

INVENTORY MANAGEMENT TECHNIQUES AND FINANCIAL PERFORMANCE OF LISTED OIL AND GAS COMPANIES IN NIGERIA**Dr. Promise I. Wokeh and Dr. Collins O. Nmehielle****Accounting Department, Ignatius Ajuru University of Education, Port Harcourt, Rivers State, Nigeria***Email: promisingfredd@yahoo.com, collins.nmehielle@iaue.edu.ng***ABSTRACT**

This study investigated the effect of inventory management techniques on financial performance of listed Oil and Gas Companies in Nigeria. The specific objectives were to: ascertain the effect of inventory turnover on return on assets, determine the effect of inventory conversion period on return on assets, two research questions and two hypotheses guided the study. The study conceptual framework guided the review of related literature. The Researcher used ex-post facto research design. Targeted population comprised of ten listed Oil and Gas Companies in Nigeria which were sampled to eight (8) using purposive Judgmental sampling technique. Secondary data were used and it was sourced from annual reports and statement of accounts of the selected companies between 2014 and 2022. Descriptive statistics and ordinary least Square regression were employed. The result of the study showed that there is a significant effect of inventory turnover on return on assets, there is an insignificant effect of inventory conversion period on return on assets. The study generally concluded that, there is a positive and insignificant effect of inventory management techniques on financial performance of listed Oil and Gas Companies in Nigeria under the period of study between 2014 and 2022. It was recommended amongst others that Oil and Gas Companies should develop a policy framework to determine inventory turnover against its return on assets. This is because the study affirmed that inventory turnover has positive and significant effect on return on assets.

INTRODUCTION

The major concern of any organisation in this modern and competitive world (both in the private and public sector) is to remain financially sustainable by optimising the use of resources (Okeke et al., 2022). Hence, to overcome these competitors in the local and global market, Inventories is among the most important assets of companies, especially oil and gas companies (Newstyle & Opuene, 2022). Swaleh and Were (2014) asserted that the industrial revolution of the 21st century changed the inventory management process and practices and this is because efficiency, effectiveness and mass production became the main focus of businesses. In view of attaining financial sustainability and stability, many oil and gas companies globally have embraced modern inventory management techniques and systems in their production process.

Inventories are current assets that form a significant part of the assets of a firm which has a resale value that earn profit to the firm after cost expenses (Major et al., 2022; Rodrigo et al, 2020). Obara (2014) posited that the cost of the inventory becomes an expense when business earns revenue by selling it to the customers. Therefore, proper management of this inventory will show financial stronghold and less-performing financial transactions. Okpara and Ifurueze (2020) opined that financial performance shows both the financial strongholds and less-performing areas of a firm by expressing associations between the statement of financial position items and the income statement items. Therefore, there is a significant task to an inventory manager to decide the right quantity of inventory to keep and estimate the appropriate time to reorder those inventories to eliminate issues such as financial stronghold, losses and stock outs of inventories. It is important that managers should have in mind about the aim of satisfying customers need and keeping inventory costs at a minimum level. The precautionary motive is applied only when future demand is uncertain while the speculative motive for holding inventory is to enable firms to purchase larger quantity of material

than normal quantity required for anticipated abnormal profits (Fararishah et al., 2018; Rodrigo et al., 2020; Eze & Adamma, 2021; Newstyle & Opuene, 2022; Major et al., 2022 and Okeke et al., 2022).

In management literature, the term inventory management has been used interchangeably with inventory control. It can be defined as the process of monitoring firms' inflow and outflow of inventories and at the same time preventing inventory level from being too high (overstock) and too low (understock) (Tarurhor & Osazevbaru, 2021). In order to manage inventory effectually, managers give room to trade-off between 'understocking and overstocking'. For instance, it is the responsibility of finance managers to guard against overstock of inventories by minimizing or reducing the level of inventories. However, this may lead to inventory shortages that contradict the marketing manager's efforts to always have sufficient stocks to meet the demands of the final consumers. Arising from the above, Several policies and strategies such as the National Industrial Policy and the National Export Strategy have been developed to accelerate industrial and export growth. Furthermore, empirical findings on the relationship between inventory management and firm financial performance are mixed. Whereas some postulated a positive relationship and any increase in stock turnover period will increase the firm's revenues (Golas & Bieniasz, 2016; Okeke et al., 2022). Hashed and Shaik (2022) examined the relationship between inventory management efficiency and financial performance in Saudi Arabian companies. The results show a positive and significant association between inventory management and firms' financial growth measured in terms of Return on Assets (ROA). Further, the study reports a positive and significant association between the inventory conversion period and inventory turnover (ITR). Yankah et al. (2022) result showed that there is a significant relationship between inventory management and the performance of listed manufacturing firms in Ghana. Alhassana and Muhammado (2022) examined the impact of inventory management on the financial performance of Nigerian listed manufacturing companies in Nigeria. The study revealed that inventory control has a significant impact on the financial performance of quoted industrial companies in Nigeria. Okeke et al. (2022) findings indicated that inventory turnover has a significant positive effect on financial sustainability. The conclusion of the study was that inventory management influences financial sustainability significantly.

Most of the studies focused on listed manufacturing firms in Nigeria. To the best of my knowledge, it was only Joseph et al. (2019) and Newstyle and Opuene (2022) that carried out studies in oil and gas companies. Hence, this study sought to investigate the effect of inventory management techniques on financial performance of listed oil and gas companies in Nigeria.

Statement of the Problem

Consequently, the company's operating environment typically influences the adoption of good inventory management techniques to maintain pipelines and tank installation to achieve high and long-term financial success. Most firms in developed economies throughout the world amongst the oil producing countries, such as the United States, Russia, Saudi Arabia, Canada, Iraq, China, United Arab Emirates, Brazil, Kuwait, Norway, Kazakhstan, Mexico, Nigeria, Qatar, Libya, Algeria, Angola and amongst others, operate in a more competitive, organized, and accommodating business climate than companies in Nigeria and Africa as wholly. The organized business environment, combined with the competitive nature of firms in the industrialized world, allows them to properly manage their inventories since the environment supports pipelines and tank installation safety. However, in Africa, particularly in Nigeria, the use of inventory management techniques to achieve high financial performance is still lacking, as pipelines maintenance and control are frequently hampered by poor competition among companies, pipelines vandalization, oil thief, corruption, a lack of trust between OPEC and Federal Government of Nigeria.

Due to these problems, several studies have been done to show the relationship between inventory management techniques and financial performance. Shin et al. (2016) investigated the impact of effective inventory management on firm profitability in U.S. manufacturing companies. They found that the firms that were maintaining lower levels of inventory experience growth in profits. Mbula et al. (2016) investigated the moderation impact of the political environment between profitability and different practices of inventory management in the venture capital firms funded by the Kenyan government using quantitative analysis. They reported that the Kenyan government-funded firms have optimum inventory management practices. Adekoya and Olumayokun (2020) studied the effect of inventory management techniques on the performance of Nigerian hospitality firms using longitudinal research. They reported a positive effect of inventory management methods on performance, hence reporting an increase in EPS due to good inventory management practice.

In other hand, Newstyle and Opuene (2022) investigated the relationship between inventory management techniques and financial performance of listed Oil and Gas Companies in Nigeria. The result from the test indicated that there is a negative and insignificant relationship between inventory turnover and profit after tax; there is a negative and insignificant relationship between operating cycle and profit after tax; there is a negative and insignificant between inventory conversion period and profit after tax. In Nigeria, not enough researches have been carried out by scholars on the relationship between inventory management techniques and financial performance of Oil and Gas Companies. Some Scholars looked at the effect of Waste Management Expenditure on the Profitability of Oil and Gas Companies in Nigeria. Others have looked at the effect of Security and Militancy Costs of the Performance of Oil and Gas Companies in Nigeria. This study is hereby to fill the gap by investigating the effect of Inventory management techniques on financial performance of listed oil and gas companies in Nigeria.

Conceptual Framework

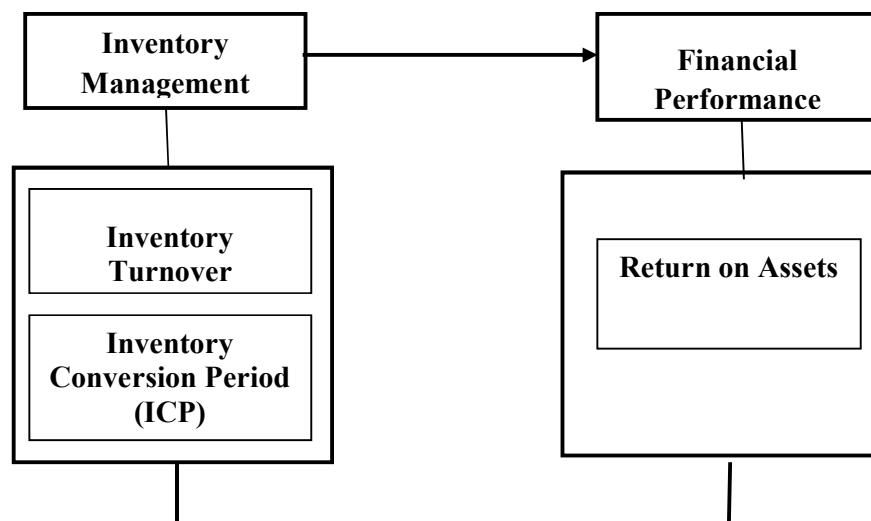


Figure 1.1 Conceptual framework showing the dimensions and measures of inventory management techniques and financial performance of listed Oil and Gas Companies in Nigeria

Sources: Folajimi et al., (2020); Rodrigo et al (2020); Hashed and Shaik (2022); Newstyle and Opuene (2022)

Aim and Objectives of the Study

The aim of this study was to determine the effect of inventory management techniques on financial performance of listed oil and Gas Companies in Nigeria. The Specific objective was to;

- i. ascertain the effect of inventory turnover on return on assets of listed Oil and Gas Companies in Nigeria,
- ii. determine the effect of inventory conversion period on return on assets of listed Oil and Gas Companies in Nigeria,

Research Questions

The following research questions were addressed in the study;

- i. What is the effect of inventory turnover on return on assets of listed Oil and Gas Companies in Nigeria?
- ii. What is the effect of inventory conversion period on return on assets of listed Oil and Gas Companies in Nigeria?

Hypotheses

The following hypotheses were tested in order to answer the stated questions.

- H₀₁:** The effect of inventory turnover on return on assets of listed oil and Gas Companies in Nigeria is not significant,
- H₀₂:** The effect of inventory conversion period on return on assets of listed oil and Gas Companies in Nigeria is not significant,

Conceptual Review

Inventory Management Techniques

Inventory is defined as the collection of physical commodities currently owned by an individual company. Inventory management helps the persons responsible to make appropriate decisions in determining the requirements of inventory in order to make purchases in appropriate quantities to support production and distribution (Kanekiyo & Agata, 2019). According to Torky (2020), inventory is defined as the resources that are stored in order to enable the existing and upcoming needs of the company. Inventory can be in the form of raw materials, finished products, and works in progress that are held by a manufacturer, retailer, and supplier in any given supply chain. Raw materials are the items that are used to create finished products through the manufacturing process. However, a raw material at one firm can be considered a finished product by another firm. The next inventory type is work-in-progress (WIP), which consists of materials still under processing, including raw materials and other items that are still going through the process of being manufactured. Next are the finished goods, which entail items that have completed the processing stage and are ready to be sold to clients. Munyao et al. (2015), inventory refers to a firm's physical, tangible commodities that are inactive, have financial worth, and are stored in a variety of types in its possession awaiting packaging, sorting, conversion, usage, or sale at a later point. Conversely, Musau et al. (2017) describe management as the organization of a person's or entity's operations to accomplish set targets. When the two meanings are combined, stock control appears to suggest the administration and synchronization of a firm's latent physical commodities with financial worth awaiting packaging, sorting, transition, usage, or selling at a later period.

According to Atnafu and Balda (2018), inventory management can be defined as framework used in firms by controlling its interest in inventory. It includes the recording and observant of stock level, estimating future request, and settling on when and how to arrange (Atnafu & Balda, 2018). Godana and Ngugi (2014) stated that inventory management refers to all or any action involved in developing and handling the inventory levels of raw materials, semi-finished materials and finished good so that sufficient supplies are available and the costs of over or under stocks are low. Deveshwar and Modi (2013) defined inventory management techniques as the process used by a company in organizing products, placing goods in a warehouse, and ensuring that the required goods are supplied while also minimizing costs as much as possible.

Inventory Turnover

According to Rao and Rao (2009), inventory turnover has to do with the number of times that an inventory turns over or cycles through the firm in a year. It measures the speed goods moves through and replenished by the system (Tipparat & Sawat, 2013). Inventory turnover measures the speed at which inventories are moving through the warehouse of the company and measures the flow (liquidity) of a main part of its current assets (Marijan et al, 2015). Namagembe and Munene (2016) defined inventory turnover as the number of times inventory is converted into cash. It is a ratio showing how many times a company's inventory is sold and replaced over a one-year period. Furthermore, inventory turnover is the speed at which the trading company sells its inventories or how much turnover the average inventory generates in one year. Moridipour and Mousavi (2014) explained that proper inventory turnover is in maintaining optimum inventory and proper marketing to sell inventory and in time order.

Inventory Conversion Period

Inventory conversion period reports about the average time to convert total inventory into sales (Ogbo et al, 2014). The inventory conversion period is the time required to obtain materials for a product, manufacture it, and sell it. The inventory conversion period is essentially the time period during which a company must invest cash while it converts material into a sale (Ogbodo et al, 2017). Cherutich and Anthony (2020) recognized inventory conversion period as a measuring tool that informs a firm the period taken in days from the date of acquiring new inventory through purchase or manufacturing, to the date when the product is sold to a customer. Sitienei and Memba (2015) believed that the capability of a firm to convert its inventory to sales within a short period enhances its financial performance. They further argued that optimum inventory level of a firm is achieved when there is growth in sales that result in an upward trend of profit. Inventory turnover ratio was utilized to measure inventory conversion period by dividing the firm's inventory on the statement of financial position sheet by the average sales of a given financial period.

The inventory conversion period ratio is often interpreted as a measure of the number of times that the company sold its inventory during the year. When interpreting inventory conversion period, it must be kept in mind that less period is better for the organization or business as it indicates that total inventory is converted into sales in a less time and there is no need to worry about the overstocking and obsolesce of products (Edwards, 2009). Inventory conversion period is directly related to the cash conversion cycle. This means that if an inventory takes a long time to end up into sales it will increase the time to complete the cash conversion cycle. (Ogbo et al, 2014).

Financial Performance

The subject of financial performance has received significant attention from scholars in the various areas of business and strategic management. Financial Performance is a subjective measure of how well a company can use assets from its primary business location and generate revenues (Newstyle & Opuene, 2022). The term is used as a general measure and has also been the primary concern of business practitioners in all types of organizations since financial performance has implications to organization's health and ultimately its survival. High performance reflects management effectiveness and efficiency in making use of company's resources and this in turn contributes to the country's economy at large (Owuor et al, 2021). Financial performance can be described as a measurement of how well a firm uses its assets from its primary model or business and general revenue. The term is also used as general measure of firm's overall financial health over a given period of time. The business directory defines financial performance as measuring results of a firm's policies and operations in monetary terms and these results are reflected in the firm's return on investment, return on assets, among others. Dogan (2013) investigating the effect of firm size and firm performance totally ignored other potential firm characteristics that had an effect on firm financial performance like investment strategy. Waweru (2013) investigated the relationship

between board size and board performance further ignoring investment strategy which is an important element.

Return on Asset

Return on assets (ROA) is an indicator of how profitable a company is relative to its total assets. ROA gives a manager, investor, or analyst an idea as to how efficient a company's management is at using its assets to generate earnings. Return on assets is displayed as a percentage (Bashari & Mohammed, 2019). Return on Assets (ROA) is an indicator of how well a company utilizes its assets, by determining how profitable a company is relative to its total assets, ROA is best used when comparing similar companies or comparing a company to its previous performance, ROA takes into account a company's debt, unlike other metrics, such as Return on Equity (ROE). Return on assets (ROA), in basic terms, explains what earnings were generated from invested capital (assets). ROA for public companies can be different from one company to another dependent on the industry. This is why when using ROA as a comparative measure, it is best to compare it against a company's previous ROA numbers or against a similar company's ROA. The ROA figure gives investors an idea of how effective the company is in converting the money it invests into net income. The higher the ROA number, the better, because the company is earning more money on less investment. ROA is most useful for comparing companies in the same industry, as different industries use assets differently (Bashari & Mohammed, 2019). Murekefu and Ouma (2012) stated that return on assets is a financial ratio that shows the percentage of profit a company earns in relation to its overall resources. It is commonly defined as net income divided by total assets. Net income is derived from the income statement of the company and is the profit after taxes.

Transaction Cost Economic Theory

The theory was formulated by Williamson (1975) and Coase (1937) who stated that firms can allocate resources more efficiently than the market (A bargaining system). The theory states that the primary function of the firm is to lower the costs and understanding them will be beneficial to firms to expand thereby incorporating other activities. The theory makes a reference to the transaction as the standard unit by which it is evaluated and argues that reducing transactional cost will be essential in examining companies.

The theory can thus be knowing the limitations existing between firms and the market and an arrangement of company transaction. In determining the maximum amount of inventory a balance between the costs and benefits associated with a certain level of inventory should be determined. Ordering costs and carrying costs are included in the costs associated with holding inventory. Ordering costs related to purchases of inventory, that comprise of costs of preparing a purchase form, receiving, examining and registering goods accepted (Pandey, 2010).

Contrarily, the carrying costs of inventory include costs of maintaining the inventory and arise due to the storage of costs of the inventory together with its opportunity costs. Several reasons exist for high and low amounts of inventory which depends on the activities of a business. A crucial reason for managing inventory is the costs associated with it as described in the theory of transaction cost economics (Emery & Marques, 2011).

The theory relates to this study since it recognizes that companies need to reduce costs to improve their performance and this can be done by lowering the level of inventory held.

Empirical Review

Newstyle and Opuene (2022) investigated the relationship between inventory management techniques and financial performance of listed Oil and Gas Companies in Nigeria. The study used ex-post facto research design. Targeted population comprised of ten listed Oil and Gas Companies in Nigeria which were sampled to eight (8) using purposive (Judgmental) sampling technique.

Secondary data were used and it was sourced from annual reports and statement of accounts of the selected companies between 2013 and 2020. Descriptive statistics, correlation analysis and ordinary least Square regression were employed with the aid of Microsoft Excel, SPSS 25 and E-View 10. The result of the study showed that there is a negative and insignificant relationship between inventory turnover and profit after tax; there is a negative and insignificant relationship between operating cycle and profit after tax; there is a negative and insignificant between inventory conversion period and profit after tax; firm size has negative and significant relationship with inventory management techniques but has positive and significant relationship with financial performance; and finally, operational efficiency has positive and significant relationship between with inventory management techniques and financial performance. It was recommended amongst others that Firms should evaluate operating cycle when planning to sell and replacing inventories because this study result revealed that it has negative and insignificant relationship with profit after tax.

Yankah et al (2022) investigated how inventory management affected the performance of manufacturing enterprises in the Kumasi Metropolis. In addition, the research used both descriptive as well as explanatory research approaches. The research demographic included all of the manufacturing companies in Ghana's Kumasi Metropolis, and the target demographic included all of the staff members who work in essential departments of the manufacturing businesses sited throughout the Assembly. The total population is 62. The sample size was determined using the Yamane sample size determination formula in the study. Because the population and location of manufacturing companies were available, probability sampling was utilized in this investigation, with a sample size of 54. According to the research, a one-unit gain in inventory management leads to a 20.3 percent, 31.9 percent, and 21 percent rise in marketplace efficiency, financial results, as well as client satisfaction, respectively. Ultimately, the research shows that stock management is a factor in the success of manufacturing companies. As a result, it is advised that optimum stock management methods be implemented in order to improve the operation of industrial enterprises in Ghana's Kumasi Metropolis.

Hashed and Shaik (2022) examined the relationship between inventory management efficiency and financial performance in Saudi Arabian companies. The study collected data from the companies listed on Tadawul (a Saudi Arabian stock exchange) during the period starting from 2016 and ending in 2020. The study uses pooled regression model by incorporating Return on Assets (ROA) and Inventory Turnover Ratio (ITR) as a performance measurement variable and inventory conversion period as an inventory management variable to report the results. The results show a positive and significant association between inventory management and firms' financial growth measured in terms of Return on Assets (ROA). Further, the study reports a positive and significant association between the inventory conversion period and inventory turnover (ITR). This shows that managing inventory efficiently shall positively impact the firm's performance. The other variables, such as debt ratio and gross profit, are positively related to ROA and negatively correlated with ITR. The firm growth is positively associated with both the dependent variables. The results suggest that the management of inventory in Saudi Arabian firms is efficient. Further, the firm size is positively associated

Emmanuel et al. (2022) accessed inventory management and firms performance of listed manufacturing firms in Nigeria. The study population was 40 manufacturing firms listed for the period of 2010 to 2020 on the Nigerian stock exchange market. A total of 33 firms were found useful in the study which represent sample size of the study. Dataset used were obtained from the Machame Ratio database compiled by Talk Data Associates. A panel ordinary least square regression and structural equation model were used for analyses in the study. The findings showed that inventory management proxied by inventory turnover ratio and inventory conversion period do not influence manufacturing firms' performance in Nigeria. In addition, despite the high and positive impact of cost of capital on firms' performance, does not exhibit a moderating effect between inventory management and firms' performance of manufacturing firms in Nigeria. It was however

recommended that government should discourage the importation of substitute locally manufactured goods.

Mishra et al. (2021) explored blood inventory management practices at the blood bank of an institute of national importance in India. The technicians of the blood bank were interviewed on the practices they followed on blood inventory management and records were reviewed where required. Finding indicated that simple rule of thumb practices, the experience of staff, training, clear policy on stock keeping and allocation, daily stock review, record-keeping, monthly performance review, automation, adoption of information system, regular communications, and leadership emerged as factors contributing to inventory management. The study concluded that blood bank follows simple procedures and relies on the experience of its staff to manage its inventory. Other measures like regular preventive maintenance of equipment, robust blood bank information system, communication with stakeholders, and effective leadership were found to contribute indirectly to inventory management practices.

Akinlabi (2021) examined effect of inventory management practices on operational performance of selected flour mills companies in Nigeria. The study adopted cross-sectional survey research design. The target population comprised 2,237 staff of the selected flour mills companies. A stratified random sampling technique was used to select the sample size of 776. A structured self-administered survey questionnaire was adapted, validated and used for collecting data for the study. Data were analyzed using descriptive and inferential (Pearson Product Moment Correlation and Regression Analysis) statistics. Finding revealed that automated inventory system was found to be positively and significantly related to operational performance. Inventory shrinkage was found to be negatively and significantly related operational performance. Inventory investment was found to be positively and significantly related to operational performance. Inventory record accuracy was found to be positively and significantly related to operational performance. Inventory turnover was found to be positively and significantly related to operational performance. The study concluded that inventory management practices significantly influenced operational performance of flour mills companies in Nigeria. It recommended that the companies should ensure that stocks were sufficient to meet production requirements and customer demands at all times and avoid holding unnecessary surplus stocks that might increase holding costs and thus ensure enhanced customer satisfaction.

METHODOLOGY

The study adopted ex-post facto research design based on the fact that the study relies on historical accounting data obtained from annual reports and accounts of the selected firms. This design seeks to identify antecedents of a present situation. The targeted population of this study consisted of ten (10) Oil and Gas Companies listed on the floor of the Nigerian Exchange Group (NGX) and the time frame considered for this study was 2014-2022 for the purpose of secondary data collection. This study used Judgmental sampling technique, the sample is chosen purely on the basis of convenience where (8) listed Oil and Gas Companies were chosen for analysis purposes. This study adopted descriptive statistics and Ordinary Least Square (OLS) multiple regression. Descriptive statistics was used to ascertain the central tendency of each of the variables of the study. Unit root test were to check the stationarity of the variables.

Model Specification

In order to investigate the relationship between inventory management techniques and financial performance of listed oil and gas companies in Nigeria from (2013 to 2021), we develop the Multiple Linear Regression analysis using (Microsoft Excel and SPSS 25). In line with the study objective and operational framework developed in chapter two, the required functional relationship to test the developed hypotheses is presented as follows:

Model I: Return on Asset (ROA) Model

$$ROA = f(\text{INVTUR}, \text{ICP}) \dots\dots\dots 1$$

This can be written in Ordinary Least Square (OLS) form as:

$$ROA_{it} = a_0 + a_1 \text{INVTUR}_{it} + a_2 \text{ICP}_{it} + U_t \dots\dots\dots 2$$

$a_1 > 0; a_2 > 0$

Where: ROA = Return on asset, as proxy for financial performance

INVTUR = inventory turnover as proxy for Inventory Management Techniques

ICP = inventory conversion period as proxy for Inventory Management Techniques

t = time period under study

a_0 = constant

a_1 - a_2 = parameter or coefficient of explanatory variable

u = error term

Empirical Results and Discussion**Analysis of Descriptive Statistics****Descriptive Statistics of the Variables Under Study**

	N	Minimum	Maximum	Mean	Std. Deviation	Skewness		Kurtosis	
	Statistic	Statistic	Statistic	Statistic	Statistic	Statistic	Std. Error	Statistic	Std. Error
INVTUR	72	.00	38.80	16.2467	50.10624	6.176	.283	42.416	.559
ICP	72	.00	507.91	41.4459	70.26187	4.859	.283	28.462	.559
ROA	72	-.56	1.51	.0434	.21499	4.056	.283	31.969	.559
Valid N (listwise)	72								

Source: SPSS Output (2023)

The results in above shows the descriptive statistics of inventory turnover (INVTUR) and inventory conversion period (ICP) as a dimensions for inventory management techniques. The results indicated that, the two dimensions of inventory management techniques (INVTUR and ICP) had a positive growth rate between the Minimum (0.00 and 0.00) to Maximum (38.80 and 507.91) which implies that oil and gas companies in Nigeria has a growing rate for inventory management techniques in term of inventory turnover (INVTUR) and inventory conversion period (ICP). The skewness and kurtosis statistics values above provide useful information about the symmetry of the probability distribution of inventory turnover (INVTUR) and inventory conversion period (ICP) data set indicated a positive skewness values of 6.176 and 4.859 which implies that they have a long right tail. The positive kurtosis values 42.416 and 28.462 imply that, the extent of flatness of the distribution is greater (>) than the normal curve 3 and this implies that inventory turnover (INVTUR) and inventory conversion period (ICP) are normally distributed.

Furthermore, the results above indicated the descriptive statistics of return on assets (ROA) as measure for financial performance represented the controlling variable in the study. The results indicated that, return on assets (ROA) had a positive growth rate between the Minimum (-0.56) to Maximum (1.51) which implies that oil and gas companies in Nigeria has a negative growing rate for financial performance in term of return on assets (ROA). The skewness and kurtosis statistics values above provide useful information about the symmetry of the probability distribution of return on assets (ROA) indicated a positive skewness values of 4.056 which implies that they have a long right tail. The positive kurtosis values 31.969, imply that, the extent of flatness of the distribution is greater (>) than the normal curve 3 and this implies that return on assets (ROA) is normally distributed

Diagnostic Test**Multicollinearity Test Coefficients^a**

Model	Unstandardized Coefficients		Sta. Coefficient s	t	Sig.	Collinearity Statistics	
	B	Std. Error	Beta			Tolerance	VIF
1	(Constant)	.054	.033		1.646	.104	
	INVTUR	2.854E-007	.000	.066	.553	.582	.971
	ICP	-6.006E-005	.000	-.020	-.163	.871	.966

a. Dependent Variable: ROA

Source: SPSS Output (2023)

The table above presents the diagnostic test using multicollinearity test of variance inflation factors has a criteria for decision. The result indicate that all the variables VIF values is less than 10 VIF criteria and this applies that there is no multicollinearity presence amongst the variables.

Multivariate (Regression) Analysis**Testing of Hypotheses in Model 1****Model Summary One**

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Durbin-Watson
1	.658 ^a	.433	.391	.23479	1.576

a. Predictors: (Constant), INVTUR, ICP

b. Dependent Variable: ROA

Source: SPSS Output (2023)

In order to answer the research questions, a standard multiple regression analysis was conducted using return on assets (ROA) as the dependent variable, two independence variable, inventory turnover (INVTUR) and inventory conversion period (ICP)

Adjusted R squared is coefficient of determination which tells us the variation in the dependent variables due to change in the independent variables. From the findings in the above table the value of adjusted R squared is 0.433 and indicates that there was variation of 43.3% on return on assets (financial performance) of oil and gas companies in Nigeria due to changes in inventory turnover (INVTUR) and inventory conversion period (ICP) at 95% confidence interval. This shows the significant that 43.3% of the variations in the return on assets (ROA) (financial performance) of oil and gas companies in Nigeria are accounted for by the variations in the independent variables and the remaining 56.7% are accounted by other factors contained in the standard error. The Durbin Watson statistic value of 1.576 following the rule of thumb indicates that there is no serial correlation present in the model, hence, there is no need for higher order autocorrelation tests.

Regression ANOVA of Model One

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	.062	3	.016	5.080	.001 ^b
	Residual	.291	68	.003		
	Total	.353	71			

a. Dependent Variable: ROA

b. Predictors: (Constant), INVTUR, ICP

Source: SPSS Output (2023)

From the ANOVA statistics shown in table, the processed data, which is the population parameters, had a significance level of 0.5% which shows that the data is ideal for making a conclusion on the population's parameter as the value of significance (P-value) is less than 5%. The result above gives a regression F-statistics ($F = 5.080$), $P = 0.001 < 0.05$ which measured the collective effect of the explanatory variables in the model indicates that, the explanatory variables have joint significant relationship between inventory management techniques measures of inventory turnover (INVTUR) and inventory conversion period (ICP) and financial performance measure of return on assets (ROA).

Regression Coefficients of Model 1

Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.
	B	Std. Error	Beta		
(Constant)	-.193	.138		-1.403	.164
1 INVTUR	5.629E-005	.000	.493	2.269	.026
ICP	2.251E-006	.000	.082	.201	.841

a. Dependent Variable: ROA

Source: SPSS Output (2023)

Test of Hypotheses

Statement of Hypotheses

Ho₁: The effect of inventory turnover on return on assets of listed oil and Gas Companies in Nigeria is not significant.

Decision Rule: Accept Ho if $P > 0.05$. Otherwise reject

Decision: The result above discovered a significant level between inventory turnover (INVTUR) and return on assets (ROA). The Beta value ($R = 0.493$) indicated that there is a moderate positive effect of inventory turnover (INVTUR) on return on assets (ROA). The probability value $P = 0.026 < 0.05$ revealed that the significant effect of inventory turnover (INVTUR) on return on assets (ROA) is statistically significant at 0.05 alpha level. Thus the null hypothesis one is rejected which implied that the effect of inventory turnover (INVTUR) on return on assets of listed oil and gas companies in Nigeria is significant.

Ho₂: The effect of inventory conversion period on return on assets of listed oil and Gas Companies in Nigeria is not significant.

Decision Rule: Accept Ho if $P > 0.05$. Otherwise reject

Decision: The result above discovered a significant level between inventory conversion period (ICP) and return on assets (ROA). The Beta value ($R = 0.082$) indicated that there is a very weak positive effect of inventory conversion period (ICP) on return on assets (ROA). The probability value $P = 0.841 > 0.05$ revealed that the significant effect of inventory conversion period (ICP) on return on assets (ROA) is statistically insignificant at 0.05 alpha level. Thus the null hypothesis two is accepted which implied that the effect of inventory conversion period on return on assets of listed oil and Gas Companies in Nigeria is not significant.

Discussion of Findings

Inventory Turnover and Return on Assets (Financial Performance)

The findings from hypothesis 1 revealed that inventory turnover has a positive and significant relationship with the financial performance variable return on assets under study which implied that as inventory turnover increases, the return on assets of companies increases. This result is consistent with the work of the following prior studies; Akinlabi (2021) study indicated that inventory

turnover was found to be positively and significantly related to operational performance. Obeidat (2021) study showed that a significant positive relationship exists between inventory turnover and return on assets. Zbigniew (2020) study showed that the days in inventory ratios for intermediates and work-in-progress (WIPC) and raw and other materials (RMI) have the strongest correlation with profitability. Amahalu et al (2018) findings showed a significant positive relationship between inventory turnover and return on assets. Amahalu et al (2018) findings showed a significant positive relationship between return on assets. Abdikani et al (2018) also found that there is significant positive relationship between the inventory management and financial performance.

However, this study finding contradicted with the work of the following prior studies; Newstyle and Opuene (2022) study revealed that there is an insignificant relationship between inventory conversion period and financial performance of listed oil and gas companies in Nigeria, Rodrigo et al (2020) study indicated that inventory turnover is insignificantly related to financial performance of manufacturing companies in Sri Lanka. Ratna and Meipita (2017) study indicated that inventory turnover ratio partially no effect on return on assets and return on equity. Folajimi et al (2020) inventory turnover period exerted insignificant positive effect on financial performance. Sunusi et al (2020) findings established that inventory turnover management affects Nigerian conglomerate companies' profitability inversely associated to the profitability of the listed conglomerate firms in Nigeria. Sharif and Islam (2018) stated that number of days in inventory has a negative effect on financial performance. Kennedy et.al (2016) found that inventory management has insignificant relationship with financial performance (ROA). Others empirical findings that support the study includes; Yakubu et al. (2019); Dedunu (2018); Ouma and Mwangangi (2018) etc.

Inventory Conversion Period and Return on Asset (Financial Performance)

The findings from hypothesis 2 revealed that inventory conversion period has a negative and insignificant relationship with the financial performance variable return on assets under study which implied that as inventory conversion period increases, the return on assets of companies decreases. This result is consistent with the work of the following; Hadiza and Mohammed (2019) study revealed a negative correlation between Inventory Conversion Period (ICP) and return on net assets (ROA) of Nigerian conglomerate companies. Sharif and Islam (2018) stated that number of days in inventory has a negative effect on corporate financial performance. Obeidat (2021) study showed a negative relationship exists between average inventory holding period and return on assets. Rodrigo et al (2020) results of the study showed that inventory conversion period has a negative relationship on return on assets, cash flow from operations and market value added of a firm. Gotas (2020) study found that days sales of inventory for total stocks clearly tends to become shorter due to a reduction in the days in inventory ratio for materials and finished products. However, this study finding contradicted with the work of the following prior studies; Amahalu et al (2018) findings showed a significant positive relationship between return on assets, firm growth and inventory conversion period at 5% significant level; a positive and non-significant relationship between return on equity and inventory conversion period. Ondimu et al (2018) study result showed that there was a strong correlation between the study variables Inventory Conversion Period, Inventory Holding cost, Actual Inventory per annum, and Optimal Inventory Orders. Kangogo and Irungu (2020) study revealed that inventory conversion period has an inverse and significant effect on the financial performance (return on assets and return on equity. Warnes (2013) study found that return on assets was significantly and positively impacted number of days inventory.

SUMMARY OF FINDINGS, CONCLUSIONS, RECOMMENDATIONS AND CONTRIBUTIONS TO SCHOLARSHIP

Conclusion(s)

This study provided empirical evidence that investigated effect of inventory management techniques on financial performance of listed Oil and Gas Companies in Nigeria. Based on data obtained from the listed Oil and Gas Companies in Nigeria, data analysis, discussion of findings, we concluded that;

1. Inventory turnover has moderate positive effect on return on assets of listed Oil and Gas Companies in Nigeria,
2. Inventory conversion period has very weak positive effect on return on assets of listed Oil and Gas Companies in Nigeria.

Recommendations

The following recommendations are provided for the study:

1. Oil and Gas Companies should develop a policy framework to determine inventory turnover against its return on assets. This is because the study affirmed that inventory turnover has positive and significant effect on return on assets.
2. Firms should monitor inventory conversion period because this study result revealed that it has negative and insignificant relationship with return on assets and return on equity.

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