study concluded that the interaction between sales growth, leverage, and financial performance has a positive effect and significantly influences the financial performance of oil and gas firms. This indicates that both sales growth and leverage play a crucial role in determining the financial performance of these companies. Additionally, it was found that factors such as firm size, firm age, firm growth, capital adequacy, and liquidity have insignificant negative effects on financial performance.

In line with the findings of the study the following recommendations are made:

The study found that sales growth and leverage significantly impact financial performance. Therefore, firms should implement effective sales expansion strategies while maintaining optimal levels of debt. Excessive borrowing should be avoided, as high leverage can negatively affect profitability and financial stability. Policymakers and regulatory authorities should encourage foreign participation and investment in the oil and gas sector through favorable investment policies, transparent regulations, and mechanisms for investor protection. Additionally, firms should enhance their internal financial management practices. Although factors such as firm size, growth, capital adequacy, and liquidity showed insignificant negative effects, it is still crucial for firms to maintain adequate liquidity and sound capital structures to ensure operational efficiency and financial sustainability.

Regulatory authorities should also promote corporate governance policies. Government agencies and industry regulators need to develop policies that strengthen corporate governance and transparency. Managers should focus on efficient resource utilization rather than merely expanding the firm, as firm size did not significantly influence financial performance. Prioritizing effective resource use, operational efficiency, and productivity improvements is essential over simply increasing the size of the firm.

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