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## FIRM SPECIFIC DETERMINANTS AND ITS IMPLICATION ON LISTED OIL AND GAS FIRMS PROFITABILITY IN NIGERIA

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### ABSTRACT

The study examined the analysis of firm specific determinants of profitability (PROF) of listed Oil & Gas firms in Nigeria between the periods of 2011-2020. The study made use of secondary data which was sourced from the annual reports and accounts of the various 10 Oil and Gas Firms for the measures of firm specific determinants [Firm Size (FS), Firm Age (FA), Liquidity (LIQ), Leverage (LEV), Sales Growth (SG) and Operating Expenses (OE)] in relation to profitability proxy with Return on Assets (ROA). Descriptive statistics and the correlation analysis were used to determine the nature of relationship between the independent and dependent variables. In view of the hypothesis formulated for this research, the method of data analysis chosen was a multiple regression analysis using E-VIEW 9.0 computer software. The findings revealed that LIQ, LEV and OE have significant relationship on ROA while FS, FA and SG does not have significant relationship on ROA relationship with ROA. Hence, the study concluded that there is a significant relationship between firm specific determinants and the PROF of listed Oil & Gas firms in Nigeria. This study recommended among others that

Listed Oil and Gas Firms should increase their FS so as to increase the return on assets of their firms.

**Keywords:** Profitability, Liquidity, Leverage, Firm Size and Return on Asset.

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## INTRODUCTION

Organizations, especially profit-oriented ones must be performance conscious to remain a going concern. Therefore, to maximize profits is a crucial aspect of every management if the organization must continue in business. Profitability (PROF) can be described as a measurement of how well a firm uses its resources effectively and affectively to generate adequate income for its survival. The term is also used as a general measure of a firm's overall financial health over a given period of time (Ehiedu, Odita & Kifordu (2020), (Akan, Ighosewe and Temile, (2021).

Until recently, the Nigerian oil and gas (O&G) business was regarded as a monopoly, with a few huge multinational conglomerates dominating the industry and generating low employment. This market inefficiency resulted in inefficient allocation of resources and a loss in the subsector's benefits to society. The sector's deregulation has made room for more players in the government's pursuit for improved economic performance (Efuntade and Akinola, 2020). As a result of the major changes produced by deregulation, the essence of business has been redefined by increased competition capable of generating more jobs and wealth that is beneficial to society. This has led to the paradigm shift from near monopoly to a more competitive structure, an examination of the determinants of profitability in Nigeria's oil and gas sector is required (Olatunji, 2018).

PROF can be defined as an assessment of how efficiently and successfully a company uses its resources to generate sufficient revenue to ensure its survival. The phrase is frequently employed as a broad indicator of a company's overall financial health over time (Irom, Okpanachi, Nma Ahmed and Tope, 2018). Firms' performance and PROF can be influenced by both internal (specific) and external influences. Specific determinants are management-controllable elements that account for PROF disparities between firms. External determinants, on the other hand, are uncontrollable elements that affect performance/ PROF and over which management has no control (Dioha, Mohammed & Okpanachi, 2018).

Certain firm characteristics, such as firm age, firm size, liquidity, and leverage, are linked to firm performance/ PROF (Mule & Mukras, 2015) cited in Etim, Ihenyen, and Nsima, (2020). Firms' performance and PROF can be influenced by both internal and external influences. Internal determinants are management-controllable elements that account for inter-firm performance/ PROF disparities. External determinants, on the other hand, are uncontrollable elements that affect PROF and over which management has no control (Dioha, et al, 2018).

Specific factors focusing on the determinants of O&G firms are divided into financial and non-financial variables. The financial determinants are factors that can be extracted from Nigerian O&G firms' financial statements. Firm size, sales growth, liquidity, leverage, the firm's age, operating expenses, tangibility, and other factors are among them (Dioha, et al, 2018).

Non-financial determinants, on the other hand, are variables that cannot be acquired from an O&G company's financial statement. External variables include exchange rate, inflation rate variations, the consumer price index, amount of government expenditure, interest rates, and

gross domestic product growth rate, among others, while internal determinants include management abilities, age, and scope of operation

Certain characteristics (determinants) are connected with business entities and have a favorable or negative impact on PROF. Firm characteristics such as firm size, leverage, liquidity, capital, firm age, dividend, market share, statement of financial position activities, and operating expenses, among others, can have a favorable or negative impact on a firm's operations. Firm size, as an internal component of a business, has long been seen as a key indicator of PROF. This is because a company's size impacts its degree of economic activity and the economies of scale it can enjoy. As a result, larger companies are more likely to create higher returns on assets (Driffield, Mahambare, & Pal, 2015) as referenced in (Dioha, et al, 2018).

Firm age influences PROF since it is assumed that a firm's risk rate decreases with age and that firm survival improves with age. Hence, new businesses are said to be unable to attain economies of scale, and they frequently lack management resources and knowledge (Adebayo, et al, 2018). Leverage, on the other hand, refers to a variety of financial instruments or borrowed cash, such as margin, that are utilized to boost a firm's potential return on investment. It refers to the quantity of debt utilized to fund a firm's assets (Lin, Li & Yung, 2016).

Liquidity is a requirement for businesses to pay their short-term obligations and to ensure that a lucrative venture continues to flow. It should be highlighted that a focus on liquidity at the price of PROF (Oyebanji, 2015) cited in (Dioha, et al, 2018). Another item on a firm's financial statement that has an impact on PROF is operating expenses. It is the amount of cash spent on a daily basis by a establishment to run its business activities. Running expenses are defined as costs of goods sold, selling, general, and administrative expenses that enable a company to continue operating without interruption (Hassan, 2013) cited in (Dioha, et al, 2018).

In the continual drive to attain high performance, manufacturers are constantly working to maximize asset utilization and reduce loss. This is due to increased shareholder pressure, which is more than ever before, and as a result, funds available for investment that would lead to changes are frequently constrained firm's must get more out of their assets while keeping costs low to stay competitive (Hassan, 2013). An illustration of a conventional financial indicator or accounting ratio that businesses use to assess PROF is return on assets (ROA). A firm's PROF in relation to its total assets is determined by its ROA. It provides insight into the management's effectiveness in generating profits from its assets.

Another quality of a corporation that is thought to influence PROF is growth (Al-Jafari and Al-Samman, 2015) cited in (Dioha, et al, 2018). As both imitate the PROF of an actual industry, sales and income growth have a significant impact on rate of return and market value metrics. In both simulated and real-world scenarios, it's uncertain whether growth in one year will affect PROF and market value metrics in the next year. Asset growth, which can be used as a proxy for plant and equipment expenditures, as well as research intensity, can influence sales and income growth in a base year or subsequent year, affecting PROF and market value indirectly (Kugari, 2013) cited in (Dioha, et al, 2018).

Macroeconomic variables that are external to the firm and outside management's control include social, environmental, and political circumstances, suppliers, competitors, and governmental regulations and policies (Egbunike & Okerekeoti, 2018). Important economic elements include the interest rates, GDP, stock market index, Consumer Price Index (CPI),

corporate tax, and unemployment rate. The performance of a corporation may be influenced by these external factors (macro) in either a positive or negative way. Although management can influence micro issues, it cannot influence macro factors (Dioha et al., 2018). Contrarily, macroeconomic factors do not affect how well a company does. The resource-based view (RBV) contends that an organization's micro traits determine its competitive position. Features of a company's organizational, human, and physical capital allow it to create and put into action plans that improve its efficiency and effectiveness (Oyebanji, 2015; Rajkumar, 2014) referenced Efuntade, et al., 2020. It has been established that company- and industry-specific traits are important predictors of PROF.

In this study, the elements that affect the success of O&G firms in Nigeria are split into two categories. Firm-specific factors that affect profitability include liquidity, leverage, age of the company, firm size, sales growth, operating costs, and tangibility. In contrast, macroeconomic factors that affect profitability include exchange rates, changes in inflation rates, the CPI, the amount of government spending, interest rates, and the rate of growth of the GDP, among others. The performance of listed firms in Nigeria is the sole subject of this study's attention, nevertheless.

Most enterprises in Nigeria's O&G sector are unable to accomplish their targets due to micro and macro constraints. The entity's PROF is significant to a variety of stakeholders that have a direct or indirect interest in it. Despite the critical role that profit plays in the ongoing operations of O&G firms in Nigeria, researchers in the field of finance have paid little attention to the PROF position of most O&G firms operating in Nigeria in relation to firm age, firm size, etc. This could be attributed to the lack of a complete study of factors that affect oil and gas companies' profit realization and maximizing in Nigeria.

The most noteworthy study, Boigues (2016) in the United States, is one of many that have been done to look into how different factors affect company profitability. Although there are a few studies on the elements that affect a company's profitability, most of them do not use ROA as a metric of profitability (a dependent variable) in their analysis. Despite the fact that other elements like firm size, firm age, etc have been discussed in the literature, only a few studies conducted in Nigeria, such as those by Efuntade et al. (2020), have evaluated the effect of operational costs on firm PROF. Again, despite the fact that numerous studies have been conducted in this area, none have used the same variable composition here in Nigeria, at least not to the researcher's knowledge.

Last but not least, ROA, return on equity (ROE), and Tobin's Q have all been used in prior research to determine PROF. Operating profit (EBIT/TA), or earnings before interest and tax divided by total assets), a measure of profitability, has not been examined. Using determining PROF by operating profit in addition to ROA and ROE, this study aims to close this difference. The EBIT/TA ratio differs from other measurements in that it excludes tax and bank interest costs. As a result, operating profit, which is based on the fundamental services the firm offers, provides a clear picture of the profitability of the business.

This research is more recent as it covers duration of ten years from 2012 to 2021. However, it is known that findings from similar foreign studies may not be applicable to Nigeria because of variation in economic condition, time frame and variables used. It is on the basis of the forgoing research gap that has necessitated embarking on the study with focused on the specific determinants of PROF of listed O&G firms in Nigeria.

### **Concept of Specific Determinants**

Specific determinants are elements that management may mostly control. Firm size, liquidity, leverage, sales growth, and firm age are some of the firm-specific determinants. Hence, it is possible to determine the PROF of O&G firms utilizing firm-specific (internal) features as specific determinants of profitability of the companies. On the basis of many financial and non-financial criteria, such as firm size, value, PROF, structure, etc., companies can be identified from one another. According to Onyekwelu, Nwajei, and Ugwu (2017), these particular factors are peculiar to particular companies and create a perception in the minds of the information's users.

Based on the pertinent data provided on the company's financial accounts for a single accounting period, the specific determinants of the firm can be identified, Obi and Ehiedu (2020), and (Stainer, 2006). According to Dean, Bulent, and Christopher (2000), a firm's qualities have a crucial role in determining both its PROF and its commercial success. This indicates that a key factor in determining the PROF of O&G enterprises is the firm specific determinants (internal qualities) that could be used to make this determination.

### **Resource Based Theory (RBT)**

The RBT, put forth by Wernerfelt in 1984, serves as the theoretical foundation for this work. According to RBT, businesses that possess "strategic resources" have substantial advantages over rival businesses in the marketplace. Some resources, like money and vehicles, are not regarded as key resources because rival businesses may easily obtain them. A resource is strategic instead if it is valuable, uncommon, difficult to duplicate, and non-replaceable. The RBT, according to Pearce and Robinson (2011), is a technique for studying and determining a firm's competitive advantages based on a close examination of its unique blend of organizational assets, skills, capabilities, and intangibles. The internal firm factors that affect company performance are the focus of this theory. It sees the company as a collection of resources that can be used to generate organizational strengths and achieve above-average PROF (Grant, 1991).

These resources allow each company to create competencies, and when these competences are adequately developed, they represent the foundation of the company's competitive advantages. Due to its focus on business characteristics rather than industry considerations, this theory will help in understanding the PROF fluctuation of intra-industry enterprises. Leverage ratios, which give the business the ability to enhance project finance by borrowing from debt providers, are typically used to gauge the firm's financial resources. The availability of impulsive financial resources for carrying out routine business operations is also measured by liquidity. One of the tangible resources the firm can utilize to acquire a competitive edge is its physical resources, measured by the amount of its assets, while its business expertise gives it a competitive advantage (Pearce and Robinson, 2011, Ehiedu & Olanye (2014). The study is founded on the resource-based hypothesis that firm specific determinants including size, age, liquidity, leverage, growth, and expenses can turn into valuable resources if they help businesses take advantage of opportunities and counteract dangers. Since it focuses on firm-specific traits rather than general industrial issues, this will aid in explaining variances in PROF. Physical resources vary in both amount and quality. These variations are the foundation of a firm's competitive advantage, especially when they are hard to copy and robust enough.

## **Empirical Review**

Thi Bui and Nguyen (2021) identified the correlation between various factors influencing the PROF of the businesses in Vietnam's O&G industry. Over the course of six years, from 2012 to 2018, a total of 203 samples were gathered from 29 firms listed on the Vietnam Stock Exchange. Based on previous research, the following variables are used in this investigation as independent variables: financial leverage (FL), government ownership (GOV), dividend payout (DIV), fixed assets to total assets (FA), and exchange rate (EXR), while return on assets (ROA) is used to describe profit (ROA). According to the study's findings, leverage, government ownership, dividends, and exchange rates are the four variables that affect ROA. Exchange rate and leverage have a detrimental impact on ROA, but government ownership and dividend payments have a positive impact. The results of this study indicate that a high debt-to-capital ratio and the negative impact of exchange rates on a company's productivity may have a negative impact on an enterprise's PROF. Additionally, a plausible level of government ownership and dividend payments could be taken into account to enhance corporate performance.

The performance of Nigeria's oil companies was examined by Akan, Ighosewe, and Temile in 2021. Chevron, Shell, and Total, three significant O&G firms, were examined. These chosen businesses rank among Nigeria's top ten O&G producers. Performance was measured against variables such as size, capital intensity, liquidity, sales, and inflation. Utilizing a unit root test to determine whether the variables were stationary, the data were subsequently de-trended. Only sales significantly and favourably influenced performance after the data were regressed, according to the results. Performance was not significantly correlated with company size, liquidity, or capital intensity. Thus, to improve performance, the oil companies should boost sales. Nigeria should diversify as soon as possible, as this also indicates.

The PROF of all 46 service firms listed on the Amman Stock Exchange from 2014 to 2018 was examined by Omar and Marie (2020), Omojefe and Ehiedu (2017) in relation to financial characteristics and capital structure. The size, tangible assets, growth, business risk, debt to equity ratio, and debt to assets ratio of the panel data variables in this study are applied as fixed and random effects models to the independent variables. Operating profits, which were determined by dividing earnings before interest and taxes by total assets, ROA, and ROE, which served as the dependent variables, were also used to determine PROF. This study provides the first concrete proof that the debt-to-assets ratio adversely affects the PROF of services firms in Jordan. According to this finding, which is consistent with the pecking order theory, more profitable service companies favour using retained earnings to finance operations over debt. According to this research, business risk has a negative impact on ROA while having a significant and positive impact on PROF. Additionally; it demonstrates that growth positively impacts operating profits while tangible assets have a negative and significant impact on PROF.

Efuntade and Akinola (2020) and Onuorah, Ehiedu and Okoh (2022) looked at how firm characteristics affected the financial results of listed manufacturing firms in Nigeria. To look into the connection between variables of firm characteristics and financial performance of listed manufacturing firms in Nigeria over a 14-year period, a descriptive and cross-sectional research design was used. The annual reports of five cited manufacturing firms were used to gather secondary data. To test the formulated hypothesis, a panel least squares regression model was used. Findings demonstrated that all independent variables together and significantly impacted the financial success of manufacturing firms in Nigeria as measured by

return on assets. Conclusion: The explanatory variables (Firm Age, Firm Size, Sales Growth, Liquidity, and Leverage) significantly influenced the outcome (ROA). The research then makes the suggestion that the management of manufacturing firms should find ways to enhance and acquire the optimal utilization of their assets, while making the most of their resources during the production processes and distribution of finished goods, as this would help them in improving their profits.

The PROF of publicly traded consumer products firms in Nigeria was examined by Ehiedu and Odita (2014), Dioha, Mohammed, and Okpanachi (2018) in relation to firm characteristics. The dependent variable, PROF, is represented by ROA, whereas the independent variable, company characteristics, is represented by firm age, firm size, sales growth, liquidity, and leverage (ROS). Twenty-two (22) publicly traded consumer products firms made up the study's population as of December 31, 2016. The sample for the research, which will include 18 publicly traded consumer products firms across a six year period, is selected (2011-2016). The research analysis tool of choice was multiple regressions. In order to conduct the research, a hypothesis was formulated and tested: firm characteristics had no appreciable impact on the PROF of listed consumer products businesses in Nigeria. Secondary data was analyzed from the financial statements of the firms. Panel data techniques were used to analyze the relationship between firm characteristics and PROF (using both fixed and random effects models), and the Hausman specification test demonstrated that the random effects model was more appropriate for the inquiry. The results show that PROF is significantly influenced by leverage, sales growth, and firm size. However, firm age and liquidity have minimal bearing on the PROF of Nigeria's listed consumer products firms. Before making crucial business decisions, consumer goods companies in Nigeria are urged to carefully analyze the firm characteristics (firm size, sales growth, and leverage) that affect their PROF in order to increase their PROF.

The factors that affect manufacturing firm's PROF in Nigeria were studied by Adebayo and Onyeiwu (2018), Ehiedu, Odita & Kifordu, (2020). The sample for the research consisted of 12 manufacturing firms out of the 22 manufacturing firms listed on the Nigerian stock exchange. The key variables in the research were ROE and ROA, which were used as stand-ins for PROF, and Firms Size, Leverage, Lag Profitability, Capital Base, and Productivity, which were used as explanatory variables. A panel data regression analysis using the fixed effect, random effect, and Hausman test was used to analyze the data, and the results showed that all the explanatory variables were significant predictors of PROF in the Nigerian manufacturing sector, with the emphasis being placed on the efficient utilization of assets rather than asset size. This research highlights the opportunities in the manufacturing sector of Nigeria, where the typical ROE is as high as 27% with little volatility. Because the agro-allied industries sector portends a promising future for Nigerian industrialization efforts, job creation, poverty alleviation, and health promotion, it is important that the Nigerian government continue to improve the ease of doing business and improve its support for it.

Obi & Ifelunini (2019), Irom, Okpanachi, Nma Ahmed, and Tope (2018), Ehiedu, Onuorah & Okoh (2021), investigated the five-year impact of firm attributes on ROA of listed firms in Nigeria. The population and sample size for this research include all 41 manufacturing firms that were listed on the NSE as of December 31, 2016. The outcome of random effect regression shows that all firm characteristics, with the exception of operating costs and firm size, had a negative and significant impact on ROA. Based on this finding, the research advises listed manufacturing firms to reduce their firm size and operating costs in order to

improve the ROA of their firms, and to refrain from using short-term cash to fund capital assets.

**Gap in Literature:** Based on the review of related literature, there is a lack of thorough evaluation of the specific determinants that play significant role in profit realization of O&G firms in Nigeria and there is no study domicile in the Nigeria that has examined both the specific determinants PROF of listed firms in the Nigeria O&G sector apart from the study of Onyekwelu, Nwajei and Ugwu, (2017), Ehiedu and Obi (2022) to the best of my knowledge. A considerable number of works outside Nigeria have been done examining the impact of specific determinants on the PROF, notably; Boigues (2016) in the United States and United Kingdom (Banchuenvijit, 2012). Though a few literatures exist on the impact of specific determinants on the PROF, most of them have not included ROA as a measure for profitability (dependent variable) in their study. Furthermore, despite other factors including firm size, firm age, sales growth, asset tangibility, and leverage being taken into account in the literature, few studies in Nigeria, such as Obi and Ehiedu (2020), Kolawole (2013) and Aliu (2010), have adequately examined the impact of operational expenses on business PROF. Again, despite the fact that numerous researches have been conducted in this area, none have used the same variable composition here in Nigeria, at least not to the researcher's knowledge. Given that it spans the years 2011 through 2020, this study is more recent. However, it is known that findings from similar foreign studies may not be applicable to Nigeria because of variation in economic condition, time frame and variables used. It is on the basis of the forgoing study gap that has necessitated my embarking on the study with focused on the impact of specific determinants on the PROF of O&G firms in Nigeria.

### RESEARCH METHODOLOGY

This research adopted the Ex-Post Facto research design. The design determines the effect and the alleged cause which have already occurred, but both conditions are studied in retrospect. This type of research design is one that takes place after the event or fact had taken place. The design involved the collection of secondary data from annual reports and accounts of total of 10 firms in the O&G sector to be evaluated using appropriate tools.

The statistical technique of data analysis was adopted in this study. The quantitative technique of data analysis was adopted in this research. Descriptive statistics and the correlation analysis were used to determine the nature of relationship between the independent and dependent variables, followed by the correlation matrix. In view of the hypothesis formulated for this research, the method of data analysis chosen was a multiple regression analysis using E-VIEW computer software. Multiple regression model specified was applied is one that seeks to explain change or variation in the value of the dependent variable on the basis of changes in other variables known as the independent or explanatory variables using a longitudinal data. The model assumes that the dependent variable is a linear function of the independent variables.

The regression model was adopted from the study of Ehiedu & Ogbeta (2014), Obi, Ifelunini and Edeme (2017), Onyekwelu, Nwajei & Ugwu (2017); title: "Effect of firms' characteristics on financial performance of O&G firms in Nigeria" which was modified to suit the variable of the study. The model which specifies that PROF [proxy with ROA] is significantly influenced by internal determinants (FS, FA, LIQ, LEV, SG and OE), is formulated as follows;

**ROA = f (FS, FA, LIQ, LEV, SG, OE)**

**ROA =  $\beta_0 + \beta_1FS + \beta_2FA + \beta_3LIQ + \beta_4LEV + \beta_5SG + \beta_6OE + E$**

E = Error Term



$\beta_0$  = Intercept

$\beta_1 - \beta_6$  = Coefficient of the Independent Variables.

The a priori expectation is  $\beta_1, \beta_2, \beta_3, \beta_4, \beta_5, \beta_6$ , is lesser or greater than 0.

## Result and Discussion

### Descriptive statistics

This section presents the descriptive statistics of the research where the minimum, maximum, mean, and standard deviation of the coefficients were described. The summary of the descriptive statistics are shown below:

Table 1

*Descriptive Statistics Output of the Independent and Dependent Variables*

	ROA	FS	FA	LIQ	LEV	SG	OE
Mean	6.165347	10.31427	1.440539	1.286439	0.667234	3.047716	10.32779
Median	0.029331	10.74962	1.462398	1.135954	0.694016	0.000000	0.129265
Maximum	13.35961	12.05345	1.812913	6.395096	1.375801	559.9736	351.8323
Minimum	260.3597	0.000000	0.477121	0.000000	0.000000	880.5420	0.000000
Std. Dev.	37.27223	1.674455	0.294910	0.787415	0.231453	104.8367	52.99491
Skewness	6.335367	4.787090	0.874913	3.254117	0.106820	4.380546	5.754738
Kurtosis	42.69516	29.53066	3.570727	19.78009	5.121732	58.56610	36.15166
Jarque-Bera	7234.388	3314.754	14.11509	1349.702	18.94745	13184.79	5079.941
Probability	0.000000	0.000000	0.000861	0.000000	0.000077	0.000000	0.000000
Sum	-616.5347	1031.427	144.0539	128.6439	66.72345	-304.7716	1022.451
Sum Sq. Dev.	137532.7	277.5762	8.610241	61.38227	5.303501	1088083.	275229.1
Observations	100	100	100	100	100	100	99

Source: Extracted from E-VIEW Outputs, 2022 (See appendix1 for detailed)

The data set as indicated from the table above contained a total of 100 observations for ten (10) companies in the O&G industry listed in the NSE over a period of ten years (2011-2020) for six measures firm specific determinants (independent variables) [FS, FA, LIQ, LEV, SG and OE] and one dependent variable [PROF proxy with ROA]. The PROF proxy with ROA as measured by net profit to total assets gave values of minimum and maximum of 260.3597 and 13.3596 respectively with their mean and standard deviation of 6.1653 and 37.2722 respectively. Since the mean value is lesser than the standard deviation, it implies that the increase in ROA is very slow in the period under review. The descriptive statistics for FS revealed that both the minimum and maximum values of 0.0000 and 12.0535 for FS. FS as measured by natural log of total assets gave values for mean and standard deviation as 10.3143 and 1.6745 respectively. This implies that since mean value is greater than the standard deviation, it means that the FS of the O&G firms under study has increase tremendously over the years. The descriptive statistics for FA revealed that both the minimum and maximum values of 0.4771 and 1.8129 for FA. FA as measured by natural log of numbers of years of existence gave values for mean and standard deviation as 1.4405 and 0.2949 respectively. This implies that since mean value is greater the standard deviation, it means that the FA of the O&G Firms under study has increase their performance. Also, the descriptive statistics above shows that the minimum value is 0.000 and the maximum of 6.3951 for LIQ. LIQ of the firm as measured by the total current assets to total current liabilities of the ten (10) companies in the O&G industry in Nigeria has an average value of 1.2864 with standard deviation of 0.7874. This signifies that there is positive variation among values of LIQ of the ten (10) firms in the O&G industry in Nigeria, since the mean is greater than the standard deviation. The minimum values of all the variables as indicated above ranges from minimum

of 0.0000 and maximum of 1.3758 for LEV. The mean value of the LEV which is measured by the ratio of long term debt to total debt plus total equity is 0.6672 with a standard deviation of 0.2315. This implies that since mean value is greater the standard deviation, it means that the LEV of the O&G Firms under study has increase their performance. Also, the descriptive statistics above shows that the minimum value is 880.5420 and the maximum of 559.9736 for SG. SG of the firm as measured by the change in revenue of the ten (10) firms in the O&G industry in Nigeria has an average (mean) value of 3.0477 with standard deviation of 104.8367. This signifies that the deviation between the mean and standard deviation values of SG of the ten (10) companies in the O&G industry in Nigeria has been negative, since the standard deviation is greater than the mean value. From the descriptive statistics above, shows that the minimum value is 0.0000 and the maximum of 351.8323 for OE. OE of the firm as measured by the ratio of OE to total assets of the ten (10) firms in the O&G industry in Nigeria has an mean value of 10.3278 with standard deviation of 52.994. Since the mean value is lesser than the standard deviation, it implies that the increase in OE is very slow in the period under review. The Jarque-Bera statistic PROF for all the variables is lesser than than 0.05, this indicates that is significant; hence we reject the null hypothesis and conclude that the series is normally distributed (or have a normal distribution).

Table 2

*Correlation Output of the Independent and Dependent Variables*

	ROA	FS	FA	LIQ	LEV	SG	OE
ROA	1.000000						
FS	0.119246	1.000000					
FA	0.198074	0.431367	1.000000				
LIQ	0.116468	0.050986	0.319825	1.000000			
LEV	0.091692	0.609130	0.457796	0.351448	1.000000		
SG	-0.004542	0.042338	-0.015709	0.057179	-0.238853	1.000000	
OE	0.986832	0.128396	0.211021	0.154442	0.101345	0.005605	1.000000

Source: Extracted from E-VIEW Outputs, 2022 (See appendix1 for detailed)

The correlation coefficient of ( $r=0.1192$ ) which is greater than the critical value of 0.05, this shows a strong positive between firm size and return on assets. It's evident from the correlation coefficient of FS that the large FS does determine its PROF level of the firm. The correlation result for FA and ROA shows a strong positive statistical significant correlation as it evident by the correlation coefficient. The coefficient of correlation of ( $r = 0.1981$ ) is greater than the critical value of 0.05, indicating a statistical significant correlations between FA and ROA. This shows that the numbers of years that a company has been in existence has a major role to play in it profitability level, thus yielding result on every ROA invested by the stakeholders. Table 2 above showed that the weak negative correlation coefficient between LIQ and ROA. The coefficient of correlation 0.1165 is greater than the critical value of 0.05, indicating a statistical significant correlation between LIQ and ROA. In other words, increase in LIQ will lead to an increase in return on assets of the firms. This finding shows a high LIQ firms in the Oil and Gas industry is at advantage in securing a better ROA in the O&G industry in Nigeria. The correlation result for LEV and ROA shows a strong positive statistical significant correlation as it evident by the correlation coefficient. The coefficient of correlation of ( $r = 0.0917$ ) is greater than the critical value of 0.05, indicating a statistical significant correlations between LEV and ROA. This shows that a company with better mix of debt and equity are have higher PROF level, thus yielding result on every assets invested by the stakeholders. Table 2 above showed that the strong negative correlation coefficient between SG and ROA. The coefficient of correlation -0.0045 is greater than the critical value of 0.05, indicating a statistical a significant correlation between SG and ROA. This implies

that there is a weak negative relationship/correlation between SG and ROA. In other words, increase in SG will lead to increase in ROA. Table 2 above showed that the strong negative correlation coefficient between OE and ROA. The coefficient of correlation 0.9868 is greater than the critical value of 0.05, shows a statistical significant correlation between OE and ROA. This implies that there is a strong positive relationship/correlation between OE and ROA. In other words, increase in OE will lead to an increase in ROA.

Table 3  
*Regression Results of the Independent and Dependent Variables*

Correlated Random Effects - Hausman Test				
Equation: Untitled				
Test cross-section random effects				
Test Summary	Chi-Sq. Statistic	Chi-Sq. d.f.	Prob.	
Cross-section random	21.740622	6	0.0013	
** WARNING: estimated cross-section random effects variance is zero.				
Cross-section random effects test comparisons:				
Variable	Fixed	Random	Var(Diff.)	Prob.
FS	0.194171	-0.689607	0.069320	0.0008
FA	0.580890	0.648270	55.361398	0.9928
LIQ	3.825595	2.436494	0.170827	0.0008
LEV	5.650322	4.708384	3.480323	0.6136
SG	-0.005674	0.004289	0.000007	0.0001
OE	-0.747572	-0.702248	0.000100	0.0000
Cross-section random effects test equation:				
Dependent Variable: ROA				
Method: Panel Least Squares				
Date: 08/04/21 Time: 12:44				
Sample: 2011 2020				
Periods included: 10				
Cross-sections included: 10				
Total panel (unbalanced) observations: 99				
Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	-10.18512	12.74104	-0.799394	0.4263
FS	0.194171	0.573236	0.338728	0.7357
FA	0.580890	7.804292	0.074432	0.9408
LIQ	3.825595	0.998349	3.831922	0.0002
LEV	4.708384	2.331744	2.019254	0.0099
SG	-0.004289	0.006377	-0.672607	0.5029
OE	0.702248	0.011875	59.13667	0.0000
Effects Specification				
Cross-section fixed (dummy variables)				
R-squared	0.980818	Mean dependent var	-6.362569	
Adjusted R-squared	0.977351	S.D. dependent var	37.40943	
S.E. of regression	5.629961	Akaike info criterion	6.441035	
Sum squared resid	2630.806	Schwarz criterion	6.860448	
Log likelihood	-302.8312	Hannan-Quinn criter.	6.610730	
F-statistic	282.9271	Durbin-Watson stat	1.759490	
Prob(F-statistic)	0.000000			

Source: Extracted from E-VIEW Outputs, 2022 (See appendix I for detailed)

Panel data is used in this study to determine whether the data should be analyzed through random effect or fixed effect. For this purpose, I use the Hausman test criteria to check which model is more appropriate in this study.

H0: Random Effects model is consistent and efficient.

H1: Random Effects model is inconsistent.

According to the Hausman test random effect model is appropriate in this study. In testing the hypotheses of this study, the Random Effects OLS was chosen because of the Hausman Test result shows Chi-Square of 21.7406 which is greater than 10 and the p-value of value of 0.0013 which is far lesser than the accepted level of significance of 0.05, this implies that the Random Effects OLS result is best for the panel data of the ten (10) O&G firms selected for this study. The table below shows the regression between the dependent variable which is Profitability proxy with ROA and independent variables identified to be FS, FA, LIQ, LEV, SG and OE which served as measures of specific determinants.

The regression coefficient values were recorded for FS and ROA of firms. FS with coefficient of 0.1942 has strong positive relationship with ROA. It also showed that the relationship between FS and ROA is strong and positive. The p-value of 0.7357 is greater than 0.05 level of significance and lesser than the acceptable 95% confidence interval. This implies that there is no significant relationship between FS and ROA of firms. This result signifies that FS has a positive insignificant effect on PROF of listed O&G firms in Nigeria, that is, the greater the FS of a firm, the lower its reported ROA. The finding contradicts the resource based theory which articulates a positive and significant relationship between firm size and profitability of a firm. But it must be noted that, the findings is line with this study because firm size is insignificant, on that basis, larger firms in the Oil and Gas sector in Nigeria, should set a criteria that will enhance firms return on assets. This is in accordance with the findings of Odita, Ehiedu and Kifordu (2020) Irom, Okpanachi, Nma Ahmed & Tope (2018) and Ghareli and Mohammadi (2016), which established positive insignificant relationship between FS and ROA but contradict the findings of Efuntade and Akinola (2020), Obi (2015), Dioha, Mohammed & Okpanachi (2018), Egbunike & Okerekeoti (2018) and Adebayo & Onyeiwu (2018), which established positive significant relationship between FS and ROA.

The table 3 above also shows the relationship between FA and PROF specifically; ROA. The level of significant was evidence with FA having a positive coefficient 0.5809 which signify positive strong relationship and p-value statistics of (0.9408). The p-value of (0.9408) connotes that FA has insignificant relationship on ROA of the O&G firms. This result shows that FA of O&G companies is not significant in explaining and predicting the PROF of listed oil and gas firms in Nigeria within the study period. This result contradicts the resource based theory which states that older firms will perform better than younger firms because they are more experienced and are not prone to the liabilities of newness. This is line with the findings of Dioha, Mohammed & Okpanachi (2018), Agbogun & Ehiedu (2022), which established positive insignificant relationship between FA and ROA but has a contradictory opinion to the finding of Efuntade and Akinola (2020), Uwuigbe, Uwuigbe, Adeyemo and Ogunbajo (2016), which established positive significant relationship between FA and ROA.

LIQ has a positive and significant impact on PROF specifically; ROA. The level of significant was evidence with LIQ coefficient having a positive of 3.8256, which signify positive relationship and the p-value of 0.0002 at 5% confidence interval. The calculated p-value of 0.0004 is significant because it is less than 0.05 (5%). It also means that the level of confidence (confidence interval) is 99.96% more than the acceptable level of 95%. This finding means that firms of oil and gas industry that have higher LIQ level maintain higher ROA. Thus, LIQ is considered a significant factor that plays a key role in making the assets investment decisions in oil and gas sector. This result support the resource based theory which states that LIQ measures the spontaneous financial resources available to conduct normal

business operations. This is line with the findings of Odita and Ehiedu (2015), Efuntade and Akinola (2020) and Egbunike & Okerekeoti (2018), which established positive significant relationship between LIQ and ROA but contradict the findings of Dioha, Mohammed & Okpanachi (2018) and Mohammed and Usman (2016), which established positive insignificant relationship between LIQ and ROA.

The regression coefficient values were recorded for leverage and return on assets of firms. The correlation coefficient values were recorded for LEV and ROA of the firms. LEV with coefficient of 4.7084 has strong positive relationship with ROA. The p-value of 0.0099 is lesser than 0.05 level of significance and greater than the acceptable 95% confidence interval. This implies that there is a significant relationship between LEV and ROA of the firms. Based on the finding, an increase in LEV positively affects ROA. This result support the resource based theory which states that financial resources are normally measured by LEV ratios which enable the firm to increase its project financing by borrowing from debt providers. This is in accordance with the study of Efuntade and Akinola (2020), Dioha, Mohammed & Okpanachi (2018), Egbunike & Okerekeoti (2018) and Adebayo & Onyeiwu (2018), which established positive significant relationship between LEV and ROA but contrary to the findings of Onyekwelu, Nwajei & Ugwu (2017), which established positive insignificant relationship between LEV and ROA.

The table 3 above also shows the relationship between SG and PROF specifically; ROA. The level of significant was evidence with SG having a negative coefficient -0.0043 which signifies inverse relationship and p-value statistics of (0.5029). The p-value of (0.5029) connotes that SG has insignificant relationship on ROA of the firms. By implication, the growth in sales has no significant impact on the ROA of the O&G firms in Nigeria. The result from the finding contradicts the growth of the fitter theory, which states that profitable firms grow and survive in the market while the other firms exist due to poor performance. This is line with the findings of Dioha, Mohammed & Okpanachi (2018) and Onyekwelu, Nwajei & Ugwu (2017), which established negative insignificant relationship between SG and ROA but has a contradictory opinion to the finding of Efuntade and Akinola (2020) and Mohammed and Usman (2016), which established positive significant relationship between SG and ROA.

The table 3 above also shows the relationship between OE and PROF specifically; ROA. The level of significant was evidence with OE having a positive coefficient 0.7022 which signify positive relationship and p-value statistics of (0.0000). The p-value of (0.0000) connotes that OE has a significant relationship on ROA of the firms. It implies that an increase in OE of the firm would have tremendous effects on the ROA of the oil and gas firms. The result is supported by the Learning-By-Doing Theory, which posit that Managers functions that initially posed problems because of their relative unfamiliarity soon become reutilized. As managers gain experience, their administrative tasks require less attention and less energy. As a result, managerial resources are continually being released. This excess managerial talent can that be channeled to value-creating growth projects). This is line with the findings of Uwuijbe, Uwuijbe, Adeyemo, and Ogunbajo (2016), which established positive significant relationship between OE and ROA but has a contradictory opinion to the finding of Dioha, Mohammed & Okpanachi (2018), which established positive insignificant relationship between OE and ROA.

### **CONCLUSION AND RECOMMENDATIONS**

The study examined the impact of firm specific determinants on the profitability of listed O&G firms in Nigeria between the periods of 2011-2020. The study made used of secondary

that which was sourced from the annual reports and accounts of the various O&G Firms for the measures of firm specific determinants [Firm Size (FS), Firm Age (FA), Liquidity (LIQ), Leverage (LEV), Sales Growth (SG) and Operating Expenses (OE)] in relation to PROF proxy with ROA. Descriptive statistics and the correlation analysis were used to determine the nature of relationship between the independent and dependent variables. In view of the hypothesis formulated for this research, the method of data analysis chosen was a multiple regression analysis using E-VIEW 9.0 computer software. Multiple regression model specified was applied is one that seeks to explain change or variation in the value of the dependent variable on the basis of changes in other variables known as the independent or explanatory variables using a longitudinal data. The model assumes that the dependent variable is a linear function of the independent variables. The study concluded that LIQ, LEV and OE have significant relationship on ROA while FS, FA and SG does not have significant relationship with ROA.

Finally we conclude that there is a significant relationship between firm specific determinants and the PROF of listed O&G firms in Nigeria. The following recommendations are made:

1. FS has a insignificant impact of ROA. The study therefore recommended that Listed O&G Firms should increase their FS so as to increase the ROA of their firms.
2. The age of the firm has an insignificant influence on the ROA. It is recommended that the company should channel their effort toward assets utilization in order to boost their PROF level.
3. It shows that the LIQ of a firm positively and significantly affects the PROF of a firm. This implies that high level of LIQ in a firm will reduce PROF. Therefore, it is recommended that the O&G firms should reduce the level of current asset on capital investment.
4. The management of O&G firms should caution their decisions in respect to leverage. The financing decision should be more of equity than debt to avoid high leverage and low PROF through issuing of more shares in the capital market and declining excessive loans and debentures.
5. O&G firms in Nigeria should not only be focused in growing their sales alone while abandoning other alternatives of boosting profits (such as investments) that could improve their PROF. Also, the study recommends therefore that they should focus more on customer-centric products that will boost their sales revenue.
6. Also, operating expenses has been found to significantly affect PROF; therefore, it is recommended that the O&G firms should maintain the right cost structure to improve on their PROF.

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