

INVENTORY MANAGEMENT TECHNIQUES AND FINANCIAL PERFORMANCE OF LISTED TRANSPORTATION AND HOTELS COMPANIES IN NIGERIA

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ABSTRACT

This study determined the effect of inventory management on financial performance of transportation and hotels companies in Nigeria. Specifically, the study ascertain the effect of inventory turnover on return on assets of listed transportation and hotels companies in Nigeria, evaluate the effect of operating cycle on return on assets of listed transportation and hotels companies in Nigeria, and determine the effect of inventory conversion period on return on assets of listed transportation and hotels companies in Nigeria. The research adopted survey research design. The population of the study consisted of ten (10) transportation and hotels companies listed on the floor of the Nigerian Exchange Group as at 31st December 2023. The sampling technique used in this study was purposive (Judgmental) sampling technique. As the name implies, it is a sample "chosen purely on the basis of convenience. Eight (8) listed transportation and hotels companies were chosen simply because as at the time of this research work, two of the companies that are listed in Nigerian Exchange Group formally known as Nigeria Stock Exchange do not have data available. This study adopted descriptive statistics and Ordinary Least Square (OLS) multiple regression with the aid of Microsoft Excel and E-View 10. The results of the findings showed that, there is no significant effect of inventory turnover on return on asset of listed transportation and hotels companies in Nigeria, there is no significant effect of operating cycle on return on assets of listed transportation and hotels companies in Nigeria and finally, there is no significant effect of inventory convention period on return on assets of listed transportation and hotels companies in Nigeria. Therefore, the study concluded that, there is a positive and insignificant effect of inventory management on financial performance of listed transportation and hotels companies in Nigeria. The study recommended that; transportation and hotels companies should develop a policy framework to determine inventory turnover against it profit after tax. This is because the study affirmed that inventory turnover has positive relationship with profit after tax, and 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 return on assets.

INTRODUCTION

Recent evidences proved that failure to manage inventory has almost caused the demise of some companies (Rodrigo et al, 2020; Ajayi et al, 2021). Torky (2020) stated that failure to manage inventories may affect the financial performance as it leads to insignificant increase in amount of profit. Financial managers have to carefully monitor inventories and forecast the level of inventories needed for future production (Golas & Bieniasz, 2016). Orga amd Mbah (2017) opined that inventory management is vital to the successful functioning of any firm; it is the lifeblood and the heartbeat of any organization. Torky (2020) stated that powerful inventory management technique help firms to have competitive edge (advantage) over other organizations. Similarly, Osadchy et al (2018) asserted that Inventories play important role in increasing shareholders fund and improvement in profitability. Ngugi et al (2019) stated that inventory management is the art and science of maintaining stock levels of a given group of items, incurring the least cost consistent with other relevant targets and objectives set by management. Inventory management is a set of control and guidelines that monitor inventory levels and determine the quantity of stock,

when to replenish or stock up, and how much to order (Chandra, 2018). Dimitrios (2008) defined inventory as a stock of goods that is kept by business in anticipation of some future request. This definition was also supported by Umar (2019) who stressed that inventory management techniques has an impact on all business functions, particularly operating department, marketing department, accounting and finance department. He established that there are three motives for holding inventories which include; transaction, precautionary and speculative motives. The transaction motive is said to occur when there is a need to hold stock to meet production and sales requirements. A firm might also decide to hold extra amounts of stock to cover the possibility that it may have under estimated its future production and requirements. 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; Daniel & Assefa, 2018; Ngugi et al., 2019; Hadiza & Mohammed, 2019; Rodrigo et al., 2020; Eze & Adamma, 2021; Cranimar & John, 2021; Mustofa et al., 2021; Akinlabi, 2021; Ajayi et al., 2021).

Financial performance had received important consideration from scholars particularly in accounting, finance and management. Financial performance is the strength in which profit making organisations use to evaluate business environment. The term is used to describe a general proportion of an organization's overall monetary wellbeing over a specific period, and can be used to investigate competitive firms throughout a comparative industry (Stevenson, 2011). According to Abdikani et al. (2018) financial performance is a subjective measure of how properly a firm can use resources from its essential method of enterprise and generate sales. Mwangi and Murigu (2015) defined financial performance as a measure of an entity's incomes, returns and increase in corporate value which is mirrored by the increase in price of the company's shares and can be equated with other companies across the sector or to relate the performance of businesses as a whole. Financial performance is observed as the efficient and effective use of resources by a firm for the achievement of corporate objectives resulting to increase in share price, market share and meeting the hopes of numerous stakeholders (Ibrahim, 2015). Financial performance of firms depend upon various factors which directly or indirectly adhere to profitability. These factors often showed their effects on profitability such as cost of goods sold, interest rate, tax rate and inventory volume. According to Obara and Efeeloo (2017), financial performance of companies can be measured by use of accounting information or stock market values in a financial accounting practices context. When accounting information is used, accounting ratios are employed. The common accounting ratios used to measure profitability are: return on assets (ROA), return on equity (ROE), net profit margin (NPM) and return on capital employed (ROCE). Return on assets is an indicator of how profitable a company is relative to its total assets. It gives an idea as to how efficient management is at using its assets to generate earnings (Obara & Efeeloo, 2017). Umar (2019) measure profitability ratios as Return on Assets (ROA) show the profit due to the use of assets, Return on Equity (ROE) for the profit which occurs due to equity and Net Profitability Margin (NPM) ratio for the profit earned due to the sale of one unit of final product.

Recent studies have shown that tremendous cost savings and potential revenue can be generated with the enhanced management of distribution and inventory. It was estimated that a company could reduce its total expenses by at least two percent through better inventory management and distribution of finished goods. This represents a percentage of total expenses, not just the amount providers spend on supplies. 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; Ngugi

et al, 2019; Joseph et al, 2019; Rodrigo et al, 2020). On the other hand, some claimed a negative relationship, which suggested that any increase in stock turnover period will reduce the firm's returns (Lamprey et al, 2017; Sharif & Islam, 2018; Mishra et al, 2021; Obeidat, 2021). For instance, Joseph et al (2019) examined the effect of inventory control management and revenue generating capabilities of oil and gas drilling firms in Nigeria. The result from the test showed positive and significant correlation between ineffective inventory management and downtime in the operations of oil and gas drilling. There is a significant correlation between incessant downtime in operations of transportation and hotels drilling firms and their income level owing to poorly managed inventory control. The study recommended that oil drilling firms should strengthen their inventory management system for effective and timely work delivery in order to avert downtime, loss of income and termination of contracts. Globally, there are more studies but locally, there are limited studies that explored inventory management techniques and financial performance of listed transportation and hotels companies in Nigeria. Hence, this study sought to investigate the effect of inventory management techniques on financial performance of listed transportation and hotels companies in Nigeria.

Aim and Objectives of the Study

The aim of this study was to evaluate the effect of inventory management techniques on financial performance of listed transportation and hotels companies in Nigeria. The Specific objective was to;

- i. ascertain the effect of inventory turnover on return on assets of listed transportation and hotels companies in Nigeria,
- ii. evaluate the effect of operating cycle on return on assets of listed transportation and hotels companies in Nigeria,
- iii. determine the effect of inventory conversion period on return on assets of listed transportation and hotels 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 transportation and hotels companies in Nigeria?
- ii. What is the effect of operating cycle on return on assets of listed transportation and hotels companies in Nigeria?
- iii. What is the effect of inventory conversion period on return on assets of listed Transportation and hotels companies in Nigeria?

Hypotheses

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

- H₀₁:** There is no significant effect of inventory turnover on return on assets of listed transportation and hotels companies in Nigeria,
- H₀₂:** There is no significant effect of operating cycle on return on assets of listed transportation and hotels companies in Nigeria,
- H₀₃:** There is no significant effect of inventory conversion period on return on assets of listed transportation and hotels companies in Nigeria.

REVIEW OF RELATED LITERATURE

Conceptual Review

Inventory Management Techniques and Financial Performance

The relationship between inventory management techniques and financial performance has been documented by several studies. According to Torky (2020), adequate application of inventory management techniques may directly or indirectly affect the financial statements of a company.

Most managers in company miss manage their inventories and can cause physical counting of materials. Similarly, Okoye et al (2016) stated that inventory management is a crucial part of a firm because mismanagement of inventory threatens a firm's viability such as that too much inventory consumes physical space, creates financial burden, and increases the possibility of damage, spoilage and loss. Ajayi et al (2021) evaluated the relationship between effective inventory management practice and firms performance: Evidence from consumer goods firms in Nigeria. The findings revealed a significant positive relationship between return on capital employed, firm growth and effective inventory management practice; a positive and non-significant relationship between return on investment and effective inventory management practice. Cramar and John (2021) study revealed inventory management as a significant predictor of private hospitals' financial performance in Western Uganda. Anisere-Hameed and Bodunde (2021) study revealed that inventory management has significant effect on return on asset, investment, net operating margin, and net income of manufacturing firms in Nigeria. Folajimi et al (2020) findings revealed that inventory control significantly affects financial performance of listed conglomerate firms in Nigeria. Ouma and Mwangangi (2018) findings showed that inventory management system indicators have positive impact on performance of the firm. Abdikani et al (2018) study found that there is significant positive relationship between inventory management and financial performance. Lukumon and Abraham (2018) study revealed that, there is significant relationship between poor inventory management system and organizational performance. Lamptey et al (2017) studied impact of inventory management on the profitability of the organization. They contended that, it would not be possible for an enterprise to maintain a reasonable profit margin if it had a poor inventory management system in the place. Khaled and Hayam (2016) studied relationship that exists between management of inventory and the general firm's performance. The study established that inventory to sales ratio affects organization performance negatively in the initial growth stage and the maturity stage; it exerts a positive and significant coefficient on performance in either the rapid growth stage or the revival stage. Kwadwo (2016) investigated effect of efficient management of inventory on profitability of manufacturing firms. The study revealed that a significant and positive correlation existed between raw materials inventory management and financial performance of manufacturing companies in Nigeria. Effective inventory management enables an organization to meet or to exceed customer expectations of product availability while maximizing net profits and minimizing costs (Okoye et al., 2016). However, Akinlabi and Sonko (2021) investigated influence of inventory management on sales growth of selected food and beverage companies in Nigeria. Their result showed that inventory forecasting did not significantly influence sales growth of selected food and beverage manufacturing companies.

Inventory Turnover and Financial Performance

There are several empirical studies that investigated the relationship between Inventory turnover and financial performance. Some studies revealed positive, negative and no relationship between inventory turnover and financial performance. According to Van et al, (2019), good inventory turnover is always necessary and essential in managing working capital. Inventory turnover has been used to measure inventory management against financial performance. The findings of these studies reviewed reveal diverse outcome. Akinlabi (2021) Inventory turnover was found to be positively and significantly related to operational performance. Obeidat (2021) result showed that a significant positive relationship exists between inventory turnover and return on assets. Zbigniew (2020) study result showed that 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. Yakubu et al (2019) study revealed that Inventory turnover ratio showed a positive significant impact on financial performance of selected quoted firms in Nigeria. Sunday and Joseph (2017) study revealed that inventory turnover has a significant positive

relationship with financial performance of SMEs. Mathuva (2009) found a significant positive relationship between net profit margin and inventory turnover.

In order hand, Rodrigo et al (2020) study indicated that inventory turnover is insignificantly related to financial performance of manufacturing companies in Sri Lanka. Folajimi et al (2020) found that 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 the number of days in inventory has a negative effect on financial performance. Ratna and Meipita (2017) result indicated that inventory turnover ratio partially no effect on return on assets and return on equity. Ali et al (2017) shows a negative effect of inventory turnover in days on firms' sales. Moreover, Lampthey, et al. (2017) inventory turnover were significantly and negatively related to performance. Elsayed and Wahba (2016) result showed that inventory to sales ratio affects organisational performance negatively in the initial growth stage and the maturity stage. Sitienei and Memba (2015) found that the result provided a negative relationship between inventory turnover and profitability of the company. Iqbal and Zhuquan (2015) found a significant negative relationship between ITP and financial performance. It is recommended that managers can improve profitability and value of their firms by reducing inventory turnover in days. Pouraghajan et al, (2013) using the list of automotive companies registered in the Tehran Stock Exchange between 2006 and 2010 found a significant negative relationship between inventory turnover and ROA. Alipour (2011) found a negative significant effect of inventory turnover on financial performance.

Operating Cycle and Financial Performance

There are few empirical studies that investigated the relationship between operating cycle and financial performance. For instance, Bhargav (2016) analyzed the association between operating cycle ratios and an MVA in the context of a group of companies listed on the Bombay Stock Exchange. The study finds that none of the operating cycle ratios are statistically and significantly related to market value added. The result of the study showed that managing operating cycle ratios efficiently need not necessarily result into the augmentation of shareholder wealth. Bahman et al (2014) result showed no significant relationship between operating cycle and accruals quality. Also, it was found that increase in operating cycle would result in reduced earnings quality. Semra et al (2017) Correlation analyses revealed that specific that cases were valid for each corporation but a concrete generalization could not be made between the operating cycle risks and other risk groups.

Inventory Conversion Period and Financial Performance

Empirically, many researchers have studied the impact of Inventory conversion period as a proxy for inventory management techniques or practices on financial performance. The findings of these studies reveal diverse outcome. 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). 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 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. Warnes (2013) result found that return on assets was significantly and positively impacted by the number of days inventory. Soekhoe (2012) study showed a positive significant effect of inventory conversion period on financial performance. Rimo and Panbunyuen (2010) findings show a significant positive link relating to financial performance and inventory days. Lee et al (2009) found that days of inventory increases in a manufacturing

firm may result in better performance. They suggested keeping enough inventories for smooth flow of business and not to lose customers and sales. Likewise, Nobanee and AlHajjar (2009) found that inventory conversion period had a significant positive impact on returns on asset and return on equity.

In order hand, Obeidat (2021) study showed that a negative significant relationship exists between average inventory holding period and return on assets. Rodrigo et al (2020) study showed that inventory conversion period has a significant negative relationship on return on assets, cash flow from operations and market value added of a firm. Gotas (2020) study found that the 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. 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 the number of days in inventory has a negative effect on corporate financial performance. Sunday and Joseph (2017) study revealed that there is a negative relationship between inventory conversion period and profitability. Sitienei and Memba (2015) study provided a negative relationship between inventory conversion period and profitability of the company. Muturi et al (2015) study revealed that inventory conversion period negatively affected profitability. Nirujah (2015) result suggested that there is a significant negative relationship between ICP and GP. Hayajneh and Yassine (2011) showed a significant negative association between financial performance and average inventory transformation period.

Theoretical Framework

Theory of Pareto (ABC) Model

The theory of Pareto ABC model was proposed by Vilfredo Pareto in 1887. ABC analysis is a categorization technique which is based on Pareto Principle. This principle helps in determination of what items to be given priority in management of a firm's inventory. In ABC analysis inventories are usually categorized to three classes. That is, class A, class B, and finally class C. Management efforts and oversights are expended in management of class A items. Class C items usually get the very least attention from the management while class B items are in-between (Ravinder & Misra, 2014). ABC is the selective approach popularly known as Always (A) Better (B) Control (C). The ABC analysis goes by its name. It always controls the best, then better and lastly good. Its importance lies in the determination of priority, which enables the management to exercise control over the managed subjects according to priority fixed for a purpose or selective basis. 'A' items call for more careful attention as compared to items in (B) or (C) which may require less careful attention on behalf of Material Managers.

With the ABC model, products are categorized depending on their important levels. Importance may be from the amount of cash flow to be generated from a product, stock out cost associated with a product, the product sales volume, profitability and so on. Once categorization is done, breaking points are also decided for each class (Class A, class B and class C). The purpose of the ABC inventory classification is to be able to assess the status of every item kept in inventory in addition to determining what specific attention is required by each group of inventory (Banjoko, 2004).

As noted by Fuller (2000), it is possible to utilize the concept of ABC in the formation of rational inventory policy which should give the best possible service level to production while minimizing investment cost. Fuller (2000) argues that categories of inventories of items should be controlled differently. For class A items, they should be controlled tightly, need accurate recording of receipts and issues, schedules should be constantly reviewed and minimum buffer stocks probably less than 2 weeks. Class B items require moderate level of control, all receipts and issues should be

recorded, schedules should be moderately reviewed and later buffer stocks 6-8 weeks. Class C items need lower level of control, there should be minimal recording of receipts and issues, need lower level of schedule and review and need large safety stocks of 12 weeks. Amahalu et al (2018) stressed that various studies have shown that only 20% of the items have 80% of the annual inventory consumption and 80% of the items have 20% of annual inventory consumption. ABC analysis is a basic critical management tool that allows management to put much of their effort where returns will be greatest or highest. ABC inventory analysis is beneficial to classify materials based on demand of the items. It also holds good control over finance, since costly items are under close observation under A category. Items in group B have moderate demand and moderate control. Items in-group C are very economic and needs not to be taken care accurately. Durn et al (2014) further asserted that ABC analysis is an important tool to control the inventory investment in an organization. It provides good guidelines for adopting appropriate inventory management.

This study is supported by the theory of Pareto (ABC) Model because it is a strategy meant to improve the financial performance of a business by reduction of excess inventory together with associated costs and it also encourages waste minimization as well as productivity enhancement. It provides good guidelines for adopting appropriate inventory management by categorizing which of the inventory to utilize A or B C or Depending on their importance levels from the amount of cash flows to be generated from a product, stock out cost associated with a product, the products sales volume, profitability and so on.

Empirical Review

The review of empirical studies guides researchers for getting better understanding of objectives used, methodology used, limitations of various available estimation procedures and data base and lucid interpretation and reconciliation of the conflicting results. Besides this, the review of empirical studies explores the avenues for future and present research efforts related with the subject matter. In case of conflicting and unexpected results, the researcher can take the advantage of knowledge of other researchers simply through the medium of their published works. Different authors have analyzed inventory management techniques and financial performance in different perspective. Therefore, the researcher reviewed various approaches to the study on inventory management techniques and financial performance.

Ajayi et al. (2023) evaluated the relationship between inventory management practice and firms performance of consumer goods firms in Nigeria. The study employed both field and empirical survey (ex-post facto) research design. The sample size was six (4) consumer goods out of 21 firms listed on the stock exchange for a ten (10) year period from 2009-2019. Inventory procurement cost, inventory usage and value of stock was used as a parameter for measuring effective inventory management practice while firms performance was surrogated by return on capital employed, firm growth and return on investment while. Panel data was sourced from publications of Nigeria stock exchange, fact books, annual reports and account of the listed brewery firms from 2009 – 2019. Correlation coefficient and ordinary least square (OLS) regression method with the aid of STATA 13 statistical package was used to analyse the data. The findings revealed a significant positive relationship between return on capital employed, firm growth and effective inventory management practice; a positive and non-significant relationship between return on investment and effective inventory management practice. The study recommended amongst others that consumable goods firms' management should emphasis on the proper effective inventory management practice techniques and measuring of efficiency deviations to identify weaknesses in the process of managing inventories.

Akinlabi and Sonko (2022) investigated influence of inventory management on the sales growth of selected food and beverage companies in Nigeria. Cross-sectional survey research design was used. The target population comprised 2027 top, middle and lower-level managers within the selected food and beverage companies in Lagos State, Nigeria. A stratified random sampling technique was used to select the sample size of 434. Hypotheses were tested using inferential statistics with the aid of SPSS V 25.0. The findings revealed that inventory management had significant effect on sales growth of selected food and beverage manufacturing companies in Nigeria. There were significant influence of inventory turnover, information technology, and inventory reorder point on sales growth of selected food and beverage manufacturing companies in Nigeria. However, inventory forecasting did not significantly influence sales growth of selected food and beverage manufacturing companies. The study concluded that inventory management significantly influence sales growth of selected food and beverage manufacturing companies in Nigeria.

Eze and Adamma (2021) examined effect of inventory management techniques of small and medium scale enterprises in Anambra state. A descriptive survey research design was adopted for the study. The population of the study consisted of 483 managers of small scale enterprises and 244 accountants of medium scale enterprise registered with the Anambra State Ministry of Commerce and Trade as at January 2020. No sample was taken, as the population size was manageable. A structured 20-items validated questionnaire was used for data collection. Data related to the research questions were analysed using mean and standard deviation while t-test was used to test the null hypotheses. The findings from the study revealed that Managers and Accountants of SMSEs in Anambra State utilize purchasing control inventory technique to a moderate extent, while economic order quantity technique was utilized to a lowly extent. The study also revealed that Managers and Accountants of SMSEs in Anambra significantly differ in their mean ratings on the extent of utilization of inventory management techniques. The study concluded that Managers and Accountants of SMSEs do not adequately utilized inventory management techniques and this resulted in stunted growth and sluggish development of SMSEs. It was recommended among others that Small and Medium Enterprises Development Agency of Nigeria (SMEDAN) should conduct regular seminars and workshops for small and medium scale enterprises on inventory management techniques to ensure effective operation of the enterprise.

Cranimar and John (2021) examined relationship between inventory management and private hospitals' financial performance in Western Uganda. The study adopted a positivist approach and a cross-sectional research design to collect data from 32 Private hospitals in Western Uganda. The study used a closed-ended questionnaire to collect data and simple linear regression for data analysis. Result revealed inventory management as a significant predictor of private hospitals' financial performance in Western Uganda. The study recommended that private hospitals adopt robust and scientific inventory management systems and models that aim to optimise stock levels and minimise costs if they are to achieve substantial financial performance.

Mustofa et al (2021) assessed implementation of inventory accounting information systems at pharmacy: Case study at Tirta pharmacy. The research was a qualitative study to describe the business flow of incoming and outgoing items by looking at the accounting information system design. The object of the research was Tirta Pharmacy located in Jember Regency, East Java. The type of data in the study was primary data in the form of observations and interviews with pharmacists in Tirta pharmacy. Data analysis was carried out in the study in order to analyze obstacles and problems regarding financial reports, the functions of the data obtained, and procedures related to the design of accounting information systems with the aim of implementing a good financial statement accounting information system and can improve efficiency and stabilization of operational activities, especially in the drug supply division at Tirta Pharmacy. The

results of this study propose systems and procedures for cash receipts and disbursements, as well as suggestions for using information technology in carrying out company operational activities. The study concluded that implementation of inventory management has significant impact on operational activities.

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.

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.

Obeidat (2021) determined whether or not a relationship exists between inventory management of the listed pharmaceutical firms at Amman Stock Exchange, and the profitability of these firms, and whether or not inventory management affects firm profitability. Three pharmaceutical firms were found listed at Amman Stock Exchange by the end of 2020, and therefore, the annual data of the three firms along the period 2009-2019 were collected and used in the analysis and hypothesis testing. Inventory turnover and average inventory holding period were used as indicators for inventory management at a reciprocal form, whereas, return on assets was used as a measure of firm profitability. Using the Pearson correlation method, the analysis and hypothesis testing demonstrated that a significant positive relationship exists between inventory turnover and return on assets, and a negative significant relationship exists between average inventory holding period and return on assets. Moreover, using the ordinary least square method, the study shows that inventory management has a positive significant effect on firm profitability. More studies regarding inventory management and firm profitability relationships, are recommended to be performed on other manufacturing industries than pharmaceutical firms.

Horsfall and Odage (2021) investigated relationship between just-in-time inventory management imports on sales performance of paint manufacturing firms in Rivers State, Nigeria. The study adopted an explanatory research design with causal type of investigation. Primary and secondary methods of data collection were employed to obtain relevant data for analysis. The instrument of data collection employed was questionnaire. The study population was made up of the 30 registered paint manufacturing firms operating in Rivers state. The study randomly selected three top management staff from each of the firms as the respondents hence a total of 90 top management staff were used for the study. The data was analyzed using the Pearson's Product Movement Correlation statistic through the aid of statistical packages for social science version 23.0. The result of the findings revealed existence of significant and positive relationship between just-in-time inventory management and sales performance of paint manufacturing firms in Rivers State. The study concluded that justin-time inventory management has significant and positive relationship with sales performance of paint manufacturing firms in Rivers State. The study therefore, recommended that managers of paint manufacturing firms should adopt just-in-time inventory management as a strategy to boost efficiency of inventory operation as well as improve the sales performance.

Gap in Empirical Review

Prior research has studied the relationship between inventory management techniques and financial performance. Based on the empirical studies reviewed in term of concepts, years, scope, methodology adopted variable employed, findings, conclusion and recommendations. The following gap were identified; (1) to the best of our knowledge, none of the prior studies has employed transportation and hotels companies in correlating or conducting the effect of inventory management techniques on financial performance of transportation and hotels companies in Nigeria, (2) to the best of our knowledge none of the previous studies used the time frame of 2014 to 2023 on the listed transportation and hotels companies in Nigeria, (3) None of the previous studies conducted a study using 8 out of the ten listed transportation and hotels companies used in this study. Therefore, this study is designed to bridge this knowledge gap that existed in the literature of inventory management techniques and financial performance of listed transportation and hotels companies in Nigeria.

METHODOLOGY

This chapter focused at presenting the methodology utilized in conducting this research. The methodology of this study deal with, philosophical underpinning of the study, research design, population of the study, sample size and sampling technique, method of data collection, measurement of variables, model specification, method of data analysis and decision rule.

Philosophical Underpinning of the Study

This study adopted positivism as the suitable philosophical framework because this study seeks to attain an objective assessment of the manifestation and critical analysis of key variables as they play out or interact in the organizational design of listed construction firms in Nigeria. This is in line with the views of Zeb-Obipi (2007); Otamiri (1998) and Agada (2019). The researcher believes that an objective and comprehensive knowledge of the phenomenon resides outside the mind and could therefore be more appropriately investigated using realist epistemology. This would involve in engaging accessible inventory techniques and financial performance of listed transportation and hotels companies in Nigeria in order to elicit secondary data from them concerning the phenomenon being investigated.

Research Design

Ex-post facto research design is used to cover investigations that are done retrospectively (after the effect has occurred) to identify possible cause-and-effect relations between the variables under

investigation through observations of existing conditions and inquisitively searching back historically for the causal factors. It is a methodological approach for eliciting possible or probable antecedents of events that have occurred already and which cannot be subjected to the direct rigorous manipulation and control of the researcher. Correlation design is adopted to show the magnitude and direction or nature (positive or negative) of relationship that exists between a dependent variable and one or more independent variables.

Population/Sample Size and Sampling techniques of the Study

The accessible population is the population which the researcher have access to during the investigation. According to the website of the Nigerian Exchange Group (www.ngx.com.ng), public companies are grouped into several categories, they include consumer goods manufacturing firms; industrial goods manufacturing firm; financial service; healthcare sector, agricultural sector, construction companies; natural gas companies, oil & gas companies and technology, and telecommunications services. For the purpose of this study, all the listed transportation and hotels companies in the Nigerian Exchange Group (NGX) was used. Therefore, the population of the study consisted of ten (10) transportation and hotels companies listed on the floor of the Nigerian Exchange Group as at 31st December 2023.

The sampling technique used in this study was purposive (Judgmental) sampling technique. As the name implies, it is a sample "chosen purely on the basis of convenience. Eight (8) listed transportation and hotels companies were chosen simply because as at the time of this research work, two of the companies that are listed in Nigerian Exchange Group formally known as Nigeria Stock Exchange do not have data available. Hence, purposively, data of eight years period was chosen for the study which consists of 64 observational time period (2016-2023).

Model Specification

In order to investigate the effect of inventory management techniques on financial performance of listed transportation and hotels companies in Nigeria from (2016 to 2023), we develop the Multiple Linear Regression analysis using SPSS v23 and E-View 10). 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: Return on Asset (ROA) Model

ROA = f (INVTUR, OC, ICP)1

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

ROA_t = a₀ + a₁INVTUR_t + a₂OC_t + a₃ICP_t + U_t.....2
a₁>0; a₂>0; a₃>0

Method of Data Analysis

This study adopted descriptive statistics, and Ordinary Least Square (OLS) multiple regression with the aid of Microsoft Excel and E-View 10. First, Microsoft Excel was employed to interpolate the raw data extracted based on the variables adopted for this study and the formula to be apply in calculating the measurement. Secondly, the data analysis was executed in three distinct stages. Firstly, a univariate (or descriptive) analysis was executed, followed by bivariate analysis and lastly, multivariate analysis.

DATA ANALYSIS AND DISCUSSION OF FINDINGS

Univariate Analysis

Table 4.1 Descriptive Statistics of Inventory Turnover

N	Mini	Maxi	Mean	Std. Dev.	Skewness	Kurtosis
Stat	Stat	Stat	Stat	Stat	Stat	Stat
					Std. Error	Std. Error

Inventory	64	.00	5.24	3.5898	.92980	-	.299	8.932	.590
Turnover						2.578			
Valid N (listwise)	64								

Source: Generated by the Researcher using SPSS

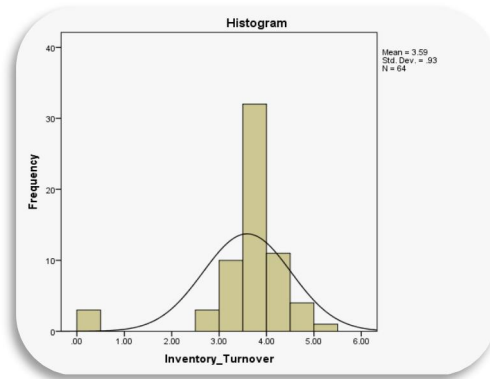


Figure 1 Inventory Turnover

The results of the analysis are shown in table 1 and figure 4.1 presents the descriptive analysis of inventory turnover data which had a mean value of (3.5898), and standard deviation (0.92980) coupled with a minimum and maximum value of (0.00) and (5.24) respectively. Also, the skewness of the data set is(-2.578) and estimated standard error (0.299)which provide useful information about the symmetry of the probability distribution showing that it has a short right tail while the Kurtosis is (8.932) coupled with estimated standard error (0.590) discovered the extent of flatness of the distribution is greater than the normal curve.

Table 2 Descriptive Statistics of Operating Cycle

	N	Min	Max	Mean	Std. Dev.	Skewness		Kurtosis	
	Stat	Stat	Stat	Stat	Stat	Stat	Std. Error	Stat	Std. Error
Operating Cycle	64	.00	.65	.0998	.12374	3.041	.299	10.430	.590
Valid N (listwise)	64								

Source: Generated by the Researcher using SPSS

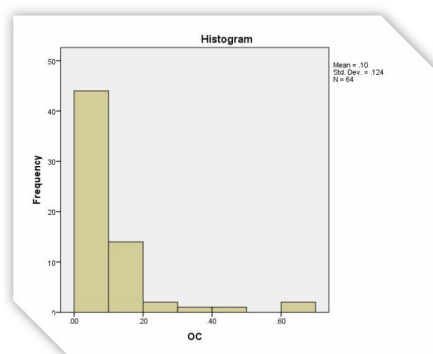


Figure 2: Operating Cycle

The results in table 2 and figure 2 had illustrated a descriptive statistics of operating cycle. The results had a positive grow rate between the Minimum (0.00) to Maximum (0.65); which had shown skewness and kurtosis statistics values that provide useful information about the symmetry of the probability distribution of operating cycle. The data set have a positive skewness value

(3.041) and standard error (0.299) presented a long right tail and positive kurtosis value (10.430) and standard error value (0.590) discovered the extent of flatness of the distribution is greater than the normal curve coupled a mean and standard deviation value as (0.0998), and (0.12374) respectively.

Table 3 Descriptive Statistics of Inventory Conversion Period

	N	Min	Max	Mean	Std. Dev.	Skewness	Kurtosis
	Stat	Stat	Stat	Stat	Stat	Stat	Stat
						Std. Error	Std. Error
Inventory conversion	64	-.11	2.38	1.2946	.55176	-.825	.299
Valid N (listwise)	64						

Source: Generated by the Researcher using SPSS

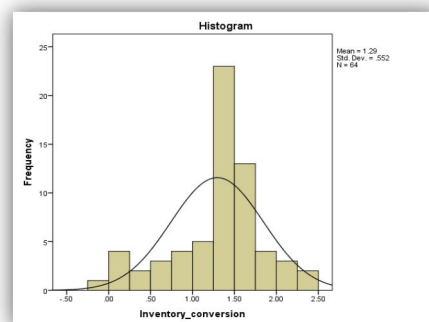


Figure 3 Inventory Conversion Periods

The results of the analysis are shown in table 3 and figure 3 presents the descriptive statistics of inventory conversion periods data set which had a mean value of (1.2946), and standard deviation (0.55176) coupled with a minimum and maximum value of (-0.11) and (2.38) respectively. Also, the skewness of the data set is (-0.825) and estimated standard error (0.299) which provide useful information about the symmetry of the probability distribution showing that it has a short right tail while the Kurtosis is (0.737) coupled with estimated standard error (0.590) discovered the extent of flatness of the distribution is greater than the normal curve.

Table 4 Descriptive Statistics of Return on Asset

	N	Min	Max	Mean	Std. Dev.	Skewness	Kurtosis
	Stat	Stat	Stat	Stat	Stat	Statistic	Stat
	t					Std. Error	Std. Error
Return on Asset	64	.00	1.51	.1041	.20641	5.485	.299
Valid N (listwise)	64						

Source: Generated by the Researcher using SPSS

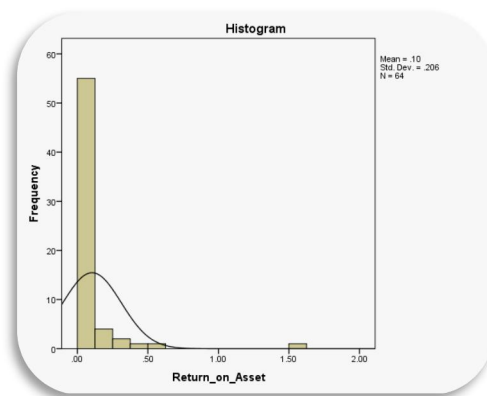


Figure 4 Returns on Asset

The results in table 4 and figure 4 had illustrated a descriptive statistics of return on asset. The results had a positive growth rate between the Minimum (0.00) to Maximum (1.51); which had shown skewness and kurtosis statistics values that provide useful information about the symmetry of the probability distribution of return on asset. The data set have a positive skewness value (5.485) and standard error (0.299) presented a long right tail and positive kurtosis value (35.368) and standard error value (0.590) discovered the extent of flatness of the distribution is greater than the normal curve coupled a mean and standard deviation value as (0.1041), and (0.20641) respectively.

Table 5 Output of Stationarity Test for Unit Root

Variables	Method	Statistic	5% Prob.**	Cross-sections	Stage
INVTUR	ADF Levin, Lin & Chu t*	-3.96014	0.0000	8	Level
OC	ADF Levin, Lin & Chu t*	-7.86944	0.0000	8	1 ST difference
ICP	ADF Levin, Lin & Chu t*	-7.86908	0.0000	8	Level
ROA	ADF Levin, Lin & Chu t*	-78.5431	0.0000	8	Level

Source: E-view Output for Stationarity of Data

The table above show the unit root test for variables conducted under the condition of an included intercept but no trend, the result reveals that the value of the augmented Dickey Fuller (ADF) of -3.96014, -7.86944, -7.86908 and -78.5431 were generated with a P-values of 0.000, 0.0000, 0.0000 and 0.0000, 0.0012 less than 0.05 respectively. The result also indicated that INVTUR, ICP, and ROA passed the stationarity test at level. Therefore, all the selection criterion were appropriately low as expected confirming that there is no reason to doubt the stationarity of the variables in question which implied that the null hypotheses of non-stationarity of the variables in the model is rejected at level and after 1st differencing at 5 percent level of significance.

Table 6 Regression Analysis

The model for the multivariate analysis of ROA is as expressed by equation-1(a) in section 3.7 of chapter three, which is recast as follows:

$$ROA = f(INVTUR, OC, ICP) \dots\dots\dots 1$$

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

$$ROA_t = a_0 + a_1INVTUR_t + a_2OC_t + a_3ICP_t + U_t \dots\dots\dots 2$$

$$a_1 > 0; a_2 > 0; a_3 > 0$$

Dependent Variable: ROA
Method: Panel Least Squares
Date: 04/23/25 Time: 19:02
Sample: 2016 2023
Periods included: 8
Cross-sections included: 8
Total panel (balanced) observations: 64

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	0.040609	0.042851	0.947681	0.3471
INVTUR	8.96E-07	1.19E-06	0.751416	0.4553
OC	23.00607	35.86035	0.641546	0.5236
ICP	-0.063484	0.098614	-0.643767	0.5222
R-squared	0.023846	Mean dependent var	0.042510	
Adjusted R-squared	-0.024962	S.D. dependent var	0.227551	
S.E. of regression	0.230374	Akaike info criterion	0.037764	
Sum squared resid	3.184331	Schwarz criterion	0.097166	
Log likelihood	5.208442	Hannan-Quinn criter.	0.015392	
F-statistic	0.488574	Durbin-Watson stat	1.894448	
Prob(F-statistic)	0.691517			

Source: Authors computation using e-view

In table 6, a panel least square regression analysis was conducted to test the significant relationship between return on assets (ROA) and inventory turnover (INVTUR), operating cycle (OC) and inventory conversion period (ICP). Adjusted R-squared is coefficient of determination which explained the variation in the dependent variable due to changes in the independent variables. From the findings in the table 6, the value of adjusted R-squared was 0.023846, an indication that there was variation of 2.3846% on return on assets (ROA) due to changes in inventory turnover (INVTUR), operating cycle (OC) and inventory conversion period (ICP), while 97.6154% was explained by unknown variables that were not included in the model. The F – statistic, 0.488574 with a Prob (F-statistic) value of 0.691517 showed that the model did not satisfies the overall goodness-of-fit statistical test. The Durbin-Watson Statistic of 1.894448 suggests that the model does not contain serial correlation.

Test of Hypotheses

Statement of Hypotheses

Ho₁: There is no significant effect of inventory turnover on return on assets of listed transportation and hotels companies in Nigeria.

Ho₂: There is no significant effect of operating cycle on return on assets of listed transportation and hotels companies in Nigeria.

Ho₃: There is no significant effect of inventory convention period on return on assets of listed transportation and hotels companies in Nigeria.

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

Decision: Results in Table 6 shown the probability value $0.4553 > 0.05$ (greater than) alpha level. Therefore, we accepted the null hypothesis one and rejected the alternate one, implied that there is no significant effect of inventory turnover on return on asset of listed transportation and hotels companies in Nigeria. This result is consistent with the work of the following prior studies; 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.

However, this study finding contradicted 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.

Results in Table 6 also showed the probability value $0.5236 > 0.05$ (greater than) alpha level. Therefore, we accepted the null hypothesis two and rejected the alternate two, implied that there is no significant effect of operating cycle on return on assets of listed transportation and hotels companies in Nigeria. This result is consistent with the work of the following; Bahman et al (2014) study showed no significant relationship between operating cycle and accruals quality. Also, it was found that increase in operating cycle would result in reduced earnings quality. Semra et al (2017), Correlation analyses revealed that specific cases were valid for each corporation but a concrete generalization could not be made between the operating cycle risks and other risk groups. However, to the best of the researcher knowledge, none of the prior findings contradicted the result.

Results in Table 6 finally, shown the probability value $0.5222 > 0.05$ (greater than) alpha level. Therefore, we accepted the null hypothesis three and rejected the alternate three, implied that there is no significant effect of inventory conversion period on return on assets of listed transportation and hotels companies in Nigeria. 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.

CONCLUSION

This study provided empirical evidence that investigated effect of inventory management techniques on financial performance of listed transportation and hotels companies in Nigeria. Based on data obtained from the listed transportation and hotels Companies in Nigeria, data analysis, discussion of findings in chapter four and summary of findings above, we concluded that;

1. Inventory turnover positively influence return on asset of listed transportation and hotels companies in Nigeria,
2. Operating cycle negatively influence return on asset of listed transportation and hotels companies in Nigeria,
3. Inventory conversion period negatively influence return on asset of listed transportation and hotels companies in Nigeria

RECOMMENDATION

Based on the summary of findings and conclusions above, the following recommendations were made:

1. Transportation and hotels companies should develop a policy framework to determine inventory turnover against it profit after tax. This is because the study affirmed that inventory turnover has positive relationship with profit after tax.
2. 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 return on assets.
3. Firms should monitor inventory conversion period because this study result revealed that it has negative and insignificant relationship with return on assets.

Implications/Contribution to Scholarship

By implication, this study provides empirical evidence to support the literature regarding inventory management techniques relationship with financial performance. The result of this investigation will unravel and shed light on the understanding of how efficient on management of inventory amongst transportation and hotels companies in Nigeria can immensely enhance their financial performance. However, below are some of contributions to scholarship;

Contribution to Concept: This study seemed to be the first study to used variable as profit after tax as proxy for financial performance in measuring inventory turnover and inventory conversion period especially of listed transportation and hotels companies in Nigeria. Also, this study seemed to be first study to used operational efficiency as a moderating variable in correlating the relationship between inventory management techniques and financial performance.

Contribution to Literature: This study is the first to contribute to the existing literature by constructing conceptual framework in chapter one instead of chapter two and supported with operational framework in chapter two which enable the researcher to clearly draw-up the dimensions of the independent variable and measures of the dependent in the transportation and hotels companies in Nigeria. Furthermore, this study has contributed to literature review by adding summary of empirical review in a tabular format with a column for individual research gap which enable the researcher to draw-up a general research gap at the end of the empirical review.

Contribution to Policy: The study is of immense benefit to the management of the corporate bodies by designing alternative measures of determining the relationship between inventory

management techniques in term of operating cycle and financial performance of listed transportation and hotels companies in Nigeria.

Contribution to Scope: This study has shown that inventory management techniques and financial performance goes beyond manufacturing sector and deposit money banks by conducting the study in transportation and hotels companies. Therefore, enlightens researcher to go far beyond studies on manufacturing firms and deposit money banks.

Contribution to Theory: This study has laid credence to lean inventory theory. It has added to the wide acceptability of the theory especially in testing the relationship between inventory management techniques and financial performance of listed Transportation and hotels companies in Nigeria. This theory is built on the postulation of inventory conversion period (ICP) which seeks to optimize when to convert inventory to cash. Thus, the theory brings to the fore, the possibility of being dynamic in Transportation and hotels companies and operating system used to monitor inventory conversion period as well as various items of inventories that may require different treatment. In a highly competitive environment where the Transportation and hotels companies operates, lean inventory theory helps firms to gain competitive advantage, capture larger market share and make more profit since carrying excess inventories negatively affects firm's return on equity.

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