

**EFFECT OF INVENTORY MANAGEMENT ON THE PROFITABILITY AND CASH
FLOW OF NIGERIAN BEER AND MINERAL COMPANIES**

BY

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Declaration

I hereby declare that this research work entitled “Effect of Inventory Management on the Profitability and Cash Flow of Nigerian Beer and Mineral Companies” is entirely the result of my own research. It has not been presented in any previous application for Master in Business Administration (MBA). All quotations are indicated and sources of information specially acknowledged by means of references.

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DATE

Certification

This project entitled “Effect of Inventory Management on the Profitability and Cash Flow of Nigerian Beer and Mineral Companies” meets the regulations governing the award of Master in Business Administration, of Nasarawa State University, Keffi for its contribution to knowledge and literary presentation.

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Dedication

With all humility, love, affection, devotion and deep sense of respect, I dedicate this project to the Almighty Allah who has made everything possible and for his infinite mercy and favour upon me all through my academic programme. I also dedicate this project to my parents; Mr. and Mrs. Saliu for giving me the sustaining foundation in life.

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Abstract

The main purpose of management of inventory is basically to try and balance the conflicting economics of not wanting to hold too much inventories or stocks. However, most managers ignore the saving potential that arise from proper management of inventories, trying to treat inventories as a necessary evil and not as an asset that require to be managed. As such, some firms do not or ignore to control their inventory holding, this usually leads to under stocking and causing the firm to stop or slow its production. This finally results to firm's ineffectiveness. This study sought to examine the effect of inventory management on profitability and operating cash flows of beer and Mineral distribution companies in Nigeria. The study employed a descriptive research design. Population of the study involved all the beer and Mineral distribution companies in Nigeria thus the study sampled out six companies for the study. The study used secondary data, which was collected from the annual financial reports of the selected companies for a period of 10 years from the years from 2007 to 2016. The data collected was analyzed using ordinary least squares in form of regression equations via the use help of E-view. The study established an insignificant negative relationship between the management of inventory and the profitability of Beer and Mineral distribution companies in Nigeria. The study concluded that inventory management can influence company profitability and operating cash flows negatively if it is not properly managed. The study recommended that the management of beer and mineral distribution companies in Nigeria should adopt effective inventory management practices like just in time and material requirement planning. This is because such inventory management practices would improve their profitability and operating cash flows

CHAPTER ONE

INTRODUCTION

1.1 Background to the Study

Stock or Inventory constitutes a substantial proportion of the current asset group. It represents investments made for obtaining a return (Duru, Oleka & Okpe, 2014). Inadequate inventory has an adverse potential effect on the smooth running of the business, while excess inventory involve extra cost, which can reduce the firm's profits (Panigrahi, 2013). Excessive stock is not desirable for longer periods because high inventory levels increase carrying cost and as inventory is increases; the profitability decreases (Priyank & Hemant, 2015). Hence, a suitable inventory control strategy will help in ensuring that the firms always keep an optimal amount of assets. Freeing frozen amounts in the form of stocks or inventories increases the firm's efficiency in the use of its resource (Ziukov, 2015). As such, a well-functioning inventory system has a great effect on total firm's performance as well as that of the firm's managers (Akindipe, 2014).

Inventories are part of current assets, which are convertible to other forms of working capital (cash and other receivables) in less than one year (Milicevic, Davidovic & Stefanovic, 2010). The theory of inventory management involves making decisions that are in line with basic trade off among firm's objectives, costs and other constraint (Mathuva, 2013). The economic order quantity theory, suggests that firms should maintain the quantity of inventory which provides the lowest total holding cost and acquiring cost (Milicevic, Davidovic & Stefanovic, 2010). Thus, inventory management is vital to for an effective and efficient firm. It is also important since it helps the firm in determination of the optimal amount of materials and goods a firm can hold at any given time (Kumar & Bahl, 2014).

Profit of an organization can easily be maximized with the help of an effective inventory management system in places. Profit maximization is all about cost minimization and revenue maximization. An effective inventory management improves the firm's total performance through matching inventory management practices and a competitive advantages especially now that most organizations operates in a more competitive industries or sectors all over the world (Mahidin et al., 2015). The main goal and objective of inventory management system is to keep at the necessary required inventory at any time so that production runs smoothly without interruption whatsoever (Panigrahi, 2013). Inventory is the second largest assets as shown in the statement of financial position in brewery industry. It's only exceeded by equipment and the physical facilities (Eneje, Nweze, & Udeh, 2012)

Inventory management refers to keeping or maintaining the firm's stocks at a level that a firm will only incur the least cost consistent with other management's set objectives or targets (Kwadwo, 2016). Inventory management is about ensuring that all input materials of production available to the firm are maintained at a level where production is not interrupted as well as ensuring that operational cost is kept at a minimal level without affecting operation efficiency (Eneje, Nweze, & Udeh, 2012). Inventory management entails planning, organizing, controlling and directing. All these coordinated efforts are meant to ensure achievement of efficiency in all operations of the firm. Such operations may include procurement, stocking and transportation (Akindipe, 2014). Mismanagement of Inventories may lead to significant financial problems for a firm (Muhayimana, 2015).

Inventory management is of high importance in financial management decision. This is because excess or shortage of this may bring danger to the company (Duru, Oleka & Okpe, 2014). The objective of inventory management is to maintain a system that minimizes total cost, while

specifically, it establishes that the amount of stock to be ordered is optimal as well as the period between orders (Anene, 2014). Excess inventory consumes a lot of space, can increase possibility of spoilage, leads to a financial burden and loss while insufficient inventory has the potential of interrupting business operations (Swaleh & Were, 2014).

Profitability refers to money that a firm can produce with the resources it has. The goal of most organization is profit maximization (Niresh & Velnampy, 2014). The profitability shows the ability of a firm to generate earnings from the use of its assets for a certain period of time (Farah & Nina, 2016). Profitability involves the capacity to make benefits from all the business operations of an organization, firm or company (Muya & Gathogo, 2016). Profit usually acts as the entrepreneur's reward for his/her investment. As a matter of fact, profit is the main motivator of an entrepreneur for doing business. Profit is also used as an index for performance measuring of a business (Ogbadu, 2009). Profit is the difference between revenue received from sales and total costs which includes material costs, labor and so on (Stierwald, 2010).

Profitability can be expressed either accounting profits or economic profits and it is the main goal of a business venture (Anene, 2014). Profitability portrays the efficiency of the management in converting the firm's resources to profits (Muya & Gathogo, 2016). Thus, firms are likely to gain a lot of benefits related increased profitability (Niresh & Velnampy, 2014). One important precondition for any long-term survival and success of a firm is profitability. It is profitability that attracts investors and the business is likely to survive for a long period of time (Farah & Nina, 2016). Many firms strive to improve their profitability and they do spend countless hours on meetings trying to come up with a way of reducing operating costs as well as on how to increase their sales (Schreibfeder, 2006).

Operating cash flow is the cash made from the operations of the firm. It is usually defined as revenues less operating expenses (Rashvand & Tariverdi, 2015). Operating cash flow comprises of all the activities that leads to net profit determination (Nwanyanwu, 2015). Operating cash flow is the flow of cash that is availed from the core operations of a firm (Amuzu, 2010). Operating cash flows are normally considered as a source of company cash and indicates the efficiency with which a company allocates its accrual cash flow (Aliakbari, 2015).

Cash generated from operating activities is a clear reflection of transactional effect of cash that help in determination of a firm's net income (Amuzu, 2010). Operating activities generally involve production and delivery goods and providing services (Duhovnik, 2008). Operating activities are the main firm's income producing activities.

They involve all transactions and activities or events which are used in computation of the firm's net profit or loss (Nwanyanwu, 2015).

1.2 Statement of the Problem

The main goal of management of inventory management is all about balancing the conflicting economics of not wanting to hold less stock or too much stock at any point in time (Kumar & Bahl, 2014). Return maximization on investment of inventories present a considerable proportion of firm's working capital which is a key function of the firm's financial manager (Mathuva, 2013). However, most managers ignore the saving potential that arise from proper management of inventories, trying to treat inventories as a necessary evil and not as an asset that require to be managed. As such, some firms do not or ignore to control their inventory holding, this usually leads to under stocking and causing the firm to stop or slow its production. This finally results to firm's ineffectiveness (Anichebe & Agu, 2013). According to Schreiberfeder (2006) many

organizations usually fail to examine its investment in inventory. They most focus on maximization of returns.

In Nigeria, more and more institutions including small and medium firms are increasingly adopting inventory management systems with the aim of achieving competitive advantage and enhancing their performance (Swaleh & Were, 2014). However, the main challenge today among firms in Nigeria is about the need to enhance of efficiency and improving on effectiveness at the same time. Nigerian firms are known to have a poor inventory management techniques which has negatively affected the firm's ability to service and satisfy their customers (Thogori & Gathenya, 2014). Thus, the need to study effect of inventory management on profitability and operating cash flows of beer distribution firms in Nigeria.

In addition, several studies have been carried out on inventory management across the world and in Nigeria too. A study by Folinias & Shen (2014) on effect of inventory turnover and inventory days on performance of the firms in United Kingdom's agricultural machinery industry. The study revealed that inventory days are vital to financial performance of organizations, however to varying degrees. Additionally, Eneje, Nweze, and Udeh (2012) studied the effect of raw materials inventory management on profitability of brewery companies in Nigeria. The study established that efficient management of the raw material inventory significantly affects the profitability of the brewery firms in Nigeria.

Sitienei & Memba (2015) also explored the effects of inventory management on the profitability of the Cement manufacturing firms. The study established a negative relation between inventory turnover, conversion period of inventory and storage cost with firm's profitability. However, most of the inventory management research globally and in Nigeria focus on inventory management of large-scale firms and mostly manufacturing entities thus ignoring supply and

distribution firms. In addition, most of the studies focus on inventory management and profitability leaving out operating cash flows. Thus, the question: What are the effects of inventory management on firm profitability and operating cash flows of beer distribution firms in Nigeria?

1.3 Research Question

- i. What is the relationship between profitability and inventory of Nigerian beer and mineral companies
- ii. What is the relationship between profitability and operating efficiency of Nigerian beer and mineral companies
- iii. What is the extent of causality between profitability and firm growth of Nigerian beer and mineral companies
- iv. What is the extent of relationship between inventory and cash flow of Nigerian beer and mineral companies

1.4 Research Objective

The main objective of this study is to investigate the effect of inventory management on the profitability and cash flow of Nigerian beer and mineral companies, while the specific objectives are to:

- i. Determine the relationship between profitability and inventory of Nigerian beer and mineral companies
- ii. Examine the relationship between profitability and operating efficiency of Nigerian beer and mineral companies
- iii. Investigate the causality between profitability and firm growth of Nigerian beer and mineral companies

- iv. Examine the extent of relationship between inventory and cash flow of Nigerian beer and mineral companies

1.5 Research Hypothesis

H₀₁: There is no significant relationship between profitability and inventory of Nigerian beer and mineral companies

H₀₂: There is no significant relationship between profitability and operating efficiency of Nigerian beer and mineral companies

H₀₃: There is no causality between profitability and firm growth of Nigerian beer and mineral companies

H₀₄: There is no significant relationship between inventory and cash flow of Nigerian beer and mineral companies

1.6 Significance of the Study

This study is of great significance to management of beer and mineral distribution firms, as it will help them to establish whether inventory management affects their firms' profitability and operating cash flows. The study will also be of significance to various policy-making organizations, which can use the findings to come up with policies on inventory management. Finally, the study will be of significance to researchers, as it will add on to the available empirical evidence on inventory management, firm profitability and operating cash flows.

1.7 Scope and Limitation of the Study

This study focuses on inventory management of selected beer and mineral companies in Nigeria which include... the period covered 2007 through 2016. The management of movement of inventory of all the selected companies' supplies was also covered by this study. Data were gathered from financial statements of the selected companies with specific focus on net profit,

total assets, opening inventory, closing inventory, sales, net opening cash flow, cost of sales and opening.

Limitations of the Study

This study sought to investigate effects of inventory management on firm's profitability and operating cash flows of beer distribution companies in Nigeria. The study focused on beer and Mineral distribution companies and thus its findings reflect the operations of those firms and may not be effective to beer and Mineral distributors of other companies in Nigeria in general. In addition, the context of the study is Nigeria hence the findings may not be applicable in other countries. The study also used secondary data from the six beer distribution companies in Nigeria, which was obtained from the finance managers of such firms. However, the validity and reliability of the data cannot be relied upon since not all the companies have audited financial statements and no proof that data was prepared based on internationally accepted accounting standards. The study also covered the quantitative aspects in terms of figures that influence profitability and operating cash flows of the bear distribution companies in Nigeria.

CHAPTER TWO

LITERATURE REVIEW

2.1 Conceptual Framework

2.1.1 Inventory Management

Inventory management refers to keeping or maintaining the firm's stocks at a level that a firm will only incur the least cost consistent with other management's set objectives or targets (Kwadwo, 2016). Inventory management is about ensuring that all input materials of production available to the firm are maintained at a level where production is not interrupted as well as ensuring that operational cost is kept at a minimal level without affecting operation efficiency (Eneje, Nweze, & Udeh, 2012). Inventory management entails planning, organizing, controlling and directing. All these coordinated efforts are meant to ensure achievement of efficiency in all operations of the firm. Such operations may include procurement, stocking and transportation (Akindipe, 2014). Mismanagement of Inventories may lead to significant financial problems for a firm (Muhayimana, 2015).

Inventory management is of high importance in financial management decision. This is because excess or shortage of this may bring danger to the company (Duru, Oleka & Okpe, 2014). The objective of inventory management is to maintain a system that minimizes total cost, while specifically, it establishes that the amount of stock to be ordered is optimal as well as the period between orders (Anene, 2014). Excess inventory consumes a lot of space, can increase possibility of spoilage, leads to a financial burden and loss while insufficient inventory has the potential of interrupting business operations (Swaleh & Were, 2014).

Inventory management is vital and needed in various areas within the firm especially in a supply network so as to protect production against any disturbance of running out of production inputs

or materials and goods (Ogbo, Onekanma & Ukpere, 2014). Management of Inventory is crucial to a firm since it plays a decisive role to enhance efficiency and improve the firm's competitiveness ability against the firm's competitors. Effective inventory management is all about holding the right amount of inventory required by the business at any point in time (Swaleh & Were, 2014). Inventory management involves creation of a purchasing plan which will help to ensure that all items or materials are available when needed as well as tracking the existing inventories and its use (Muhayimana, 2015)

According to Miller (2010), inventory management involves all activities put in place to ensure that customer has the needed product or service. It coordinates the purchasing, manufacturing and distribution functions to meet the marketing needs and organizational needs of availing the product to the customers. Inventory management is primarily involved with specifying the size and placement of stocked goods. Inventory management is required at different locations within a facility or within multiple locations of a supply network to protect the regular and planned course of production against the random disturbance of running out of materials. The scope of inventory management also involves managing the replenishment lead time, replenishment of goods, returns and defective goods and demand forecasting, carrying costs of inventory, asset management, physical inventory, available physical space, demand forecasting, inventory valuation, inventory visibility, future inventory price forecasting and quality management. With a balanced of these requirements, it is possible to reach an optimal inventory level, which is an on-going process as the business needs a shift and react to the wider environment (Ogbo et al, 2014)..

2.1.2 Firm Profitability

Profitability refers to money that a firm can produce with the resources it has. The goal of most organization is profit maximization (Niresh & Velnampy, 2014). The profitability shows the ability of a firm to generate earnings from the use of its assets for a certain period of time (Farah & Nina, 2016). Profitability involves the capacity to make benefits from all the business operations of an organization, firm or company (Muya & Gathogo, 2016). Profit usually acts as the entrepreneur's reward for his/her investment. As a matter of fact, profit is the main motivator of an entrepreneur for doing business. Profit is also used as an index for performance measuring of a business (Ogbadu, 2009). Profit is the difference between revenue received from sales and total costs which includes material costs, labor and so on (Stierwald, 2010).

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Profitability is used in measuring performance of the firm. Profitability is one of main aspects of financial reporting for many firms (Farah & Nina, 2016). Profitability is vital to the firm's manager as well as the owners and other stakeholders that are involved or associated to the firm since profitability gives a clear indication of business performance. Profitability ratios are

normally used to measure earnings generated by a firm for a certain period of time based on the firm's sales level, capital employed, assets and earnings per share (EPS). Profitability ratios are also used to measure the firm's earning capacity and considered as a firm's growth and success indicator (Majed, Said & Firas, 2012).

Inventory control means availability of materials whenever and wherever required by stocking adequate number and kind of stocks. The sum total of those related activities essential for the procurement, storage, sales, disposal or use of material can be referred to as inventory management. Inventory managers have to stock-up when required and utilize available storage space resourcefully so that available storage space is not exceeded. Maintaining accountability of inventory assets is their responsibility. They have to meet the set budget and decide upon what to order, how to order and when to order so that stock is available on time and at the optimum cost (Benedict and Margeridis,1999). Hence, inventory management involves planning to organize and controlling the flow of materials from their initial purchase unit through internal operations to the service point through distribution (Smaros, et al., 2003). Functions of Inventories

Having (an amount of) stock is costly and can cause various additional risks. Waters (2003) states the following: "stocks are expensive, because of the costs of tied-up capital, warehousing, protection, deterioration, loss, insurance, packaging, administration and so on". He therefore also wonders why inventories are being maintained by organizations at all. According to the Just-in-Time principle (JIT) when all materials arrive just in time, no stock will be needed and thus inventory management will not have to deal with the temporary storage of all these goods (Coyle et al., 2003). This is how managers often explain the JIT-principle. Unfortunately, the JIT-principle cannot always be applied and JIT is just a way of control in a situation where production takes place based on an order (no mass production). JIT does not mean there are any

inventories at all but aims at the elimination of unnecessary stocks during production (Dijk et al., 2007).

Challenge of Inventory Management

The wholesalers and retailers that are major actors involved in downstream distribution channels face a special challenge in keeping inventory at reasonable levels due to the difficulty of forecasting demand and expectations of customers about product availability (Coyle et al., 2003). The challenge grows even bigger when we think about the diversity of products in terms of their color/design, package type, size and so on. To further explain the problem, we assume there is an accurate demand forecast; however, the aggregate demand needs to be broken down by various specifications of the product into sub-total demand forecast to guide the stock keeping units (SKUs) in the company in order to fulfill the final customer's order. But the sub-total demand forecasts could be diverse, reaching dozens, hundreds, or even thousands of categories; in that case, they become truly difficult, complex and time-consuming. The difficulty of forecasting demands accurately naturally results in two problems, which are in opposite extreme, overstock and stock-out of inventory. As companies strive to avoid lost sales from stock-out of inventory, there is a tendency to overstock

Demand Management

Demand management may be thought of as “focused efforts to estimate and manage customers’ demand, with the intention of using this information to shape operating decision.” (Coyle et al., 2003)

Independent and Dependent Demand

Independent demand is what whose usage is based on external market requirements rather than related to other items’ demand. The market demand for consumer goods is a typical example of

2.1.3 Operating Cash Flows

Operating cash flow is the cash made from the operations of the firm. It is usually defined as revenues less operating expenses (Rashvand & Tariverdi, 2015). Operating cash flow comprises of all the activities that leads to net profit determination (Nwanyanwu, 2015). Operating cash flow is the flow of cash that is availed from the core operations of a firm (Amuzu, 2010). Operating cash flows are normally considered as a source of company cash and indicates the efficiency with which a company allocates its accrual cash flow (Aliakbari, 2015).

Cash generated from operating activities is a clear reflection of transactional effect of cash that help in determination of a firm's net income (Amuzu, 2010). Operating activities generally involve production and delivery goods and providing services (Duhovnik, 2008). Operating activities are the main firm's income producing activities.

They involve all transactions and activities or events which are used in computation of the firm's net profit or loss (Nwanyanwu, 2015).

Operating cash flow is a measurement of the amount of funds a firm generates through its core business (Rashvand & Tariverdi, 2015). Operating cash flow is a more objective and a direct measure of firm's liquidity position (Telmoudi, Ziadi & Noubbigh, 2010) and the operating cash flow can be determined either by a direct method or indirect method. Normally, cash flow to sales ratio is used to measure as to proxy for cash flow from operations. The cash flow to sales ratio is usually give cash flow as a percentage of sales ratio. This ratio is computed using the cash flow from operations.

2.2 Empirical Literature Review

Etale & Bingilar (2016) examined effect of inventory cost management on profitability of listed brewery firms in Nigeria was used. Secondary data from the annual reports and accounts of

selected brewery firms from the Nigeria Stock Exchange from 2005 to 2014 was used in the study. Using the multiple regression technique the study found that efficient inventory cost management has a positive effect on profitability of brewery firms in Nigeria. The study recommended that brewery companies should adopt effective and efficient inventory cost management practices; deploy appropriate modern technology for effective inventory cost management; and employ capable and qualified staff who should be trained regularly on proper and efficient inventory cost management.

Naliaka & Namusonge (2015) investigated the role of inventory management on competitive advantage for Kenyan manufacturing firms. A descriptive research design was used in the study. Self-administered questionnaires were used in data collection. The findings of the study revealed that inventory control systems, information technology, inventory lead-time and inventory control practices are vital factors in achievement of a competitive advantage for Kenyan's manufacturing firms.

Sitienei & Kioko (2015) examined the effect of working capital management on the profitability of cement manufacturing firms in Kenya. The study used secondary data for a 15 years period from 2000 to 2014. The study established that inventory conversion period positively and significantly influences profitability while average receivables period had a positive insignificant relationship with profitability. The study also established a positive significant relationship between leverage and profitability while liquidity and size of the firm had a positive but insignificant relationship with the profitability. The study concluded that inventory days, receivables period, liquidity, advantage and firm size positively influences profitability of cement manufacturing firms in Kenya.

Mwangi & Thogori (2015) explored the role of inventory management on the performance of food processing firms in Kenya. The study used a sample of 110 respondents and a questionnaire for data collection. The study findings established that a unit increase in maintaining production, cost control, reduced loss and continuous supply will lead to an increase in the scores of the performance of food processing company. The study recommended that inventory management should be well articulated and there should be a good management on cost control such as carrying cost, ordering cost as well and maintain production should be managed to meet demand, increase production turnover and identify opportunity.

Munyao et al. (2015) examined the role of inventory management practices in performance of the production department by manufacturing firms in Mombasa County. The study adopted the descriptive research design and a sample of 45 manufacturing firms while data was collected using questionnaires. The study findings revealed that manufacturing firms use various inventory management techniques such as the action level methods, JIT, EOQ and periodic review technique. The study found that despite the fact that MRP was most effective in contributing to performance of the production department most organizations in the manufacturing industry used action level methods.

Nwosu (2014) examined the impact of materials management on profitability of Nigeria brewing companies using a sample size of 368 companies. The study used questionnaire and oral interviews to collect data. The study established that materials procurement and storage has significant effect on profitability of brewing companies. The study also found that materials inventory has a significant contribution to profitability of brewing companies; and that interdepartmental collaboration significantly contributed to the profitability of brewing firms.

The study concluded that effective materials management is indispensable to brewing firms in making profits.

Anichebe & Agu (2013) assessed impact of proper inventory management on performance of organizations in Nigeria. The study used a sample of 248 respondents and collected data using questionnaire and oral interviews. The study findings established a significant relation between inventory management and effectiveness in an organization. The study also established that inventory management had a significant effect on productivity of an organization and there was a strong positive correlation between inventory management and profitability of an organization. The study concluded that good management of Inventories is key to growth and success of an organization.

Kariuki (2013) examined factors that influence effectiveness of the inventory control at the Ministry of State for Provincial Administration and Internal Security in Kenya. The study established that procurement of goods delays, stock-outs and unpredictable change in prices were the effects of the long bureaucratic procurement procedure. The study also found that untimely funds dispatch has a negative effect on inventory control. The study further found that inaccessibility stores records, lack of qualified and well-trained employees hinder an effective inventory management and control system.

Panigrahi (2013) examined the relationship between inventory conversion period and profitability of top five cement firms in India from 2001-2010 using regression analysis. The results of the study established a negative significant linear relationship between the inventory conversion period and the profitability. The study also established that the Inventory conversion period h Edwin and Florence (2015) The Effect of Inventory Management on Profitability of Cement Manufacturing Companies in Kenya: A Case Study of Listed Cement Manufacturing

Companies in Kenya. Given the milestone contribution of the Cement manufacturing firms to the economy of as an inverse relation with profitability of the firms. Kenya, this research is necessary to evaluate the effects of inventory management on the profitability of the Cement manufacturing firms in Kenya. A cross-sectional data from 1999 to 2014 was gathered for the analysis of the annual reports for the three sampled firms listed at Nairobi Securities Exchange (NSE). The ordinary least squares (OLS) stated in the form of multiple regression models was applied in the data analysis to establish the relationship between inventory management and firm's profitability. The variables used include inventory turnover, inventory conversion period, Inventory levels, storage cost, size of firm, gross profit margin, Return on assets and growth of the firm. The results provide a negative relationship between inventory turnover, inventory conversion period and storage cost with the profitability of the company. In addition, inventory level was found to be directly related to firm's size and storage cost. The study recommends that the Cement manufacturing firms in Kenya should strive to ensure that the right stock is kept in their warehouses to hedge against excessive holding cost and stock-outs.

Koin ,Cheruiyot , and Mwangangi ,(2014) conducted a study on the effect of inventory management on an organization's performance. the study will employ a descriptive research design the study population too is 459 employees and care will be taken to ensure that the accessible population sampled is of a sizeable to inform the researcher on the formulated research objectives. a sample of 56 employees will be obtained from the target population the data will be collected from the company's supply chain department in liaison with the various integrated functions in the chain using questionnaires. the questionnaires will be dropped to all the heads of the various business process owners linked to the supply chain and their staff the collected data will be compiled for analysis the data will be analyzed using descriptive statistics

and this will be done using a statistical package for analysis (specs). the findings indicate that e inventory management system, supplier relation affects the supply chain effectiveness in the manufacturing sector to a great extent while order management and warehouse management affects it to a moderate extent .this study shall demonstrate the practicality and effectiveness of the proposed approach.by means of this research, valid solutions for harmonization of inventory management and procurement performance shall be availed to the decision makers.

Ogbo, Onekanma and Wilfred (2014) carried out a study on the effect of the effective system of inventory management on organization performance in the seven-up bottling company, Nile Mile Enugu. The researchers were motivated to embark on this study, in order to bring to fore the importance of effective inventory control system on organizational performance as it relates to the bottling company. A total of eighty-three respondent constitute the sample for the study. Four research questions and Four hypotheses were generated and tested at 10% (that is 0.10) significant level using descriptive statistics and a non-parametric test (chi-square that is, χ^2). The result of the analysis showed that flexibility in inventory control management is an important approach to achieving organizational performance. It was found that organizations benefits from inventory control management by way of easy storage and retrieval of material, improved sales effectiveness, and reduced operational cost. The study also found that there is a relationship between operational feasibility, the utility of inventory control management in the customer related issues of the organization and cost effectiveness technique are implemented to enhance the return on investment in the organization. Effective inventory control management is recognized as one of the areas management of any organization should acquire capability. It is recommended that organizations should adopt the inventory keeping method that best suits their operations.

Kamau and Assumpta (2008) carried out a study on the influence of inventory management on organizational competitiveness, with a particular focus on Safaricom Ltd Kenya. The specific objectives of the study were to determine the effects of inventory shrinkage, inventory investment and inventory turnover on the competitiveness of Safaricom Ltd. A descriptive research design was used in this study. The target population comprised of Safaricom Kenya Ltd senior personnel in the following departments; Finance division, customer care, supply, and administration, commercial (sales and marketing) department. The study targeted personnel in those departments as they are better placed to answer questions relating to inventory control and the company's competitiveness. The target respondents included the 103 management staffs from the Company's Head Offices in Nairobi. Stratified random sampling was applied where a sample was calculated using Fishers Formula. This generated a sample of 80 respondents. The study collected primary data using questionnaire with both open ended and closed ended questions and administered using drop and pick later method. The quantitative data that was obtained from the questionnaires were coded and keyed into a statistical package of social science (SPSS) analysis software. Both descriptive and inferential statistics were utilized to analyze the results interpreted in terms of percentages and means score and presented in tables and figures. The study found that inventory shrinkage, inventory investment, aInventory Management and Financial Performance

There have been numerous attempts to explain financial performance of companies in the fields of strategic management, accounting, finance, marketing and management science. Naturally each of these areas concentrates on different explanatory variables and therefore this study limits the survey to papers that are perceived as immediately relevant. In the US, Sanghal (2005)

studied the effect of excess inventory on long term stock price performance. The study estimated the long-run price effects of excess inventory using 900 excess inventory announcements made by publicly traded firms during 1990-2002. These announcements are clear and unambiguous acknowledgement by affirm that it is suffering from excess inventory.

Examples include instances of production curtailment, temporary shutdowns, price mark downs, promotion to liquidate inventory and inventory write- offs to deal with excess inventories. He found evidence suggesting that stock market partially anticipates excess inventory situations and that firms do not recover quickly from negative effects of excess inventory. He further noted that the negative effect of excess inventory is economically and statistically significant. In Malaysia, Agus and Noor (2006) examined the relationship between inventory management practices and financial performance. The study measured he manager's perceptions of inventory and supply chain management practices and the level of performance in the industry.

The practices include lean inventory systems, Technology and strategic supplier partnerships. They employed a structured questionnaire, which was designed to assess the companies in terms of the described dimensions. The sample companies were randomly chosen from manufacturing companies (non- food based manufacturing companies with medium to high technology) in Klang valley, Malaysia. The findings suggest that inventory management practices have significant correlations with profitability and return on sales (ROS).

Roumiantsev and Netessine (2005) investigated the association between inventory management policies and the financial performance of affirm. The purpose of the study was to assess the

impact of inventory management practices on financial performance across the period 1992-2002. They used conventional firm specific variables (inventory levels, margins, and lead times) as explanatory variables. They found no evidence that smaller relative levels are associated with financial performance as measured by return on assets. Eckert (2007) examined inventory management and role it plays in improving customer satisfaction. He found a positive relationship between customer satisfaction and supplier partnerships, education and training of employees, and technology.

In Greece, Koumanakos (2008) studied the effect of inventory management on firm performance 1358 manufacturing firms operating in three industrial sectors in Greece, food textiles and chemicals were used in the study covering 2000 – 2002 period. The hypothesis that lean inventory management leads to an improvement in a firm's financial performance was tested. The findings suggest that the higher the level of inventories preserved (departing from lean operations) by a firm, the lower the rate of return. In conclusion, most of the studies reviewed concentrated on conventional firm level variables such as inventory levels, demand and lead time.

Little attempt was made to capture the perceptions of managers about the impact of inventory management practices on firm financial performance. Agus and Noor (2006) did measure the perception of managers about the impact of inventory management practices on financial performance of manufacturing firms in Malaysia. However, circumstances in Malaysia could be different from those in Kenya. This study seeks to investigate the impact of inventory management practices on financial performance of sugar manufacturing firms in Kenya. nd

inventory turnover affects the competitiveness of Safaricom Ltd. The study concludes that inventory management practices are very vital to the competitiveness of organizations.

Ogbo, Onekanma and Ukpere (2014) examined the relationship between effective inventory management and organization's performance in Nigeria. This case study of a bottling company using descriptive statistics and Chi-Square non-parametric test found that inventory management enhanced the return on investment. Augustine and Agu (2013) studied the effect of inventory management on organizational effectiveness and profitability of manufacturing companies in Nigeria. Using Pearson product moment correlation coefficient and linear regression techniques, the study found positive correlation between inventory management and profitability. Okwo and Ugwunta (2012) studied the impact of input costs on firm profitability of the breweries industry in Nigeria. The study adopted the ratios of selling and general administrative expenses, cost of goods sold (inventory), receivables, payables and depreciation as independent variables; and profitability as dependent variable. Using Ordinary Least Squares and multiple regression techniques, they among others found that cost of goods sold (inventory) had positive significant relationship with profitability. Abdulraheem, Yahaya, Isiaka and Aliu (2011) studied the impact of inventory management on the performance of small businesses in Nigeria, using multiple regression technique. The study found that inventory management had a strong positive impact on profitability among small businesses in Nigeria. Falope and Ajilore (2009) used a sample of 50 Nigerian quoted non-financial firms for the period of 1996-2005. Their study utilized panel data econometrics in a pooled regression where time series and cross sectional observation were combined and estimated. They found a significant negative relationship between operating profit and the inventory turnover in days for a sample of 50 Nigerian firms listed in the Nigerian Stock Exchange.

Hassan, Imran, Amjad and Hussain (2014) examined the effect of working capital management on the performance of listed non-financial firms in Pakistan. Ordinary Least Square technique was employed to analyse data collected from non-financial firms listed on the Karachi Stock Exchange for the period 2007 to 2010. Among the independent variables used as proxy for working capital management, average age of inventory had a positive insignificant relationship with gross profit margin and return on assets, but had a negative insignificant effect on return on equity. Raheman and Nasr (2007) studied the effects of inventory turnover in days and current ratio of the net operating profit of Pakistani firms. They selected a sample of 94 Pakistani firms listed on the Karachi Stock Exchange for a period of six years from 1999-2004 and found a strong negative relationship between inventory conversion period and profitability of the firms. Sekeroglu and Altan (2014) investigated the effect of inventory management on the profitability of firms in the weaving, food, wholesale and retail industries in Turkey from 2003 to 2012. The study employed regression and correlation techniques using the computer software SPSS 20 version to analyse data collected from the income statements of the selected firms. The results showed positive relationship between inventory management and profitability in the food industry, but no relationship in the weaving, wholesale and retail industries. Panigrahi (2013) examined the relationship between inventory conversion period and the profitability of cement companies in India for the period 2001 to 2010. The study adopted gross operating profit as the dependent variable and proxy for profitability and inventory conversion period as the independent variable. In addition, current ratio, size of the firm and financial debt ratio were used as control variables. The study found significant negative linear relationship between inventory management and profitability. Deloof (2003) studied the relationship between inventory conversion period and corporate profitability, using a sample of 1,009 large Belgian non-

financial firms for a period of 1992-1996. The study employed correlation and regression analysis techniques to data and found a significant negative relationship between gross operating income and inventory turnover days of Belgian firms.

2.3 Theoretical Framework

2.3.1 The Theory of Economic Order Quantity

The economic order quantity (EOQ) theory was proposed by Haris (1913) to determine the optimal inventory level. EOQ refers to an inventory level that can minimize both inventory holding cost and inventory ordering cost (Lwiki et al., 2013). The EOQ model is used to determine an optimal ordering size that will minimize the sum of ordering and carrying costs (Ziukov, 2015). This model was found on the assumption that demand equals annual total quantity ordered by the firm at any point in time (Milicevic, Davidovic & Stefanovic, 2010).

The EOQ model considers a tradeoff between storage cost and ordering cost when making a decision on the quantity to use when replenishing inventory items. Ordering frequency is usually reduced by a larger amount of quantity ordered, hence reduced ordering cost but increases storage costs and requires a larger space for storage too (Schwarz, 2008). Some costs declines with holding inventory, while others holding costs increases and that the total inventory-associated cost curve has a minimum point (Lwiki et al., 2013). Ordering costs refers to those costs which are incurred when additional inventories are being procured or purchased while carrying costs are the costs incurred for inventory holding. Thus, EOQ is determined by intersection of ordering cost curve and carrying cost line. At this point total carrying cost and total ordering cost are equal to each other (Kumar, 2016).

The EOQ method is used in determining an optimal order quantity which will minimize total inventory cost. The EOQ is very useful tool for inventory control and it can be applied to

finished goods inventories, work- in- progress inventories and raw material inventories. It regulate the purchase and storage of inventory in a way to ensure that an even production flow at the same time restricting excess investment on inventories (Kumar, 2016).

2.3.2 Just in Time Model

Just in Time (JIT) is a strategy that is meant to improve the financial performance of a business by reduction of excess inventory together with associated cost (Shin, Ennis & Spurlin, 2015). The JIT model is based on three crucial principles: waste elimination, continuous improvement in product and service quality and involvement of staff/workers in planning and implementation of the firm's strategies (Obiri-Yeboah, Ackah & Makafui, 2015). JIT is a management concept that was invented to specifically help firms in waste avoidance/reduction. JIT encourages waste minimization as well as productivity enhancement. JIT model is able to identify the value chain challenges and helps in reduction of production waste in the system (Kootanaee, Nagendra & Hamidreza, 2013). Just-In-Time (JIT) is about having right items, right quality and right quantity at the right time and place. If JIT is implemented well, it has the potential of enhancing production quality, increase productivity, improve production efficiency and finally reduces wastes and other avoidable costs associated with production (Kootanaee, Nagendra & Hamidreza, 2013).

JIT help in reduction of inventory levels within a firm. As such, firms end up lowering their investments in inventories. JIT emphasize on having in hand the minimum required quantity of materials for immediate use. As such, inventory holding costs are substantially reduced (Kootanaee, Nagendra & Hamidreza, 2013).

2.3.3 Pareto (ABC) Model

The Pareto principle 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). With the ABC model, products are categorized depending on their importance levels. Importance may be 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. Once categorization is done, breaking points are also decided for each class (Class A, class B and class C) (Obiri- Yeboah, Ackah & Makafui, 2015).

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 (Priyank & Hemant, 2015).

CHAPTER THREE

RESEARCH METHODOLOGY

3.1. Research Design

The study will adopt descriptive research design, which is informed by the quantitative nature of the problem of the study and its suitability for the study of inventory control and profitability as confirm by vast empirical studies.

3.2. Population, Sample and Sampling Technique

The population of the study will consists of all the beer and mineral distribution companies in the Nigeria and the sample of six (6) companies are be selected. The simple random sampling technique is employ to select the six (6) beer and mineral companies for the study. The technique is well suited for determining the sampling as it provides an equal probability of selection and as such minimizes selection bias. The sample companies are: Ofico Nigeria Limited, D O Ononiwu & Son Nigeria Limited, Easy Drinks, Benue Brewery Limited, Ranbaxy Nigeria Limited and Bendel Nigeria Limited.

3.3 Data Collection

This study utilized the secondary data, which was collected using a data collection sheet. The data collection sheets were issued to finance managers of all the six firms. Data collection sheet obtained data on inventory management, profitability and operating cash 23 flows from the beer distribution firms for a period of 10 years from the years from 2006-2015.

3.4. Procedure for Data Analysis and Model Specification

Collected data was analyzed using ordinary least squares in form of regression equations via E-view. To measure inventory management, this study used inventory conversion period (ICP)

while to measure profitability and operating cash flows the study calculated the return on assets (ROA) and the Cash flow to sales ratio (CFO) respectively.

Multiple regression analysis will be use as the data analysis method. The regression analysis will be carried out using the Ordinary Least Squares (OLS), estimation technique.

Model Specification

In view of the discussion above, the various hypothesis and variables are combined into a functional equation to explain the relationship between inventory management and profitability and between inventory and cash flow.

For the purpose of the study a model is specified and estimated.

The functional specification is shown thus;

$$ROA = f(ICP,OE, FG,FS).....Eq1$$

$$CFO = f(ICP,OE, FG,FS).....Eq2$$

The model specification is thus;

$$\text{Model 1: } ROA_{jt} = \beta_0 + \beta_1 ICP_{jt} + \beta_2 OE_{jt} + \beta_3 FG_{jt} + \beta_4 FS_{jt} + \epsilon_{jt}$$

$$\text{Model 2: } CFO_{jt} = \beta_0 + \beta_1 ICP_{jt} + \beta_2 OE_{jt} + \beta_3 FG_{jt} + \beta_4 FS_{jt} + \epsilon_{jt}$$

Where:

ROA_{jt} = Return on assets (Net Income/Total Assets) in firm j at time t

CFO_{jt} =Cash flow from operations (Net Operating Cash Flow/Net Sales)in firm j at time t

ICP_{jt} = Inventory conversion period (Average stock/Cost of Sales x 365) in firm j at time t

OE_{jt} = Operating efficiency (Operating Expenses/Total Income) in firm j at time t

FG_{jt} = Firm growth ((Sales_t – Sales_{t-1})/Sales_{t-1}) in firm j at time t

FS_{jt} = Firm size (natural Log of Total Assets) in firm j at time t

β₁ – β₃ = Coefficient of explanatory variables

β_0 = Constant or Intercept

ε = Error Term in firm j at time t

3.5. Justification of Methods

It is only the modified Jones model find discretionary accruals that are consistent with both performance and opportunistic smoothing of earnings and also the Modified-Jones-model has the most explanatory power compared to the other proposed models (Stolowy & Breton, 2004).

CHAPTER FOUR

DATA PRESENTATION AND ANALYSIS

4.1 Introduction

This chapter presents results of the collected data on effect of inventory management on firm profitability and operating cash flows of beer and Mineral distribution companies in Nigeria. The results of the study are presented in form of tables.

4.2 Descriptive Statistics

This study carried out an investigation of Nigerian beer and Mineral distribution companies and obtained data from all the beer and Mineral distribution companies. The study also carried out a descriptive summary of the study variables. Table 4.1 shows the results obtained.

Table 4.1 Summary Descriptive Statistics

```
. tabstat roa cfo icp oe fg fs, statistics( mean max min sd var semean skewness
> kurtosis )
```

stats	roa	cfo	icp	oe	fg	fs
mean	.1545	.0115	8.015833	.308	.1328333	18.91367
max	.95	.06	51.94	.84	3.94	20.61
min	-.31	-.02	1.91	.01	-.81	9.53
sd	.194983	.0117639	6.589812	.2132858	.6183551	1.419132
variance	.0380184	.0001384	43.42562	.0454908	.382363	2.013936
se(mean)	.0251722	.0015187	.8507411	.0275351	.0798293	.1832092
skewness	2.064451	1.281436	5.085227	.7070079	3.721959	-4.79672
kurtosis	9.067499	7.440363	34.25928	2.723541	25.29296	33.13404

Source: Research Findings (Stata)

Table 4.1 shows the average ROA for the beer distribution firms is 0.1545 which indicates average profitability for most of the beer and Mineral distribution companies in Nigeria is good. The results also indicate the average operating cash flows (CFO) for the firm is 0.0115 and the average inventory conversion period (ICP) is less than 1 day, which indicates that on average Nigeria beer distribution companies take an average of less than 1 day to convert inventory into

sales. The mean operating efficient (OE) ratio is 0.308 hence an indication that that expenses account for 30.8% of the beer distribution companies hence inefficient management. The results also indicate the average growth (FG) rate for the firms is 13.2%, even though is low but still good for them and the average size (FS) of the beer distribution firms is 18.91367 respectively.

4.3 Correlation Analysis

Table 4.2 Correlation Analysis

```
. correlate roa cfo icp oe fg fs
(obs=60)
```

	roa	cfo	icp	oe	fg	fs
roa	1.0000					
cfo	0.4758	1.0000				
icp	-0.2551	0.4374	1.0000			
oe	0.0671	0.0120	-0.1662	1.0000		
fg	0.2724	0.1571	-0.1097	0.0181	1.0000	
fs	-0.3087	-0.0236	0.0683	-0.1308	0.2554	1.0000

Source: Research Findings (Stata)

The results on table 4.2 shows that here is negative correlation between profitability measured using ROA and inventory conversion period (ICP) and firm growth (FG). The results also indicate that there is a positive correlation between profitability and operating efficiency (OE) and firm size (FS).

4.4 Regression Analysis

4.4.1 Model I using ROA

Table 4.3 shows the regression results obtained using ROA as a proxy for profitability.

Table 4.3 Regression Coefficients using ROA

. regress roa cfo icp oe fg fs

Source	SS	df	MS			
Model	1.32983861	5	.265967723	Number of obs =	60	
Residual	.913246317	54	.016911969	F(5, 54) =	15.73	
Total	2.24308493	59	.038018389	Prob > F =	0.0000	
				R-squared =	0.5929	
				Adj R-squared =	0.5552	
				Root MSE =	.13005	

roa	Coef.	Std. Err.	t	P> t	[95% Conf. Interval]	
cfo	11.00203	1.663778	6.61	0.000	7.666354	14.3377
icp	-.0152221	.0029948	-5.08	0.000	-.0212263	-.0092178
oe	-.0651885	.081428	-0.80	0.427	-.2284417	.0980647
fg	.0611104	.0295451	2.07	0.043	.0018761	.1203447
fs	-.0435124	.0125883	-3.46	0.001	-.0687503	-.0182744
_cons	.9849335	.2423305	4.06	0.000	.4990902	1.470777

Source: Research Findings (Stata)

From results on table 4.4, the resultant regression equation is as follows

$$ROA = - 0.0152221 - 0.0651885 + 0.0611104 - 0.0435124 + \varepsilon$$

The results on table 4.4 show a negative insignificant relationship between inventory conversion period (ICP) and growth of the firm (FG) and profitability. The results also indicate a positive significant relationship between the Management efficiency (OE), Size of the enterprise (FS) levels and profitability of beer and Mineral distribution firms in Nigeria. The study also shows that, the R- squared value is 0.5929, which indicates that 59.29% of the variation in dependent variable ROA is explained by independent variables; inventory conversion period management efficiency, firm growth levels and size of the enterprise. The study also shows that the calculated F statistics value 15.73 is significant at 5% level of significance as P-value 0.0000<0.05. This indicates a significant relation between the inventory management and the profitability Beer and Mineral distribution firms in Nigeria.

4.4.2 Model II using Operating Cash flows (CFO)

Table 4.4 shows the regression results obtained using CFO as a proxy for the operating cash flows

Table 4.4 Regression Coefficients using Operating Cash flows (CFO)

```
. regress roa cfo icp oe fg fs
```

Source	SS	df	MS	Number of obs = 60		
Model	1.32983861	5	.265967723	F(5, 54) =	15.73	
Residual	.913246317	54	.016911969	Prob > F =	0.0000	
Total	2.24308493	59	.038018389	R-squared =	0.5929	
				Adj R-squared =	0.5552	
				Root MSE =	.13005	

roa	Coef.	Std. Err.	t	P> t	[95% Conf. Interval]	
cfo	11.00203	1.663778	6.61	0.000	7.666354	14.3377
icp	-.0152221	.0029948	-5.08	0.000	-.0212263	-.0092178
oe	-.0651885	.081428	-0.80	0.427	-.2284417	.0980647
fg	.0611104	.0295451	2.07	0.043	.0018761	.1203447
fs	-.0435124	.0125883	-3.46	0.001	-.0687503	-.0182744
_cons	.9849335	.2423305	4.06	0.000	.4990902	1.470777

Source: Research Findings (Stata)

From results on table 4.4, the resultant regression equation is as follows

$$CFO = 0.123185 + 0.141636 + 0.030466 + 10.92094 - 0.017708 + \varepsilon$$

The results on table 4.5 show a positive significant relationship between the firm growth (FG) and the operating cash flows of beer distribution firms in Nigeria. The results also show indicate a negative insignificant relation between the Firm Size (FS) and operating cash flows of beer distribution firms in Nigeria. Further, the study established found a positive but insignificant relationship between the inventory conversion period (ICP), management efficiency (OE) and the operating cash flows of beer distribution firms in Nigeria.

The results also indicate that the R- squared value is 0.584504, which indicates that 58.45% of variation in dependent variable CFO is explained by independent variables; inventory conversion period management efficiency, firm growth levels and size of the enterprise. The study also

shows that the calculated F statistics value (7.815333) is significant at 5% level of significance as P- value $0.005 < 0.05$. This indicates a significant relationship between the inventory management and the operating cash flows of Beer distribution companies in Nigeria.

MULTICOLLINEARITY TEST

```
. estat vif
```

Variable	VIF	1/VIF
icp	1.36	0.735964
cfo	1.34	0.748251
fg	1.16	0.858808
fs	1.11	0.898184
oe	1.05	0.950323
Mean VIF	1.21	

The standard for VIF should not be more the 10, the reason is that as the degree of multicollinearity increases, the regression model estimates of the coefficients become unstable and the standard errors for the coefficients can get wildly inflated. In this section, the VIFs look fine here. Since the mean of the VIF is only 1.21 and for all the variables, no is even up to 2.

FIXED EFFECT

```
. xtreg roa cfo icp oe fg fs, fe
```

```
Fixed-effects (within) regression      Number of obs   =       60
Group variable: crossid                Number of groups =        6

R-sq:  within = 0.6140                  Obs per group:  min =       10
      between = 0.0832                                avg   =      10.0
      overall  = 0.5737                                max   =       10

corr(u_i, Xb) = -0.0108                  F(5, 49)        =      15.59
                                          Prob > F         =      0.0000
```

roa	Coef.	Std. Err.	t	P> t	[95% Conf. Interval]	
cfo	10.52808	1.66467	6.32	0.000	7.182795	13.87335
icp	-.0161164	.0030092	-5.36	0.000	-.0221636	-.0100692
oe	.0477089	.1126344	0.42	0.674	-.1786383	.2740562
fg	.0538147	.0292979	1.84	0.072	-.0050616	.1126911
fs	-.0376669	.0132995	-2.83	0.007	-.0643953	-.0109428
_cons	.8532299	.2613211	3.27	0.002	.3280855	1.378374
sigma_u	.05575455					
sigma_e	.12784507					
rho	.15979954 (fraction of variance due to u_i)					

```
F test that all u_i=0:      F(5, 49) =      1.38      Prob > F = 0.2499
```

RANDOM EFFECT

```
. xtreg roa cfo icp oe fg fs, re
```

```
Random-effects GLS regression           Number of obs   =       60
Group variable: crossid                 Number of groups =        6

R-sq:  within = 0.6043                  Obs per group:  min =       10
      between = 0.6527                                     avg   =      10.0
      overall  = 0.5929                                     max   =       10

Wald chi2(5)           =      78.63
corr(u_i, X) = 0 (assumed)   Prob > chi2           =      0.0000
```

roa	Coef.	Std. Err.	z	P> z	[95% Conf. Interval]	
cfo	11.00203	1.663778	6.61	0.000	7.741083	14.26297
icp	-.0152221	.0029948	-5.08	0.000	-.0210918	-.0093523
oe	-.0651885	.081428	-0.80	0.423	-.2247844	.0944073
fg	.0611104	.0295451	2.07	0.039	.0032032	.1190177
fs	-.0435124	.0125883	-3.46	0.001	-.0681849	-.0188398
_cons	.9849335	.2423305	4.06	0.000	.5099745	1.459893
sigma_u	0					
sigma_e	.12784507					
rho	0	(fraction of variance due to u_i)				

Hausman Test

```
. hausman fixedeffect randomeffect
```

	—— Coefficients ——			
	(b) fixedeffect	(B) randomeffect	(b-B) Difference	sqrt(diag(V_b-V_B)) S.E.
cfo	10.52808	11.00203	-.4739523	.0545052
icp	-.0161164	-.0152221	-.0008943	.0002939
oe	.0477089	-.0651885	.1128975	.0778202
fg	.0538147	.0611104	-.0072957	.
fs	-.037669	-.0435124	.0058434	.0042908

```
b = consistent under Ho and Ha; obtained from xtreg
B = inconsistent under Ha, efficient under Ho; obtained from xtreg
```

```
Test: Ho: difference in coefficients not systematic
```

```
chi2(5) = (b-B)'[(V_b-V_B)^(-1)](b-B)
        =      16.96
Prob>chi2 =      0.0046
(V_b-V_B is not positive definite)
```

Test of the Hypothesis One

. regress roa icp, noconstant

Source	SS	df	MS			
Model	.470770045	1	.470770045	Number of obs =	60	
Residual	3.20452986	59	.054314065	F(1, 59) =	8.67	
Total	3.6752999	60	.061254998	Prob > F =	0.0046	
				R-squared =	0.1281	
				Adj R-squared =	0.1133	
				Root MSE =	.23305	

roa	Coef.	Std. Err.	t	P> t	[95% Conf. Interval]	
icp	.008565	.0029092	2.94	0.005	.0027436	.0143864

H₀ There is no significant relationship between profitability and inventory of Nigerian beer and mineral companies. From the result above, the R² of 0.1281 explains the independent variable which is ICP in the dependent variable. The hypothesis stated that. There is no significant relationship between ROA and ICP but the result shows that, at the 0.05 level of significant the p-v is 0.005 which means that H₀ should be rejected and accept the alternative. By implication, one unit increase in ICP will increase ROA by 0.008565 percent.

Test of the Hypothesis Two

. regress roa oe, noconstant

Source	SS	df	MS			
Model	1.08875472	1	1.08875472	Number of obs =	60	
Residual	2.58654518	59	.043839749	F(1, 59) =	24.83	
Total	3.6752999	60	.061254998	Prob > F =	0.0000	
				R-squared =	0.2962	
				Adj R-squared =	0.2843	
				Root MSE =	.20938	

roa	Coef.	Std. Err.	t	P> t	[95% Conf. Interval]	
oe	.3605387	.0723471	4.98	0.000	.2157726	.5053048

H₀ There is no significant relationship between profitability and operating efficiency of Nigerian beer and mineral companies. From the result above, the R² of 0.2962 explains the independent

variable which is OE in the dependent variable. The hypothesis stated that. There is no significant relationship between ROA and OE but the result shows that, at the 0.05 level of significant the p-v is 0.005 which means that H_0 should be rejected and accept the alternative, since it is highly and positive significant with 0.000 significance. By implication, one unit increase in ICP will increase ROA by 0.3605387 percent.

Test of the Hypothesis Three

`. regress roa fg, noconstant`

Source	SS	df	MS			
Model	.425152448	1	.425152448	Number of obs =	60	
Residual	3.25014745	59	.055087245	F(1, 59) =	7.72	
Total	3.6752999	60	.061254998	Prob > F =	0.0073	
				R-squared =	0.1157	
				Adj R-squared =	0.1007	
				Root MSE =	.23471	

roa	Coef.	Std. Err.	t	P> t	[95% Conf. Interval]	
fg	.1341683	.0482951	2.78	0.007	.03753	.2308065

H_0 There is no causality between profitability and firm growth of Nigerian beer and mineral companies. From the result above, the R^2 of 0.1157 explains the independent variable which is FG in the dependent variable. The hypothesis stated that. There is no significant relationship between ROA and FG but the result shows that, at the 0.05 level of significant the p-v is 0.005 which means that H_0 should be rejected and accept the alternative, it shows that is positively significant with 0.007 significance level. Which means, one unit increase in FG will increase ROA by 0.1341683 percent.

Test of the Hypothesis Three

. regress icp cfo, noconstant

Source	SS	df	MS			
Model	3523.19821	1	3523.19821	Number of obs =	60	
Residual	2894.12855	59	49.0530263	F(1, 59) =	71.82	
Total	6417.32676	60	106.955446	Prob > F =	0.0000	
				R-squared =	0.5490	
				Adj R-squared =	0.5414	
				Root MSE =	7.0038	

icp	Coef.	Std. Err.	t	P> t	[95% Conf. Interval]	
cfo	467.795	55.19757	8.47	0.000	357.345	578.2451

H_0 There is no significant relationship between inventory and cash flow of Nigerian beer and mineral companies. From the result above, the R^2 of 0.5490 explains the independent variable which is CFO in the dependent variable. The hypothesis stated that. There is no significant relationship between ICP and CFO but the result shows that, at the 0.05 level of significant the p-value is 0.000 which means that H_0 should be rejected and accept the alternative, since it is highly and positive significant with 0.000 significance. The result shows that, one ₦ increase in CFO will increase ICP by 467.795 percent. The result shows the level of the relationship that exist between inventory and cash flow.

4.5 Interpretation of the Findings

The study findings established that inventory conversion period, management efficiency and firm size negatively influence profitability of Beer Mineral distribution firms in Nigeria. This indicates that an increase in inventory days, poor management and small size negatively affects and reduces profitability Beer distribution firms. According to Sitienei and Memba (2015) there is a negative relation between the inventory turnover, inventory conversion period and the firm's profitability.

The findings also established that firm growth levels positively influence profitability hence an indication that high growth firms have high levels of profitability and low growth firms have lower profitability. In concurrence, Farah and Nina (2016) found that the growth rate significantly and positively effects to profitability.

This study findings also found that inventory conversion period positively and significantly influences operating cash flows of beer distribution firms in Nigeria which indicates that the number of inventory days have a positive impact on operating cash flows. Additionally, the findings of the study revealed that management efficiency, firm size negatively influences operating cash flows of beer distribution companies in Nigeria hence an indication that ineffective management and firm size adversely firms operating cash flows. According to Predescu (2008), efficiency in management ensures a more effective use the organizations resources and assets to enhance profitability and that the size of the firm is among the factors that determine cash flow sensibility to investments. The study found that firm growth positively influences operating cash flows of beer distribution firms in Nigeria, which indicates that high growth firms have high operating cash flows level while low growth firm have low operating cash flows level.

CHAPTER FIVE

SUMMARY, CONCLUSIONS AND RECOMMENDATIONS

5.1 Introduction

Chapter five presents the summary of findings of this research, conclusions and recommendations based on research findings, the limitations of the study and suggestion of areas which may require further consideration as far as future research is concerned.

5.2 Summary

The aim of the study was to explore the effect of management of inventory on firm's profitability and the operating cash flows of beer distribution companies in Nigeria. Inventory management measured through inventory conversion period was used as the independent variable whereas firm profitability and operating cash flows formed the dependent variable while management efficiency, firm growth and size formed the control variables. Complete data was obtained from all six the beer distribution companies in Nigeria using a data collection sheet.

The results of descriptive statistics established that the average ROA for the beer distribution firms is 18.91367 and average operating cash flows (CFO) for the firms was 0.154500 while average inventory conversion period (ICP) was 8 days. The average operating efficient (OE) ratio was 0.132833 while the average growth (FG) rate and size was 0.011500 and 8.015833 respectively. Correlation analysis results found a negative correlation between profitability measured using ROA and the period of inventory conversion and the operating efficiency and a positive correlation between profitability and firm growth.

The study further revealed a positive correlation between operating cash flows and inventory conversion period and the firm size and a negative correlation between operating efficiency and growth of the firm.

The results of the first regression model using ROA to proxy profitability found an insignificant negative relationship between inventory conversion period, management efficiency, size of the enterprise and profitability and a significant positive relation between the growth of the firm level and the profitability of beer distribution companies in Nigeria. This study found that the independent variable (inventory conversion period) and control variables (management efficiency, size and growth levels) influence 10.41% of the dependent variable (profitability). The study established a significant relation between the inventory management and the profitability of Beer and Mineral distribution companies in Nigeria.

The results on the second regression model using Operating cash flows (CFO) established a significant positive relation between the period of inventory conversion and the operating cash flows of beer distribution companies in Nigeria. The findings also found a negative insignificant relationship between the management efficiency, the size of the firm and operating cash flows and a positive but insignificant relation between the growth of the firm and the operating cash flows of beer distribution companies in Nigeria. The study found that the independent variable (inventory conversion period) and control variables (management efficiency, size and growth levels) influence 58.45% of the dependent variable (operating cash flows).

The study further established a significant relation between the inventory management and the operating cash flows of Beer distribution companies in Nigeria.

5.3 Conclusions

The findings of the study found that inventory conversion period, management efficiency and firm size negatively influence profitability of Beer distribution companies in Nigeria. The study thus concludes that increase in inventory days, poor management and small size negatively affects and reduces profitability of beer and Mineral distribution companies in Nigeria. The

findings of the study also established that firm growth levels positively influence profitability and operating cash flows thus the conclusion that high growth firms have high levels of profitability and operating cash flows and low growth firms have lower profitability and low levels of operating cash flows.

The study finding also found that inventory conversion period positively and significantly influences operating cash flows hence the conclusion the number of inventory days positively impacts operating cash flows beer distribution companies in Nigeria. Further, the study found that management efficiency and firm size negatively influences operating cash flows hence the conclusion that ineffective management and firm size adversely firms operating cash flows. The study concludes that inventory management significantly influences firm profitability and operating cash flows of beer distribution companies in Nigeria.

5.4 Recommendations

This study recommends to the management of beer and Mineral distribution companies in Nigeria should adopt effective inventory management practices like just in time and material requirement planning. This is because such inventory management practices would improve their profitability and operating cash flows.

This study recommends the management of the beer distribution firms to develop effective strategic policies and guidelines on inventory management to guide the staff to ensure they hold optimal inventory levels. Holding optimal inventory would help the firms to minimize costs and maximize their profitability and operating cash flows.

The study recommends that the management of distribution companies in Nigeria should focus on growing their firms since high growing firms are able to grow their profitability, operating

cash flows and increase their size. This would ensure the firms are able to withstand any negative shocks and benefit from economies of scale associated with large size.

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