Effect of Asset Structure on the Performance of Oil and Gas Firms in Nigeria

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DOI: 10.56201/jafm.v9.no9.2023.pg179.199

Abstract
The study examined the effect of assets structure on the performance of oil and gas firms in Nigeria. The study adopted Ex-post facto research design. The population of this study consists of the whole 18 listed deposit money banks in Nigeria Exchange Limited as at 31st December, 2021. The study used 9 selected oil and gas firms as sample size. The study used secondary data, secondary data used were collected from annual financial reports of the sampled oil and gas firms for ten years period spanning from 2012-2021. Multiple Linear regression model was developed to test the effect between dependent and independent variables. It was operated using EVIEWS 11. The results of the multiple linear regression analysis revealed that, there is a significant effect of property plant and equipment on the performance of oil and gas firms in Nigeria ($p<.05$), there is a significant effect of current assets on the performance of oil and gas firms in Nigeria ($p<.05$), financial assets have no significant influence on the performance of oil and gas firms in Nigeria ($p<.05$), and intangible assets have a significant effect on the performance of oil and gas firms in Nigeria ($p<.05$). This study concludes that asset structure affects the firm performance of oil and gas firms in Nigeria. The study recommended that, managers should avoid diverting cash for other alternative investment opportunities, by managing investments in real estate, manufacturing facilities, and equipment well, managers should be conscientious of investments in current assets. This is because of its crucial nature to a company's profitability and liquidity, shareholders should constantly monitor investment in financial assets because this study's empirical findings emphatically supported the notion that such investment has a positive but insignificant coefficient

as shown by the numerical coefficient and Shareholders should constantly monitor firms carrying intangible assets, as this may not be indicative of profitability but rather a way to cook up the books. This is because intangible assets can be artificially inflated in the case of its overstatement.

Keywords: *Asset Structure, Property Plant and Equipment, Current Assets, Financial Assets, Intangible Assets and Return on Asset*

Introduction

As a going concern with the desire to continue running sustainably, every firm strives to meet up with the general short term objective of profit maximization, and the long term objective of maximizing the wealth of the shareholders at the minimal cost possible. To achieve these objectives, asset structure and capital structure of the firm are two factors that have gained prominence in corporate finance literature and therefore, have been the subjects of discussion in this study. Assets composition has been viewed from various aspects by different scholars. According to Zheng and Nuo (2013) asset structure is the allocation of the resources diversely, it can be broken down into three components namely; turnover assets, production assets and wasting assets. Koralun, (2013) defined asset structure as the combination of the various asset components which were identified as: financial assets, tangible assets, current assets and current investments and cash in hand and at bank. A similar approach is taken by Schmidt (2014), where asset structure is described in terms of; current assets, long term investments and funds, property, plant and equipment , intangible assets, and other assets. On the other hand, Mawih (2014) studied the assets structure conceptualizing it as a component of assets and current assets. Empirical evidence has concluded that the study of asset structure is significant to the business organizations. Zheng and Nuo (2013) contends that the research of assets structure has more practical value and universal significance than capital structure as they are the main source of creating corporate value and avoid risks. Assets structure has also been widely reported by corporate finance literature to significantly affect financial structure of firm (Koralun-Bereznicka, 2013).

Performance of firms is a main feature which defines their competiveness, business potentials and economic interest of the management (Dufera, 2020). Several factors determine the level of firms' performance such as the size, ownership, capital structure, equity, and age of the firm, experience, new investment in both physical and knowledge capital, managerial efficiency, growth in sales, export activity as well as the industry age (Papadogonas, 2017).
Performance comprises the actual output or results of an organization as measures against its intended output (or goals and objectives). It is one of the most important variables in the field of management research today. Although the concept of organizational performance is very common in academic literature, its definition is not yet a universally accepted concept (Gavrea, Ilies & Stefan 2011). Richard and Shelor (2009) view organizational performance as encompassing three specific areas of from outcomes: financial performance (profits, return on assets, return on investment.), product market performance (sales, market share); and (shareholder return (total shareholder return, economic value added). Specialists in many fields are connected with organizational performance including strategic planners, operations, finance, legal, and organizational development. In recent years, many organizations have attempted to manage

organizational performance using the balanced scorecard methodology where performance is tracked and measured in multiple dimensions such as financial performance (shareholder return), customer service, social responsibility, internal business processes and employee stewardship.

Richard and Shelor (2009) defines organizational performance as the organization's ability to attain its goals by using resources in an efficient and effective, manner; effectiveness being the degree to which the organization achieves a stated goal, an efficiency being the amount of resources used to achieve an organizational goal. (Alien, Dawson, Wheatley & White, 2007) noted that, when defining firm performance, it is important to consider a wide range or variety of organizational performance measures which include quality, productivity, market share, profitability, return on equity, customer base and overall firm performance. The term performance was sometimes confused with productivity. Ricardo, (2001) explains that there is a difference between performance and productivity. Productivity being a ratio depicting the volume of work completed on a given amount of time.

Firms operate as part of the larger system, it sources, its raw material from the society and pushes it finished product back into the society, its complies with policies and reflect the changes in societal taste, demand pattern, income and government micro and macroeconomic policy, unfavorable policy could lead cause shock to firms and lead to serious instability challenges.

Assets as resources used in the production process, help to generate inflow that can be used to secure favorable funding. However, excess investment in assets can tie down the capital, affect working capital give rise to high maintenance cost. Inadequate investment on the other hand can lead to low production of output and may not generate the required fund to meet demands as at when due and ultimately affect the profitability of the firm, therefore, having the appropriate mix of those assets enables the management achieve competitive edge and better performance, which in turn, enhances the stability of the firm. The problem statement here is, what constitutes the appropriate mix and to what extent does it impact on the stability of oil and gas firm? This has not been exhaustively researched on.

Numerous researchers have studied the impact of asset structure/composition on performance value of firms. For example, in Hong Kong, Li and Wang (2014) used descriptive methodology and regression for data analysis, Okwo, Ugwunta and Nweze (2012) used ex-post facto design and multiple regression analysis for the pool dat. Ngunya and Mwangi (2018) and Mwaniki and Omagwa (2017) utilized binary log it analysis, but Anas and Mohammad (2015) employed a descriptive design and used multiple regression without adjusting for cross section or fixed effect in their work.

The uniqueness of this research over other prior studies is the focus of the sector, this study focused on oil and gas sector, to the best of our knowledge no to the study has consider this sector in the study of assets structure and the combination of independent variables such as, property, plant and equipment, current assets, financial assets and intangible asset to investigate the effect of assets structure on performance of quoted oil and gas firms in Nigeria. This therefore, addresses the problem of assets structure measurement and presents a holistic measure of firm’s performance using return on asset. Although these variables have been widely studied, the empirical evidence that associated asset structure with firm performance in the post recession era is lacking in Nigeria.

This study therefore, filled the gap in knowledge by evaluating the impact of corporate assets structure on the performance of oil and gas firms in Nigeria. The specific objectives of the study are to:

1. Determined the effect of property, plant and equipment on performance of oil and gas firm in Nigeria.

2. Investigate the extent to which current assets acquisition are related to performance of oil and gas firm in Nigeria.

3. Find out the effect of financial assets on performance of oil and gas firm in Nigeria

4. Examine the effect of intangible asset on performance of oil and gas firm in Nigeria.

2.0 Conceptual Review

2.1.1 Property Plant and Equipment

Property plant and equipment are assets which cannot be easily converted into cash. They constitute major portion of total assets of oil and gas firms. The quality of it can help determine the quality of product and the long run survival plan of the firm. Investment in property, plant and equipment assets help build up affirms balance sheet and stripping them can be a veritable source of finance to firm when all other sources fails. In the study of Ibam (2008) a company's investment in noncurrent assets is dependent to a large extent on its line of business. This hold true as some businesses operates in capital intensive industry like oil and gas than others operate in industries with less capital concentration. Most firms operating in oil and gas or other natural resources sector need large and technology driven noncurrent assets than firms in service sector whose assets is majorly intangible in nature.

Chukwu and Egbuhuzor, (2017). Define property, plant and equipment (land, building, plant and machinery) as immovable assets which are expected to be used for more than one accounting year, they are capital intensive in nature and cannot be easily converted into cash without loss of stability. International Accounting Standard (IAS) 16, differentiate property, plant and equipment from other class of assets and are expected to be used for more than one accounting year. The investment in property, plant and equipment account for the highest proportion of the total assets of a firm.

2.1.2 Current Assets

These are assets that can be converted into cash during the normal production cycle. A normal production cycle is one year, that is, twelve months. Current physical assets are sometimes referred to as convertible assets. These are physical assets such as stock of raw materials, stock of work-in progress, stock of finished goods, and goods held for resale. (Chan and Sougiannis 2008). Current assets are assets that can be easily and quickly converted into cash or other liquid assets. The investment in current assets involves investment in accounts receivable, cash and inventory which are non-interest bearing assets. Current asset management has gained increased prominence as firms began to be aware of the difference between profitability and liquidity. It's possible for a business to run without the provision of adequate current assets. This is particularly true as the

major role of the financial manager of firm is to spend a great deal of their time managing current assets and current liabilities.

According to Mashkour (2019) current assets represent the value of all assets that are reasonably expected to be converted into cash within one year in the normal course of business. Current assets include inventory, accounts receivable, marketable securities, cash, prepaid expenses and other liquid assets that can be readily converted to cash. In personal finance, current assets are all assets that a person can readily convert to cash to pay Accrued debts and cover liabilities without having to sell fixed assets. In other words, current assets are anything of value that is highly liquid.

2.1.3 Financial Assets

According to Aleksandrova (2018) financial assets, often called financial instruments, are intangible assets, which are expected to provide future benefits in the form of a claim to future cash. Some financial instruments are called securities and generally include stocks and bonds. Any transaction related to financial instrument includes at least two parties: 1) the party that has agreed to make future cash payments and is called the issuer; 2) the party that owns the financial instrument, and therefore the right to receive the payments made by the issuer, is called the investor.

According to Cheptoo (2018), financial assets are company's investment in capital market instrument, stock, security of other companies and government bonds on the short term or long term basis. They also include investment in convertible security with the aim of maintaining high level of liquidity. They are non-physical assets who derive their stability contractual claims or the market stability of other security. Financial assets can be classified in line with the international accounting standard 39 into three basic categories: financial assets held for trading: they are financial assets acquired for the purpose of selling them for a margin.

Financial assets held to maturity: they are assets that have fixed maturity date and payment.

Financial assets available for sale: they are assets that the company has put on sales but has not yet been bought over. Those financial assets are more liquid than any other form of noncurrent assets yet they are mostly of long term. Simeyo, Bernard, Patrick and Francis, (2013). Opined that investment in financial assets involves outlay funds with the anticipation of a future cash inflow which is the compensation for the risk plus premium to cover inflation, and interest foregone. Similarly, Pandy (2008) the decisions to invest in financial assets entail decision to invest its current assets (resources) in long-term assets in anticipation of expected inflow of benefits or capital gain which can span over period of years.

2.1.4 Intangible Assets

The Standard (IAS 38) defined intangible asset as an identifiable, nonmonetary assets without physical substance held for use in production or supply of goods or services or rental or other administrative purpose by organization. IAS 38 requires that for an asset to be recognized as intangible asset it should be identifiable in a way that it is possible to distinguish it from goodwill. In addition, the enterprise should have sufficient control of the asset. Zambon (2003) classified

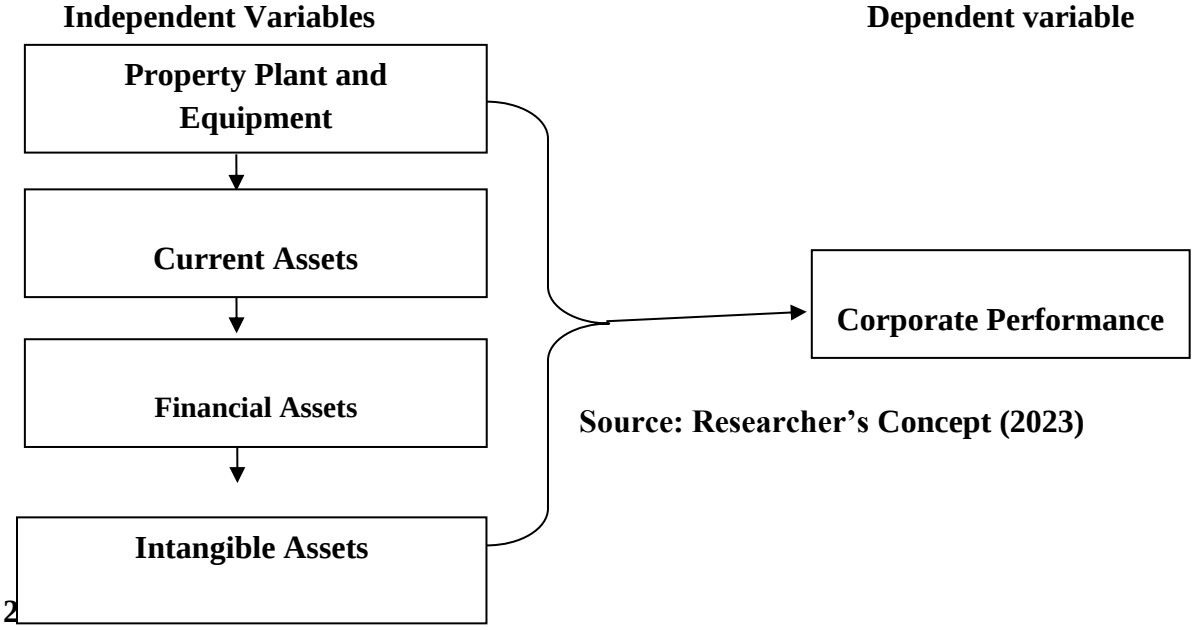
intangible assets into two using their source of cash inflow to the firm: those that internally generated revenue for the firm (research and development, goodwill) and those that externally generated revenue for the firm (patent, brand name, copy right, trade mark, royalty). One of the unique attributes of intangible assets in their non-physical nature and non-tradability, which differentiates them from other assets. They may not be traded in an active and open market. For instance goodwill, they are difficult to be traded in active and open market, this may be due to lack of detailed information which is usually not available to the public resulting to information asymmetries between their owners and investor/outsiders.

Lev and Daum (2004) give two reasons for this. First, on a stand-alone basis, intangibles are inert, they can neither create stability nor generate growth and need to be combined with other production factors to do so. Secondly, the components of intangibles are intertwined making them difficult to isolate and quantify. According to Zeghal and Maaloul (2011) the lack of measurement and open market valuation of intangibles has affected the stability relevance of financial information. In this study, intangible assets are:- patent, brand name, copy right, trade mark, royalty (Zambon, 2003).

2.1.5 Return on Asset

Return on Asset (ROA): ROA is the best financial scorecard of a company's health and an indicator of how its decisions play out. The return on assets ratio, often called the return on total assets, is a profitability ratio that measures the net income produced by total assets during a period by comparing net income to the average total assets. In other words, the return on assets ratio or ROA measures how efficiently a company can manage its assets to produce profits during a period (Delloite University Press, 2013).

Fig. 2.1 Conceptual Diagram Representing Independent and Dependent Variables



Source: Researcher's Concept (2023)

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2.2.1 Resource Based Theory

The evolution of the resource based view originates from penrose's Pioneering idea presented in the 1950s in her book 'The theory of growth of a firm' where a firm is described as a pool of resources that should be organized into their best uses in order to create grounds for firm success, (Penrose, 1995). The RBV is based on the fact that tangible and intangible resources and the capability to coordinate those assets or inputs of production in a strategically successful way (Helfat & Peteraf 2003) from the grounds for competitiveness in the dynamic business environment (Brown & Blackmon, 2005). The role of company managers is crucial to firm-level competitiveness, since their perceptions of the environmental circumstances dictate the selection of resources (Fahy, 2002) to be exploited, developed and protected (Dierick & Cool, 1989). In addition, in structuring the firm level resource portfolio, managers should also be able to make successful decisions on strategic resource investments (Sirmon et al 2007). The theory argues that one of the ways which the firm can compete favorable and achieve competitive advantage is to deploy its unique assets. Those one-of-a-kind assets are exclusive to the company and cannot be replicated. It is believed that the company has some distinguishing characteristics that offer it a competitive advantage.

2.3 Empirical Review

Anichebe and Agu, (2013) examined the effects of inventory management on performances of selected firms in Enugu state using firms like, Yememite, Hardis and Dromedas, and the Nigeria Bottling Company. The study adopted the descriptive research method, primary data collected from sample size of two hundred and forty-eight (248), which was derived using the Taro Yamane formula for sample size determination. Person product moment correlation coefficient and linear regression were used in the data analysis and hypotheses testing. The finding shows that there is a significant relationship between good inventory management and organizational effectiveness, thus inventory management has a significant effect on organizational productivity. The finding reveals that the entire profitability of an organization is tired to the volume of products sold which has a direct relationship with the quality of the product.

Dennis (2014) evaluates the current asset management practices of small and medium enterprises selected from agriculture sector, the industry and manufacturing, technology, hospitality and from energy sector. The study used stratified random sampling to select the firms and adopted the descriptive research design. The study used primary data collected using a structured questionnaire. The study finds that smack and medium enterprises mostly used their own cash sources to finance their business. Most of the SMEs do not regularly set cash targets for their business. The study also found that small and medium enterprises used the banks as a source of both storage and source of cash.

Setiadharma and Machali (2017) studied the effect of asset structure and firm size on firm value with capital structure as intervening variable, this study is to analyze the direct and indirect effect of asset structure and firm size on the firm value. The samples of this study are thirty four property and real estate firms registered in Indonesia Stock Exchange in the period 2010-2014. The result of this study shows that, there is a direct effect of asset structure on the firm value, there is no

indirect effect of asset structure on the firm value with capital structure as intervening variable, there is no direct effect of firm size on the firm value, there is no indirect effect of firm size on the firm value with capital structure as intervening variable. Thus, it can be concluded that capital structure as intervening variable cannot mediate the relationship between asset structure and firm size on the firm value.

Zaher (2020) impact of Financial Leverage, Size and Assets Structure on Firm Value: Evidence from Industrial Sector, Jordan; the researcher used the analytical method approach for a sample of 13 firms from the mining and extraction industry sector listed on the Amman stock exchange of the period 2010-2018. The model of simple line regression was used for testing the hypotheses of the study by using both programs of (E-views, STATA) in addition to both programs of unit root test and variance inflation factor to make sure of the data stability and no relationship between variables. The study concluded the non-existence of the impact of financial leverage on the firm value and the relationship between the financial leverage and Tobin's q scale was negative. However, there was an impact of each size and asset structure on firm value and the relationship between the natural logarithm of size and asset structure was positive with Tobin's q. The study recommends that Companies must achieve an optimal mixture of debt and equity, for long-term survival and hence the growth of the company.

Grace and Mwangi (2018) evaluates the extent of effect asset structure has on the financial performance of manufacturing firm quoted in Nairobi Stock Exchange Kenyan. The study adopted the casual research design. Panel regression analysis was employed in analyzing the panel data collected from 8 companies. The hausman effect specification test result shows that random effect is preferable to fixed effect. The random effect results shows that tangible noncurrent assets have negative insignificant effect on performance of firms. Intangible noncurrent assets have positive insignificant effect on the performance of firms. While the result of the impact of current assets shows that current assets has positive and significant effect on performance of firms. The finding of the study reveals that current assets are a driver of performance among firms in Kenya.

Mwaniki and Omagwa (2017) asset structure and financial performance: a case of firms quoted under commercial and services sector at the Nairobi securities exchange, Kenya, This study sought to determine the relationship between the asset structure and the financial performance of the firms quoted under the commercial and service sector at the NSE, Kenya. The target population by the study was the secondary data from the annual reports of the firms. The asset structure is analyzed in term of: Property, Plants and Equipment; current assets; intangible assets; and long term investments and funds, which formed the independent variables. The dependent variable of interest was the financial performance of the firms, and was measured in terms of: earning per share; return on assets; return on equity, profit margin (return on sales); and current ratio, by aid of a composite index. A census was done on the entire firms listed under this sector by the year 2014, for a five year period, 2010 to 2014. A document review guide was used to collect the secondary data from the financial statements of the firms under study. A multiple regression analysis (standard) was conducted with the aid of statistical programs. The results of the study indicate that asset structure had a significant statistical effect on the financial performance. In particular, the study found that: Property, Plants and Equipment, and long-term investments and funds have a statistically

significant effect on financial performance, while current assets and intangible assets do not have statistical significance on financial performance. This study concluded that the firms should increase the allocation of resources towards long term investments and funds, and utilize available resources in terms of the Property, Plant and Equipment effectively.

Aggarwal and Padhan (2017) studied impact of capital structure on firm value: This study examines the effect of capital structure and firm quality on firm value of selected BSE listed Indian hospitality firms over a time frame of 2001-15. Variables including firm quality measured through Altman Z score, leverage, size, profitability, tangibility, growth, liquidity along with macro variables of growth in gross domestic product and inflation are taken into consideration for examining their impact on firm value. An empirical study has been carried out through panel data techniques by applying pooled OLS, fixed effects and random effects models. The findings of the study reveal a significant relationship of firm value with firm quality, leverage, liquidity, size and economic growth. The study shows that Modigliani miller theorem of capital structure irrelevance does not hold for Indian hospitality sector. It is of practical significance for hotel owners to reassess their capital structure to improve firm quality and firm's market performance.

Ndumia and Jagongo (2022) studied a critical review of literature on asset structure and profitability of firms listed under manufacturing and allied sector at the Nairobi securities exchange, Kenya; The study sought to carry out a critical review of literature on asset structure and profitability of the manufacturing and allied firms listed in Nairobi Securities Exchange, Kenya. It was found that several studies have been done with respect to asset structure and profitability. However, these studies are characterized by various research gaps. Some of the studies were centered on other countries and not Kenya. Notably, different countries are guided by varying regulatory frameworks as such the findings of the previous study cannot be directly applicable to the Kenyan context. The study recommends that rather that focus on financial performance, profitability which is a narrow and key aspect of financial performance can be explored. Moderation effects of inflation on the relationship between asset structure and profitability can be considered while focusing on manufacturing and allied firms listed at the Nairobi Securities Exchange, Kenya.

Mawih (2014) examines the effect of asset structure on the financial performance of several listed manufacturing companies in South Africa. The study method consists of analyzing the content of the annual reports of 28 out of 70 companies (40%) for the period n2008 – 2012. The asset structure is measured by the turnover of noncurrent assets and the turnover of current assets, while financial performance is measured by profitability, return on assets (ROA) and return on equity (ROE). The general result of the study is that the structure of the assets does not have a significant impact on the profitability of the ROE. This result means that if the asset structure changes, the ROA will not change. Another result of the study indicates that only noncurrent assets have an impact on the ROE unlike the ROA. Another result of the study shows that the impact of the structure of the assets has an impact on the ROE only in the petrochemical sector.

Ubesie and Ogbonna (2012) evaluates the effect of investment on non-current assets on the performance of cement manufacturing companies in the Nigeria stock exchange. The study used

panel data collected between 2004 and 2013. The study used only tangible noncurrent assets variables like; land and buildings, plant and machinery, motor vehicles, furniture and fittings, while firm performance was proxy by return on assets. Ordinary least square was used to analyze the data collected. The study shows that non-current assets has insignificant effect on the performance of cement manufacturing companies in the Nigeria stock exchange. The result of the analysis reveals that plant and machinery contributed more to the performance of firms.

3.0 Methodology

The study adopted *ex-post facto* research design, this is because the researcher has no direct control over the variables involved and the issues investigated relates to events that have already taken place and for which a causal-comparative evaluation was carried out to analyze the objectives of the study. The study is conducted in Nigeria focusing on oil and gas firms in the Nigeria Exchange Group. The population of the study consists of all the 18 quoted oil and gas firms in the Nigeria Exchange Group. The sampling technique employed in the study is the purposive sampling technique and the researcher systematically selected Nine (9) firms out of the total population under study as the sample size. Secondary data were collected and analyzed in the form of descriptive statistics, correlation and regression analysis using EVIEW 11.

Multiple regression analysis was used to evaluate the relationship between the independent variables on the dependent variable.

Operationalization of Variables

Variables	Measurements	A Priori Expectations
Dependent variable		
Return on Assets (ROA)	Net profit/ Total assets	Olonite and Okoro (2021), Omaliko ans Okpala (2023)
Independent Variables		
Property, Plant and Equipment (PPE)	Property, plant and Equipment/sales	Mwaniki & Omagwa J, (2017)
Current Assets (CAS)	Total Current Assets/sales	Mwaniki & Omagwa J, (2017)
Financial Assets (FIS)	Longterm Investment/Funds	Mwaniki & Omagwa J, (2017)
Intangible Assets (IAS)	Intangible Assets/sales	Mwaniki & Omagwa (2017)

Source: Researcher's Concept (2023)

Model Specification

This study adapted the model from the study of Mwaniki & Omagwa J, (2017) on the Asset Structure and Financial Performance: A case of Firms Quoted Under Commercial and Service Sector at the Nairobi Securities Exchange, Kenya. The model is expressed as follows

$Y_{it} = \beta_0 + \beta_1 X_{1it} + \beta_2 X_{2it} + \beta_3 X_{3it} + \beta_4 X_{4it} + \mu$

Where

Y = Financial Performance

β_1- β_4 = the regression coefficients

X1 = property, plant and equipment

X2 = Current Assets

X3 = Intangible Assets

X4 = Long term Investment and Funds

The model was modified to suit the variables to be used. Hence the model for the study is anchored on the objective.

ROA = *f*(PPE, CAS, FIS, IAS) ----------1

This can be econometrically expressed as

$\mathbf{ROA_{it} = \beta_0 + \beta_1 PPE_{it} + \beta_2 CAS_{it} + \beta_3 FIA_{it} + \beta_4 IAS_{it} + \mu}$----------2

Equation 1 and 2 are the linear regression model used in testing the null hypotheses.

Where:

ROA = Corporate Stability

PPE = Property, Plant and Equipment

FIA = Financial Assets

CAS = Current Assets

IAS = Intangible Assets

β_1--- β_4, = are the coefficient of the regression equation

μ = Error term

i = is the cross section of firms used

t = is year (time series)

4.0 Data Presentation and Analysis

Table 1: Descriptive statistics of the model variables

	ROA	PPE	Current Assets	Financial Assets	Intangible Assets
Mean	0.029492	53355305	59615897	5111592.	5154556.
Median	0.028652	14762285	39463318	0.000000	57366.00
Maximum	1.762669	6.61E+08	4.04E+08	92795000	76277000
Minimum	-0.713574	0.000000	42435.00	0.000000	0.000000
Std. Dev.	0.224271	1.26E+08	78875480	15425570	15995923
Skewness	4.708404	3.414469	2.521927	4.107039	3.207563
Kurtosis	42.87269	14.09046	9.313618	21.18783	12.15068
Jarque-Bera	6224.465	629.0550	242.1625	1476.911	463.1292
Probability	0.000000	0.000000	0.000000	0.000000	0.000000
Sum	2.624780	4.75E+09	5.31E+09	4.55E+08	4.59E+08
Sum Sq. Dev.	4.426183	1.39E+18	5.47E+17	2.09E+16	2.25E+16
Observations	90	90	90	90	90

Source: E-Views 11

To ensure consistency, all the figures were scaled to thousands. The mean ROA of the sampled companies was 2.9492×10^{-2} while its median value was 2.8652×10^{-2}. This implies that the ROA, i.e., a measure of a company's profitability in relation to its total assets is approximately 2.9%. The maximum value of ROA was 1.762669 which suggests that some firms had net income more than total assets while the minimum value of -0.713574 suggests that some firms incurred losses during the study period. Thus, on average oil and gas companies with higher or equal to the average ROA are high ROA firms while firms with a value below the average ROA are low profitability firms. The mean of PPE (₦'000) of the sampled companies was fifty-three million three hundred fifty-five thousand three hundred five while its median value was fourteen million seven hundred sixty-two thousand two hundred eighty-five. The maximum value of PPE was six hundred sixty-one million while the minimum was nil. This, therefore, means that companies with higher or equal to the average PPE are high PPE firms while companies with a value below the average PPE are low PPE firms. In the case of current assets (₦'000), the mean value of the sampled companies was fifty-nine million six hundred fifteen thousand eight hundred ninety-seven while its median value was thirty-nine million four hundred sixty-three thousand three hundred eighteen. The maximum value was four hundred four million while the minimum was forty-two thousand four hundred thirty-five. This, therefore, means that companies with a higher or equal to 5.96×10^{7} are high current assets firms while companies with a value below 5.96×10^{7} are CAS firms.

In the case of long-term investment (₦'000), the mean value of the sampled companies was five million one hundred eleven thousand five hundred ninety-two while its median value was nil. The maximum value was ninety-two million seven hundred ninety-five thousand while the minimum

was nil. This, therefore, means that companies with a higher or equal to 5.11×10^6 are high LTI oil and gas firms while companies with a value below 5.11×10^6 have low long-term investment firms. With regards to intangible assets (₦'000), the mean value of the sampled companies was five million one hundred fifty-four thousand five hundred fifty-six while its median value was fifty-seven thousand three hundred sixty-six. The maximum value was seventy-six million two hundred seventy-seven thousand while the minimum was nil. This, therefore, means that companies with a higher or equal to 5.11×10^6 are high LTI oil and gas firms while companies with a value below 5.11×10^6 have low long-term investment firms.

4.2 Correlation Matrix

The Pearson correlation coefficient (correlation matrix) was used to examine the relationship between the variables, and the findings are shown in the table below.

Table 2: Correlation analysis of the model variables

	ROA	PPE	CAS	FIA	IAS
ROA	1	-0.06878	0.5044	0.097353	0.016755
PPE	-0.06878	1	0.665783	-0.1209	0.182167
CAS	0.5044	0.665783	1	-0.11997	0.279354
FIA	0.097353	-0.1209	-0.11997	1	-0.08234
IAS	0.016755	0.182167	0.279354	-0.08234	1

Source: E-Views 11

The ROA negatively correlated with the PPE; but, positively correlated with CAS, FIA and IAS, the above results show that there exists a *weak* correlation values with none greater than .70. In the case of PPE, we observed that there exists a positive association between PPE and CAS (i.e., 0.665783). For, FIA we observed that there exists a moderate negative association between PPE and FIA (i.e., -0.1209). The correlation between PPE and IAS showed a positive correlation. (i.e., 0.182167). The CAS negatively correlated with FIA (r=-0.11997); however, a positive correlation was observed between CAS and IAS (r=-0.11997). Lastly, the correlation between FIA and IAS showed a *moderately weak* correlation between the two variables, the strength of the relationship was -0.08234. According to the correlation matrix in Table 2, which was used to test for collinearity among the independent variables, the correlation results demonstrate that there is no strong correlation between any two independent variables. This is because all of the correlation coefficients were less than 0.80. This suggests that there are no issues with the multicollinearity between them. The Variance Inflation Factor (VIF) test is used in Section 4.3 to further verify this.

4.3 Test of Hypotheses

To test the hypotheses a fixed effects regression model was estimated since correlation analysis does not imply a cause-effect relationship. This model focuses on estimating the effect of asset composition on the stability of oil and gas firms in Nigeria.

Table 3: Multiple linear regression output for the test of hypotheses

Dependent Variable: ROA
Method: Panel Least Squares
Date: 05/20/23 Time: 12:01
Sample: 2012 2021
Periods included: 10
Cross-sections included: 9
Total panel (balanced) observations: 90

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	-0.017528	0.022543	-0.777565	0.4393
PPE	-0.036990	0.009118	-4.056796	0.0001
CAS	0.121851	0.010680	11.40935	0.0000
FIA	0.011051	0.071063	0.155510	0.8768
IAS	-0.479000	0.149079	-3.213066	0.0019

Effects Specification

Cross-section fixed (dummy variables)

R-squared	0.651320	Mean dependent var	0.030261
Adjusted R-squared	0.594777	S.D. dependent var	0.226804
S.E. of regression	0.144377	Akaike info criterion	-0.895769
Sum squared resid	1.542511	Schwarz criterion	-0.527300
Log likelihood	51.96595	Hannan-Quinn criter.	-0.747398
F-statistic	11.51909	Durbin-Watson stat	1.472738
Prob(F-statistic)	0.000000		

Source: E-Views 11

Test of Hypothesis One

Ho_1: There is no significant effect of property plant and equipment on performance of oil and gas firms in Nigeria.

At a 5% level of significance, PPE as an independent variable in the model shows a negative (i.e., -0.036990) and significant effect on ROA. Therefore, this suggests that a rise in PPE will result in a decline in ROA. Therefore, given this data, the null hypothesis is rejected and the alternative is accepted. Thus, "there is a significant effect of property plant and equipment on the performance of oil and gas firm in Nigeria".

Test of Hypothesis Two

Ho_2: There is no significant effect of current assets on the performance of oil and gas firms in Nigeria

CAS as an independent variable to ROA appears to have a positive (i.e., 0.121851) and significant influence on ROA at a 5% level of significance. This, therefore, implies that an increase in CAS

will cause an increase in ROA. This evidence, therefore, leads to a rejection of the null hypothesis and acceptance of the alternate; thus, "there is significant effect of current assets on the performance of oil and gas firm in Nigeria".

Test of Hypothesis Three

Ho_3: Financial assets have no significant effect on performance of oil and gas firms in Nigeria.

At a 5% level of significance, FIA as an independent variable in the model shows a positive non-significant (i.e., 0.011051) effect on ROA. Therefore, this suggests that a rise in FIA will result in an increase in ROA. Therefore, given this data, the null hypothesis is accepted and the alternative is rejected. Thus, "financial assets have no significant effect on the performance of oil and gas firms in Nigeria".

Test of Hypothesis Four

Ho_4: Intangible assets have no significant effect on the performance of oil and gas firms in Nigeria.

IAS as an independent variable to ROA appears to have a negative (i.e., -0.479000) and significant influence on ROA at a 5% level of significance. This, therefore, implies that an increase in IAS will cause a decrease in ROA. This evidence, therefore, leads to a rejection of the null hypothesis and acceptance of the alternate; thus, "intangible assets have significant effect on the performance of oil and gas firm in Nigeria".

4.4 Discussion of Findings

Discussion of Hypothesis One

There is a significant and negative relationship between property, plant and equipment and the performance of oil and gas firms in Nigeria. Likewise, Setiadharma and Machali (2017), used a sample of thirty-four property and real estate firms registered in Indonesia Stock Exchange in the period 2010-2014. The result of this study shows that there is a direct effect of asset structure on the firm value. Mwaniki and Omagwa (2017), examined asset structure and financial performance of the commercial and services sector at the Nairobi Securities Exchange, Kenya. The results of the study indicate that Property, Plants and Equipment have a statistically significant effect on financial performance. However, the negative coefficient is not in alignment with the study by Temuhale and Ighoroje (2021), using a sample of quoted industrial goods firms in Nigeria; from 2011 to 2019 finds a positive insignificant effect of property, plant, and equipment (PPE) on return on asset (ROA).

Ubesie and Ogbonna (2012) evaluate the effect of investment on non-current assets on the performance of cement manufacturing companies in the Nigeria stock exchange. The study used panel data collected between 2004 and 2013. The OLS used to analyze the data shows that plant and machinery contributed more to the performance of firms.

Discussion of Hypothesis Two

There is a significant and positive relationship between current assets and the performance of oil and gas firms in Nigeria. Similarly, Olonite and Okoro (2021) on the impact of assets structure on

the financial performance of quoted construction firms in Nigeria; using data from 2012 to 2018 found that fixed assets have a positive and significant impact on return on asset. Nangih and Emeka (2021) evaluated how the asset mix affected the financial performance of Nigerian consumer products companies. Data was taken from the annual reports for seven years between 2013 and 2019. The data were analysed using the multiple regression analytical technique. The study's conclusions showed that both current and intangible assets have a positive and considerable impact on ROA. Zaher (2020) using industrial goods firms for the period 2010-2018 tested using simple linear regression concludes there is an impact of each asset structure on firm value and the relationship between the natural logarithm of size and asset structure was positive with Tobin's q. Likewise, Ullah and Ahmad (2019) used nine years of data from six pharmaceutical businesses listed on the Karachi Stock Exchange from 2010 to 2018 to examine the effects of current and non-current assets on the profitability of pharmaceutical companies in Pakistan. Regression analysis and an ex-post facto research strategy were used in the study. The results of the study showed a positive influence and a strong association between current asset investments and the ROA of pharmaceutical companies. Grace and Mwangi (2018) evaluates the extent of effect asset structure has on the financial performance of manufacturing firm quoted in the Nairobi Stock Exchange Kenyan. The study adopted the casual research design. Panel regression analysis was employed in analyzing the panel data collected from 8 companies. The result shows that current assets have a positive and significant effect on the performance of firms. Omondi (2018), in Kenya from 17 firms cutting across the commercial and service sector and energy and petroleum sectors for the time frame 2011 to 2017 finds that the current asset was established to exert a significant effect on the financial performance of listed firms at NSE.

The findings are not supported by the study by Muli et al. (2022) on the impact of asset structure on the financial performance of manufacturing enterprises in Kenya's building and construction sector. The study covered 5 years from 2016 to 2021. The study employed a fixed-effects panel regression model. According to the findings, current asset structure (CAS), as indicated by the current asset to total assets ratio, has a negative impact on financial performance as indicated by return on equity and net profit margin. Ngunya and Mwangi (2018), on a sample of listed manufacturing and allied companies in Kenya. The random effect analysis showed that assets had a negative insignificant effect on financial performance. Mwaniki and Omagwa (2017), in Kenya, find that current assets and intangible assets do not have statistical significance on financial performance; while, Mawih (2014), using a sample of listed manufacturing companies in the Muscat Securities Market (MSM) from the period 2008 to 2012 found that asset structure had insignificant effects on profitability (ROE).

Discussion of Hypothesis Three

Financial assets have a positive non-significant relationship with the performance of oil and gas firms in Nigeria. Nyamasege, Okibo, Nyang'au, Sang'ania, Omosa, and Momanyi's (2014), study on asset structure and the firm value findings confirmed that the asset structure determines the firm's value to a high extent. Firms did not seem to consider appropriately all elements before making decisions on the composition and alteration of their capital structures thus affecting their values negatively. Marian and Ikpor (2017) investigated how asset investments affected the financial success of a few Nigerian banks. The study employed an ex-post factor research design.

The eight (8) banks were chosen based on how asset investments affected the financial success of the chosen banks in Nigeria. Multiple regression techniques were used to analyse the data and the findings indicate a weak negative correlation between asset investment and ROA.

Discussion of Hypothesis Four

Intangible assets have a negative and significant relationship with the performance of oil and gas firms in Nigeria. IAs can increase corporate performance from a financial perspective, according to consistent findings in previous literature (Ferdaous & Rahman, 2019). The findings are consistent with the study by Okoye, Ofor, and Manukaji (2019), on quoted companies in Nigeria; using time series data from 2008 to 2017. They found that intangible assets have a significant effect on the performance of quoted companies in Nigeria. Saleh (2018), studied the impacts of tangible and intangible asset investment on the value of manufacturing companies listed on the Indonesia stock exchange using a sample of 51 companies during the period 2012-2016. The result of the analysis showed that tangible asset variables have a significant effect on firm value.

This is contrary to studies by The study by Iltaş and Demirgüneş (2020), using time series evidence of Turkish manufacturing firms find that asset tangibility, financial leverage, liquidity and operating efficiency have significant and positive effects on financial performance till (and including) the break date. However, from this break date on, they affect financial performance negatively. Ngunya and Mwangi (2018) in Kenya, which analyzed asset structure and financial performance of listed manufacturing and allied companies found that intangible fixed assets had a positive insignificant effect on performance. However, Andonova and Ruíz-Pava (2016) investigated 831 companies in AFF sectors to analyse the role of IAs, but they did not draw any conclusions particular to those industries despite their suggestion that IAs are crucial for business success in the setting of developing nations. Grace and Mwangi (2018) evaluates the extent of effect asset structure has on the financial performance of manufacturing firm quoted in the Nairobi Stock Exchange Kenyan. The study adopted the casual research design. Panel regression analysis was employed in analyzing the panel data collected from 8 companies. The results show that intangible noncurrent assets have a positive insignificant effect on the performance of firms.

5.0 Conclusion and Recommendations

This study concludes that asset structure affects the firm performance of oil and gas firms in Nigeria. This study draws upon two theoretical stances: the resource-based theory (RBV) and the pecking order theory (POT). The RBV is founded on the idea that competitiveness in the changing business environment depends on both tangible and intangible resources, as well as the capacity to successfully coordinate such assets or production inputs. The POT comes in second. This theory is based on how businesses make financial and investment decisions when they are exposed to knowledge that is not available to them. The study employs data from oil and gas firms from 2012 to 2021 to analyse the effect of asset structure on the ROA of quoted oil and gas firms in Nigeria. The data were examined using descriptive statistics such as the mean, median, maximum, and minimum, and the multiple regression model was used to test the hypotheses. The study specifically finds a significant relationship between property plant and equipment and the performance of oil and gas firms; a significant relationship between current assets and the

performance of oil and gas firms and intangible assets have a significant relationship with the performance of oil and gas firms in Nigeria. However, the proxy for financial assets showed no significant relationship with the performance of oil and gas firms in Nigeria.

The study makes the following recommendations for managers, shareholders and policymakers in the Nigerian context as follows:

1. Managers should avoid diverting cash for other alternative investment opportunities, by managing investments in real estate, manufacturing facilities, and equipment well. This is because PPE acquisitions/additions reduce the returns available to shareholders; thus, PPE should be purchased after careful capital budgeting analysis and NPV computations. Managers may think about obtaining debt financing to fund their investments and also provide shareholders with minimal returns despite such investments to promote shareholder satisfaction.
2. Managers should be conscientious of investments in current assets. This is because of its crucial nature to a company's profitability and liquidity. These include such as cash, accounts receivable, and inventories, etc. which do not don't pay interest. A company cannot function without sufficient current assets. The positive association between CAS and ROA, suggests that it plays a considerable impact on the profitability of listed oil and gas firms and thus should be managed properly. The idea should be to meet working capital or liquidity constraints but should not be held in excess. However, managers should consider the risks, such as economic risk and market risk as the value of current assets is more volatile in nature.
3. Shareholders should constantly monitor investment in financial assets because this study's empirical findings emphatically supported the notion that such investment has a positive but insignificant coefficient as shown by the numerical coefficient. These led to the conclusion that financial assets had a very small impact on the financial success of oil and gas companies in Nigeria. The performance of oil and gas companies in Nigeria improves with increasing financial assets. Shareholders should monitor and assess the return on assets index especially when managers spend more in investment in financial assets because such speculative considerations might not result in the maximisation of shareholders' value.
4. Shareholders should constantly monitor firms carrying intangible assets, as this may not be indicative of profitability but rather a way to cook up the books. This is because intangible assets can be artificially inflated in the case of its overstatement.

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