EFFECT OF INVENTORY MANAGEMENT ON FINANCIAL PERFORMANCE OF RETAIL PHARMACIES IN UGANDA:

A CASE STUDY OF RUBAGA DIVISION, KAMPALA DISTRICT

BY

KASIBANTE ALLAN JULIUS

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DEDICATION

For always inspiring me and being there for me, I dedicate this dissertation to my family and friends.

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A number of people have read this dissertation during the various stages of its development. For their guidance, advice and criticism, I thank them all.

I want to thank my supervisor Sister Caroline Andiru. It has been an honor to be her student. She has taught me, both consciously and unconsciously, how research is done. I appreciate all her contributions of time and ideas.

As a Finance major, I would also like to acknowledge all the lecturers who took me through the Finance modules as they are the ones who most imparted in me the knowledge I needed to complete this paper.

I would like to thank my family for all their love and encouragement. For my parents who raised me with a love of education and supported me in all my pursuits, gratitude.

Lastly, nothing is possible without the all the almighty, thank you God.

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ABRREVIATIONS AND ACRONYMS

CIPS	Chartered Institute of Procurement & Supply
CVI	Content Validity Index
NDA	National Drugs Authority
SCM	Supply Chain Management
SPSS	Statistical Package for Social Scientists
SRM	Supply Risk Management
UK	United Kingdom

ABSTRACT

The general objective of the study was to examine the relationship between inventory management and the financial performance of retail pharmacies in Rubaga Division. The study was guided by the following objectives: to examine the relationship between inventory planning and financial performance of retail pharmacies in Rubaga Division; to examine the relationship between inventory optimization and financial performance of retail pharmacies in Rubaga Division; and to assess the relationship between inventory control and financial performance of retail pharmacies in Rubaga Division.

A Cross-Sectional research design was used. The study predominantly employed a quantitative approach. The study population consisted of 120 retail pharmacies found in Rubaga division. A sample size of 92 respondents was selected using simple random sampling techniques. Quantitative data analysis mainly consisted of descriptive statistics (percentages) and inferential statistics (Pearson correlation, coefficient of determination and regression). SPSS V.20 was used in quantitative analysis.

Findings revealed that Inventory planning has a positive influence (68.6%) on financial performance. Inventory optimization has a positive influence (66.4%) on financial performance. Inventory control had a positive influence on financial performance of retail pharmacies in Rubaga Division.

It was concluded that all Inventory management variables positively influenced financial performance of retail pharmacies in Rubaga Division. Thus, it was recommended that for purposes of promoting financial performance of retail pharmacies in Rubaga Division, it is imperative the inventory levels are managed by all chain partners working with retail pharmacies as well as ensuring that inventory controls are employed at all levels.

CHAPTER ONE:

GENERAL INTRODUCTION

1.0 Introduction

Better inventory management enables better financial performance and customer satisfaction (Norman, 1998). Customers are satisfied when suppliers fulfill their orders on time (Norman, 1998).This makes channel partners keep buffer stocks to fulfill customer orders or enter into long term relationships which require commitment and trust (Wang,2002).

Commitment is the desire to continue a relationship and may be defined in three dimensions; inputs to it, its durability and its ongoing consistency (Davis, 2008).

Trust is the belief that a party's word or promise is reliable and a party will fulfill its obligations in an exchange relationship. High levels of trust lead to high levels of customer satisfaction (Andaleeb, 1995).

This study therefore intended to examine the effect of inventory management on financial performance of retail pharmacies in Uganda using a Case Study of Rubaga Division, Kampala District. This chapter provides the introductory part of the study. It comprises of the background of the study, statement of the problem, objectives of the study, research hypothesis, conceptual framework, significance and justification of the study, scope of the study and operational definitions.

1.1 Background of the study

The background to the study was presented in four themes including historical, theoretical, conceptual, and contextual background.

1.1.1Historical Background

The American Production and Inventory Control Society (APICS) define inventory management as the branch of business management concerned with planning and controlling inventories (Toomey, 2000). Inventory management is a critical management issue for most companies – large companies, medium-sized companies, and small companies.

It was initially a military activity concerned with getting soldiers and ammunitions to the battlefront in time for fight. Military typically incorporate the supply, movement and quartering of troops in a set. The main background of its development is that the recession of America in the 1950s caused the industrial calling to place importance on goods circulations (Chen and Yu, 2005). Now it is seen as an integral part of the modern production process. Before the 1950s, inventory was under the dormant condition. Production was major work done by the managers concerned, and industry logistics were once regarded as "necessary evil" in this period.

During the 1950s to1960s, applying new ideas of administration on business was a tendency. Due to petroleum price rise in 1973, the effects of logistics activities on enterprises grew.

Slow growth of market, pressure of high stagflation, release of transportation control, and competition of the third world on products and materials all increased the significance of inventory system on planning and business at that time.

The further tendency of inventory in the early 21st century is logistics alliance, Third Party Logistics (TPL) and globalized logistics which came with ways of improving profitability of US firms through inventory planning, inventory optimization and inventory control (Chen and Yu, 2005). In the UK competitive pressure begun forcing companies to reduce inventory costs and, as a result, quality and delivery times became important considerations alongside price (CIPS, 2013). In response, purchasing departments became instrumental in ensuring that inventory

plans, inventory optimization and inventory control are in place to achieve ISO 9000 quality standards.

In Africa today, companies in South Africa, Kenya, Rwanda and Tanzania have already embraced the concept of inventory management and have realized the importance of SRM (Agaba and Shipman, 2007). They are now implementing world class concepts in SCM to have improved performance from service providers. Managing logistics has therefore become significant in service delivery and efficiencies (Agaba and Shipman, 2007). However, the transitivity of company's competitive advantage has not only transformed simple linear supply chains into complex networks of inventory management but has also made the management of inventory and logistics a key component of corporate strategy, competitive advantage and success (Simchi-Levi, Kaminsky & Simchi-Levi, 2004). This has in turn lead managers as well as researchers to address the issue of the relational determinants of competitiveness.

In Uganda, similarly, according to Basheka (2009), Ntayi and Eyaa (2010) inventory management in pharmaceutical industry are often characterized by late deliveries, lack of concern for the end customer, partial supply of items, supply of substandard and counterfeited items, failure or refusal to supply, rejection of products and deferred payments. In addition, Muhwezi (2009) suggests that in Uganda, pharmaceutical supply chain partners do not devote energy to manage their inventories, even when there are inconveniences and costs. Inventory management can be done but implementation often breaks since every party in the inventory system set up suspects the other of betrayal, dishonesty and trickery (McCarthy and Golicic, 2002).

In Kampala district and particularly in Rubaga division, the concept of inventory management has not been paid much attention too. The weak positioning of the purchasing department in the

delivery chain has resulted into paying low attention on the part of pharmaceutical management. This thus makes it difficult to promote the purchasing function from a pure cost driver to a respectable facilitator of service delivery. This contributes to reduction of costs, delivering in time, and added value to the firm supply chain management (SCM). Thus, due to the ongoing losses incurred by pharmacies in the area, this study is adopted as a mechanism to assess the relationship between inventory management and financial performance of retail pharmacies in Uganda using a Case Study of Rubaga Division, Kampala District.

1.1.2 Theoretical Background

The study was guided by both transaction cost economics theory advanced by institutional economist Commons (1931) and formalized by Coase (1937) and, the stochastic inventory model. Under transaction cost economics theory, the major emphasis is on the cost of providing for some good or service through the market rather than having it provided from within the firm. The theory postulates that in order to carry out a market transaction it is necessary to discover who it is that one wishes to deal with, to conduct negotiations leading up to a bargain, to draw up the contract, to undertake the inspection needed to make sure that the terms of the contract are being observed, and so on.

On the side of stochastic inventory model, this assumes that there is no question that uncertainty plays a role in most inventory management situations. The retail merchant wants enough supply to satisfy customer demands, but ordering too much increases holding costs and the risk of losses through obsolescence or spoilage. For example, the pharmacy manager must set the amount of supplies stored at a level that balances the risk of expiries and the risk of shortages. The operations manager must set a master production schedule considering the imprecise nature of forecasts of future demands and the uncertain lead time of the manufacturing process. These

situations are common, and the answers one gets from a deterministic analysis very often are not satisfactory when uncertainty is present. The decision maker faced with uncertainty does not act in the same way as the one who operates with perfect knowledge of the future. This idea intimates that in inventory planning, inventory optimization and control can be among the most effective ways of improving the financial performance of a firm. In a nutshell, the transaction cost economics theory and stochastic inventory model advocate for alignment of inventory management with real organizational activities if the goal of improving financial performance is to be realized.

1.1.3 Conceptual Background

The key concepts of the study were inventory management and financial performance. Inventory management is a process of overseeing and controlling of the ordering, storage and use of components that a company will use in the production of the items it will sell as well as the overseeing and controlling of quantities of finished products for sale (Silver et al, 1998).Inventory management is a system that ensures that the provision of a required quantity of materials (sufficient) which are needed at the required time with minimum amount of capital/funds tied up in inventories stored and the system also aims at minimizing inventory costs in general. It ensures that inventories are efficiently purchased, stored and used or consumed in the right quantities and quality (Kamukama, 2006). In this study thus, inventory management was conceptualized to mean inventory planning, inventory optimization and inventory control

According to Dixon et al (1990), financial performance is an appropriate performance measure which enables an organization to direct its actions towards achieving its strategic objectives. On the other hand Sebbowa (2009) refers to financial performance as the ability to operate efficiently, with profitability, survive, grow and react to the environmental opportunities and

threats. Gerrit and Abdolmohammadi (2010) define financial performance as measured with income and expenses. Income is money generated from the activities of the business. Expenses are the cost of resources used up or consumed by the activities of the business. Accordingly, in this study, financial performance was operationally measured using liquidity, profitability, return on sales, loss from expiry and expenses incurred.

1.1.4 Contextual Background

A retail pharmacy is any business licensed to sell class A and class be medicines (NDA, 2014).The number of retail pharmacies in Uganda has been expanding since 2000 and in Kampala district; it is believed that there were 2000 pharmacies (NDA, 2014). The retail pharmaceutical industry in Uganda is among the most regulated sector (MOH, 2010). It is regulated by an Act of Parliament, the National Drug Policy and Authority (NDPA) Act 1993 (Government of Uganda, 1993). This legal framework prescribes two types of retail medicines outlets, namely retail pharmacies and drug shops. Retail pharmacies are authorized to stock and supply all classes of medicines while drug shops are restricted to supply of over-the-counter (OTC or non-prescription) medicines, which is a very small fraction of the medicines typically available in the market. Most importantly, the operations of retail pharmacies are required to be supervised by a registered pharmacist (NDA, 2014). Therefore, NDA in its supervisory capacity, called upon all pharmacies to try to put in place inventory management policies to manage inventories such as inventory plans, inventory optimization and inventory control. These have been adopted as mechanisms to solve losses that company used to incur. However, despite the adoption of the above inventory policies, the retail pharmacies in Kampala district have continued to perform below standards. For instance, the Private Sector Foundation Uganda Report (2014) shows that over 14% of the retail pharmacies closed in the last three

years. The losses were as a result of many factors and among them include weaknesses in the company's inventory management such as poor inventory records of supplies, storage, sharp variations in inventory levels and costs. This study thus endeavored to assess the extent to which inventory management was related to financial performance of retail pharmacies.

1.2 Statement of the Problem

According to Blackstone and Cox (1998), inventory management plays an important role in the reduction of costs and the optimization performance of a firm. Ideally, pharmacies under the recommendations of NDA have currently undertaken a number of efforts to invest in inventory management in form of inventory plans, inventory optimization and inventory control in an effort to improve their drug and medicines management.

However, in reality, this seems not to have improved financial performance of these pharmacies. For instance, the Private Sector Foundation Uganda Report (2014) shows that over 14% of retail pharmacies closed in the last three years, which suggests that they could be economically struggling.

Further, there are reports on absence of some important pharmaceutical drugs in the store due to late deliveries and poor management of stock. If this situation is not catered for, it may continually affect the financial performance of the pharmacies up to failing.

It was from this background that this study was undertaken to assess the effect of inventory management on financial performance of retail pharmacies in Uganda.

1.3 General Objective

The general objective of the study was to investigate the effect of inventory management on financial performance of retail pharmacies in Uganda.

1.4 Specific Objectives

i) To examine the relationship between inventory planning and financial performance of retail pharmacies in Uganda

ii) To examine the relationship between inventory optimization and financial performance of retail pharmacies in Uganda

iii) To assess the relationship between inventory control and financial performance of retail pharmacies in Uganda

1.5 Research Questions

i) What is the relationship between inventory planning and financial performance of retail pharmacies in Uganda?

ii) What is the relationship between inventory optimization and financial performance of retail pharmacies in Uganda?

iii) What is the relationship between inventory control and financial performance of retail pharmacies in Uganda?

1.6 Hypotheses for the Study

H_1. There is a significant relationship between inventory planning and financial performance of retail pharmacies in Uganda.

H_2. There is a significant relationship between inventory optimization and financial performance of retail pharmacies in Uganda.

H_3. There is a significant relationship between inventory control and financial performance of retail pharmacies in Uganda.

1.7 Scope of the Study

1.7.1 Content Scope

This research was limited to inventory management on financial performance. Inventory management in this study was considered as the independent variable (IV) while financial performance was the dependent variable (DV). Inventory management was limited to inventory planning, inventory optimization and inventory control, whilst financial performance was limited profitability, liquidity, sales volume, expenses, and losses incurred.

1.7.2 Geographical scope

The study was limited to retail pharmacies in Rubaga division, Kampala district. Kampala was chosen because it was both easily accessible to the researcher and is home to 30% of private pharmacies in Uganda (NDA, 2014).

1.7.3 Time Scope

The study covered the period between 2011 and 2015 because it was within this period that there were anomalies worth millions of shillings that indicated poor inventory management in retail pharmacies in Rubaga Division (Private Sector Foundation Uganda Report, 2014)

1.8 Significance of the study

The study will foster creation of new knowledge and awareness in the area of inventory management especially in private sector organizations and particularly in retail pharmacies.

The researcher anticipates that the findings and policy recommendations generated from the study may be of invaluable input to the stakeholders of retail pharmacies in Uganda.

The findings are anticipated by the researcher to add more knowledge on the existing body of knowledge in the subject area.

The research findings will help current and future firm owners and customers in designing mechanisms that ensure that information is shared hence leading to better inventory management that will improve financial performance.

The study will stimulate further research in the area of inventory management and performance. This is because the study is intended to contribute and provide reference to scholars and policy makers for creative ways of improving the inventory management.

The research will enable the researcher to acquire master's degree of business administration.

1.9 Justification of the study

The study took into account the fact that inventory management has undergone several reforms with a view of improving financial performance. However, in terms of scope, the previous studies had mainly focused on the inventory function as a support function, forgetting that close to 70 percent of expenses, is through inventory of goods, services and works. According to the Private Sector Foundation Uganda Report (2014), over 14% of retail pharmacies closed in the last three years, which suggests that they could be economically struggling. The audit report of 2014 indicates that most of the pharmacies made losses worthy shs.14.5billions and shs13.3billions for the years 2013 and 2014 respectively. Therefore, the researcher found it as a problem to retail pharmacies that needed to be addressed for the survival of the business. Therefore the study was necessary to address the urgent problem in the retail pharmacies and failure to address the problem may lead to closure of the business, thus the justification for this study is majorly to address them by investigating inventory management and financial performance of retail pharmacies in Rubaga Division.

1.10 Definition of key terms

Inventory planning; this referred to the prior preparations done before orders are pressed in retail pharmacies or prior consideration done before pressing inventory orders

Inventory optimization (IO): referred to a strategy for balancing the amount of working capital that's tied up in inventory with service-level goals across multiple stock-keeping units in retail pharmacies.

Inventory control; this referred to continuous process of ensuring that the orders are fulfilled and costs/expenses are clearly controlled.

Financial performance; this referred to measurement of income and expenses incurred by retail pharmacies.

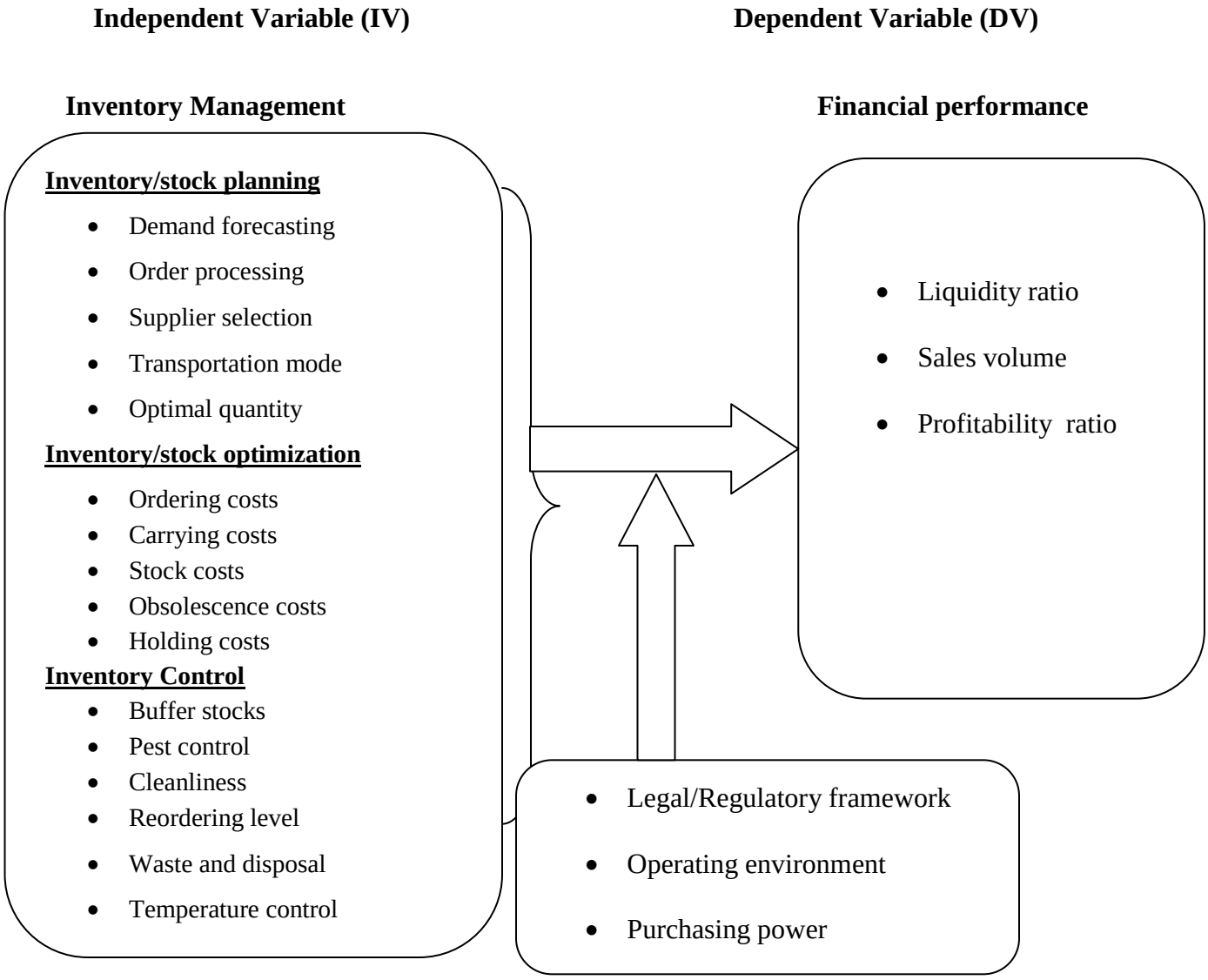
Liquidity: this meant the current ratio of current assets divided by current liabilities in a retail pharmacy

Profitability: this meant the rate at which the organization income exceeds its expenses in the process of rendering its services

Retail pharmacy; this referred to all those pharmacies that are authorized to stock and supply all classes of medicines and supervised by a registered pharmacist.

1.11 Conceptual Framework

Figure 1: conceptual framework showing the relationship between inventory management and financial performance



Source: Adopted and Modified from Cooper, M.C., Lambert, D.M. and Pagh, J.D. (1997)

The study focused on inventory management with emphasis on inventory planning (demand forecasting, order processing, supplier selection, transportation mode and optimal quantity), inventory optimization (ordering costs, carrying costs, stock costs, obsolescence costs and holding costs) and inventory control (Lead time, order point, physical stock, reordering level and

waste and disposal) as the independent variable and financial performance with emphasis on profitability, liquidity, sales volume, expenses, and losses incurred. The relationship between inventory management and financial performance was based on the fact that inventory planning, inventory optimization and inventory control leads to financial performance of a firm. This relationship can be mitigated by other factors including financial management, operating environment and purchasing power of people in the area. For improved financial performance of retail pharmacies, it is imperative that retail pharmacies have in place inventory management and among these; he mentioned inventory planning, inventory optimization and inventory control.

1.12 Conclusion:

The study the aimed at showing the correlation between Inventory management and Financial performance where inventory management was conceptualized as Inventory planning, Inventory control and Inventory Optimization while Financial management was Liquidity, Profitability and Sales Volume.

CHAPTER TWO

LITERATURE REVIEW

2.0 Introduction

This chapter reviews the literature related to establishing the relationship between inventory management and financial performance of retail pharmacies. The review was conceptualized under the objectives of the study and focuses primarily on inventory planning, inventory optimization, inventory control and their financial performance. These are considered the pillars of the study.

2.1 Theoretical Framework

The theoretical framework for this study was derived from both transaction cost-economics theory and stochastic inventory model. The transaction cost economics theory was advanced by institutional economist Commons (1931) and formalized by Coase (1937). Under this framework, the major emphasis is on the cost of providing for some good or service through the market rather than having it provided from within the firm. The theory postulates that in order to carry out a market transaction it is necessary to discover who it is that one wishes to deal with, to conduct negotiations leading up to a bargain, to draw up the contract, to undertake the inspection needed to make sure that the terms of the contract are being observed, and so on. This idea intimates that in inventory planning, inventory optimization and control can be among the most effective ways of improving the performance of a firm.

For stochastic inventory model, this assumes that there is no question that uncertainty plays a role in most inventory management situations. The retail merchant wants enough supply to satisfy customer demands, but ordering too much increases holding costs and the risk of losses

through obsolescence or spoilage. If an order is very small, there is an increased risk of lost sales and unsatisfied customers. For example, the pharmacy manager must set the amount of supplies at a level that balances the risk of expiries and the risk of shortages. The operations manager must set a master production schedule considering the imprecise nature of forecasts of future demands and the uncertain lead time of the manufacturing process. These situations are common, and the answers one gets from a deterministic analysis very often are not satisfactory when uncertainty is present. The decision maker faced with uncertainty does not act in the same way as the one who operates with perfect knowledge of the future. This idea intimates that inventory planning, inventory optimization and control can be among the most effective ways of improving the financial performance of a firm. In a nutshell, the transaction cost economics theory and stochastic inventory model advocate for alignment of inventory management with real organizational activities if the goal of improving financial performance is to be realized.

2.2 Conceptual review of the study variables.

2.2.1 Inventory management

Inventory management to a layman may be defined as a system used in a firm to control the firm investment in inventory. It involves the recording and monitoring of stock levels, forecasting future demands and decides when and how many to order. Inventory management brings about customer service that leads to customer satisfaction. Silver et al, 1998 argues that there are several functions of inventory management: raw materials, meaning the raw materials and the company must keep on hand for production: Work in progress inventory which include any of the goods that are in the production process and finished goods inventory or products that are already to ship to customers. Without inventory management, it would be difficult for any company to maintain control and be able to handle the needs of the customers.

Pandey (2005) asserts that stock of finished goods has to be held because production and sales are not instantaneous. A firm cannot produce immediately when goods are demanded by a customer, therefore, to supply finished goods on a regular basis there stock has to be maintained for sudden demand from customers, in case the firm's sales are seasonal in nature substantial finished goods inventories should be kept to meet the peak demand. Failure to supply products to customers when demanded would mean loss of the firm's sales to competitors.

2.2.1.1 Inventory Planning

This is referred to as the process of determining the optimal quantity and timing of inventory for the purpose of aligning it with sales and production capacity (Helms and Chapman, 2000). Inventory planning has direct impact a company's cash flow and profit margins especially for smaller businesses that rely upon a quick turnover of goods or materials. The process of determining the optimal quantity and timing of inventory for the purpose of aligning it with sales and production capacity. Inventory planning has a direct impact a company's cash flow and profit margins especially for smaller businesses that rely upon a quick turnover of goods or materials. Inventory planning can help companies manage cash flow (Buxey, 2006). Small businesses do not have large capital balances for purchasing copious amounts of inventory. Business owners implement policies and procedures to limit the amount of money spent on inventory (Wang, 2000). Cash flow improvements also come from purchasing the lowest cost inventory available in the business environment. Not only does low-cost inventory save the company money, but it also allows companies to develop a cost advantage in the economic market.

2.2.1.2 Inventory control

This is referred to continuous process of ensuring that the orders are fulfilled and costs/expenses are clearly controlled (Buxey, 2006). Business owners pay close attention to inventory as it usually represents the second largest expense in their businesses. Inventory planning includes

creating forecasts to determine how much inventory should be on hand to meet consumer demand. Inventory control is the process by which managers count and maintain inventory items in the business. Business owners usually create internal policies and procedures for inventory planning and control (Buxey, 2006). Managers and employees must follow these policies and procedures when handling the company's inventory. Policies and procedures outline who can order inventory, how inventory flows through the company, and accounting policies for valuing inventory and procedures to deal with obsolete goods. Inventory planning and control has several benefits for companies who derive the majority of their revenue sales from inventory. Business owners can use inventory control to generate higher profits (Heng and Zang, 2007). Purchasing the right type of inventory to meet consumer demand often leads to higher business profits. Companies who sell through their entire inventory multiple times each year also increases business profits. Inventory planning and control procedures can also limit the amount of obsolete inventory in the company. Obsolete inventory must be disposed of and written off by the company. Writing off obsolete inventory creates a loss on the income statement.

2.2.1.3 Inventory optimization

This is the method of balancing capital investment constraints or objectives and service-level goals over a large assortment of stock-keeping units (SKUs) while taking demand and supply volatility into account (Nyangau et al, 2014). Every company has the challenge of matching its supply volume to customer demand. How well the company manages this challenge has a major impact on its profitability. American Productivity & Quality Center open Standards data shows that the median company carries an inventory of 10.6 percent of annual revenues. The typical cost of carrying inventory is at least 10 percent of the inventory value. So the median company spends over 1 percent of revenues carrying inventory, although for some companies the number is much higher (Wang, 2000). Also, the amount of inventory held has a major impact on

available cash. With working capital at a premium, it's important for companies to keep inventory levels as low possible and to sell inventory as quickly as possible. When Wall Street analysts look at a company's performance to make earnings forecasts and buy and sell recommendations, inventory is always one of the top factors they consider. The challenge of managing inventory is increased by the "Long Tail" phenomenon which is causing a greater percentage of total sales for many companies to come from a large number of products with low sales frequency (Kang and Gershwin, 2005). Shorter and more frequent product cycles which are required to meet the needs of more sophisticated markets create the need to manage supply chains containing more products and parts. Hence, businesses need to understand how this affects their inventory and how they can seize the opportunities presented by such products.

2.2.2 Financial performance

Business operations feed on cash. In retail pharmacies, you need cash to stock adequate amounts and enough variety of medicines and to pay for skilled technical staff, besides the cross-cutting costs of rent, regulatory fees, taxes and utilities. If a firm's operating cash flows are low, the firm may not be able to meet all its obligations. A financially distressed firm has no option but to either wind up or undertake cost-cutting measures such as staff downsizing, rationing, or substitution with cheaper personnel (Brennan & Soloman, 2008). Pattern and Rosengard (1991) identified six determinants to evaluate the performance of any business. These include; efficiency, effectiveness, adaptability, personnel, autonomy and accountability. Krajewski and Ritzman 2002 were of the view that the key performance indicators of organizations include capital adequacy, credit quality, nominal and real return and profitability, efficiency and operating margins and net operating income. Financial analysts view pharmacy strength in terms

of level of capitalization, quality of assets, earnings capability as well as ability to meet short term liabilities with minimal constraints or liquidity.

2.2.2.1 Profitability

It is the ability of the business to earn a profit on the level of income made. Traditionally the financial performance has been measured using a combination of convectional accounting measures of risk and return (Pandey, 2005). Dermirguc and Detrigiache (1998) argued that financial performance can be measured using profitability which is the percentage of net profit before tax to the total income of a business. Sadakkadula and Subbaiah (2002) contend that profitability indices are widely accepted and used by bankers, financial institutions, management, owners and other creditors as they are interested in knowing whether or not the firm earns a profit on its activities.

2.2.2.2 Liquidity

It is the ability of an organization to pay its short term debts as they fall due. Liquidity ratio is the result of dividing liquid assets by current liabilities. On the other hand, liquidity risk is the risk of the financial institution being unable to meet financial commitments or payments at the right time, place and in the required currency (Kaufman, 1995). Kasekende and Atingi-Ego (2003) argue that many retail businesses keep excess reserves on hand that is sufficient to cover adverse interbank clearing. Liquidity is essential for a business because it determines whether the bank will be able to provide funds for growth. Liquidity analysis determines how easily a business can acquire immediate funds through either assets or liabilities. This would involve selling assets as a first option or increasing the business‘s liabilities. Although both of these scenarios come with a cost attached. By selling assets the asset quality will decrease, and by adding liabilities the business may add costs depending on the market situation.

2.2.2.3 Sales volume

This refers to the quantity or number of products sold or services provided by a company in a particular period of time: higher/lower/total sales volume(s) boost/increase sales volume. Sales volume equals the quantity of items a business sells during a given period, such as a year or fiscal quarter. Sales -- or sales revenue -- equal the dollar amount a company makes during the period under review. The concepts of sales and sales volume interconnect because total sales equal sales volume multiplied by the unit price (Hannington, 2008).

2.3 Inventory Planning and financial performance

This is referred to as the process of determining the optimal quantity and timing of inventory for the purpose of aligning it with sales and production capacity (Helms and Chapman, 2000). According to Gillerman and Browning (2000), Pharmacies can meet their financial performance by developing an inventory plan and planning to grow. She points out that developing an effective and efficient inventory plan involves developing what Saenz called "best-practices solutions" and defining in future plan requirements. Regardless of the approach which can be used by the company, developing an inventory plan is a critical step in the right direction. Nyangau et al (2014) further adds that there are factors that retail pharmacies can consider in inventory planning so as to provide customer satisfaction which improves its profitability in long run. They point out that the key for improving profitability and general financial performance of a retail pharmacy is to determine their needs accordingly and to meet and exceed the need in a consistent manner. They argue that retail pharmacies can adopt strategic and proactive plans that focuses on customer service basing on the understanding of the customers own logistics process and to design a logistics system which will meet customer needs with the ultimate goal of creating value for customers that enables them to achieve their financial objectives efficiently (Nyangau et al, 2014).

Mascarenhas et al (2014) ascertain that inventory planning starts with demand forecasting. Demand forecasting is the process of translating inputs assumptions into forecasting of expected sales. In all pharmaceutical industry, retail pharmacies are facing a challenge of high customer expectations, strict regulations, changes in market dynamics and the impact of technology changes which is forcing organizations to find ways of refining their forecasting and managing demands so as to satisfy their customers and keep up with changing market price. According to Mascarenhas et al., (2014), inventory accuracy is the ability to predict the true demand of a product. Trying to control inventory with bad information is futile (Taylor, 2000). All replenishment decisions are based on the status of a company's inventory (Aissaoui et al., 2007). Use of systems like electronic data interchange, point of sale systems, enterprise resource planning systems enable inventory accuracy through the provision of accurate information (Borade and Bansod, 2007). According to Kang and Gershwin (2005) retail business chain partners experience inaccurate inventory records as a result of lack of collaboration while Kulp et al., (2004) says that inventory records do not match with physical stock in chain partners' stores due to lack of collaboration. These inevitably affect the financial performance of retail pharmacies in both long and short runs since, the moment the inventory projection is inaccurate, there is a possibility of less sales (Kang and Gershwin, 2005).

Better inventory management enables better financial performance in retail pharmacy (Norman, 1998). Sales increase because customers are satisfied when suppliers fulfill their orders on time (Wilding, 2003). This makes channel partners keep buffer stocks to fulfill customer orders or enter into long term relationships which require commitment and trust (Wang, 2002). Commitment is the desire to continue a relationship and may be defined in three dimensions; inputs to it, its durability and its ongoing consistency (Davis, 2008). Trust is the belief that a

party's word or promise is reliable and a party will fulfill its obligations in an exchange relationship. High levels of trust lead to high levels of customer satisfaction and this provides increased profitability in a retail pharmacy (Andaleeb, 2007).

Trust and commitment can be achieved through the use of vendor managed inventory, consignment inventory and just in time inventory management (Buxey, 2006). These enable channel partners to satisfy their customers' needs through providing on time deliveries which result into repeat purchases, positive word of mouth and reduced inventory carrying costs on the customers' side (Wang, 2000). Kwon and Suh (2004), point out that customer satisfaction is obtained through reducing order cycle time which leads to on time deliveries to the customer through reducing the manufacturer's production lead time. Customers are satisfied when suppliers are flexible and responsive and these act as the basis for improving financial performance of a retail pharmacy (Verwijmeren et al, 2006).

In the study done by Gillerman and Browning (2000) showed that pharmacies which did not conduct inventory planning and had low quantity of products, these performed poorly in liquidity and sales. However, for those pharmacies which had inventory plans and optimal quantity, their sales improved accordingly. Therefore, Humphrey and Tucker (2003) concluded that without ensuring flexibility in the supply chain of a pharmacy, there is a big possibility of performing below standards and leaving the business in the long run Flexibility is the extent to which the supplier is willing to make changes to accommodate the customer's changing or unforeseen needs and to making available the products/ services to meet the individual demand of customers (Humphrey and Tucker, 2003; Gunasekaran, 2001). It is particularly valued in case of unforeseen problems or short-term changes in the needs of the customer. Suppliers displaying flexibility will make quick responses to the buying firm's needs (Tachizawa and Ginemezi, 2005). There is need

for willingness to modify inventory policies or procedures when this helps a customer (Buxey, 2006).

For purposes of improving retail pharmacy financial performance, Raman et al., (2001) argues that it is important that businesses are flexible allows a supplier to demonstrate a general readiness to respond to customer needs and this is supported by the use of information technology such as flexible manufacturing systems (FMS), group technology (GT), and computer-integrated manufacturing (CIM) which enable integration and information flow within the chain. The flexibility of downstream chain is crucial in satisfying customers' changing needs in today's competitive and uncertain environments (Ndubisi et al, 2005). Chain partners in retail pharmacies keep excess stock in order to be flexible. They want to meet customer orders immediately the customer releases it, that is shortens the lead time (Smaros, 2003). These enable them meet the delivery dates and fill customer orders (Buxey, 2006). Customers may not return after experiencing many negative experiences and this means many lost sales to chain partners (Gruen and Corsten, 2006). Retail pharmacies with advanced technology as their competitive edge can overcome stiff competition by introducing wide range of products to meet the different market segments and able to deliver quickly to the hands of customers before any of its competitors can do so and these are the pharmacies that meet their financial objectives (Ndubisi et al, 2005).

The above literature completely signaled that there is inventory planning has an effect on financial performance of retail pharmacies. However, the major gap indentified in the literature reviewed is that it generally ignored the situation in retail pharmacies found in Rubaga division. This was the basis of undertaking a study like this to access whether there is an effect of inventory planning on financial performance of retail pharmacies in Rubaga division.

2.4 Inventory optimization and financial performance

This is the method of balancing capital investment constraints or objectives and service-level goals over a large assortment of stock-keeping units (SKUs) while taking demand and supply volatility into account (Nyangau et al, 2014). Inventory optimization plays an important role in improving the financial performance of retail businesses (Samaranayake, 2008). Inventory optimization enables chain partners to plan properly, avoid inventory bottlenecks in the chain and avoid unsafe stocks both for all the channel members which improve on profitability of a firm (Chopra and Meindi, 2001). Normally, when a buyer needs a product, he places an order to a supplier. With information, chain partners are able to know when and how much to order and what to put in the inventory plan (Presutti, 2003). In order to share information, a partnership is formed between the supplier and buyer in which the supplier takes care of the-orders and replenishing (Pramatari, 2007). To accomplish this, the supplier (retailer or distributor) gets regularly information on the inventory level and sales data of the buyer via the web or Electronic Data Interchange (EDI) (Ndubisi et al, 2005). Thus, when inventory drops below a certain level, orders are generated automatically on behalf of the buyer. In this case, it is the supplier who creates and manages the inventory plan. Continuous replenishment (CR) and vendor managed systems are used to share information that is used to manage inventory levels. The moment a retail business manages its inventory levels, it is a fact that it will generate the required cash flow all the time (Samaranayake, 2008).

Gillerman and Browning (2000) emphasize that stores managers need to control a big number of variables when planning to carry out purchasing for stores. He argues that the first step in using turnover rate in stores is by finding a method which determines the rate of consumption. He cautions that most tools used in stores for this purpose are not enough but he notes that stores managers can track the growth rate simply by using a spread sheet. Arrowsmith and Davies

(2009) defines inventory handling as a process of specifying the size and placing order of stocked goods within a facility or in a multiple location of a supply network so as to protect the regular and planned course of product or a service against the random disturbance of running out of service or goods. The scope of inventory handling involves lead time replacement, carrying costs of inventory, asset management, inventory forecasting, physical inventory, available physical space for inventory, quality management and returns and defective goods among others.

Norman (1998) further suggests that a retail pharmacy's financial performance depends on how it manages its inventory levels. Much of the chain partners' costs are attributed to the amount it invests in inventory and associated holding, transportation, and management costs (Samaranayake, 2008). According to Pramatari (2007), inventory has the biggest cost hidden in most chain partners' businesses. In addition, Atali et al., 2006 found out that poor inventory optimization results into inventory inaccuracies which increases the chain partners' holding costs and increases the out-of stock situations. In response, chain partners seek for cost improvements and this affects the financial performance of a retail pharmacy (Verwijmeren et al., 2006). The use of systems like point of sale systems and collaboration helps chain partners to acquire information which reduces losses from obsolescence, damaged inventory, handling costs, stock outs costs, enables proper demand planning and replenishment (Onwubolu and Dube 2006). Safety stocks are reduced through vendor managed inventory, just in time and consignment inventory (Simatupang et al., 2008). All those can be operated through the use of integrated systems like vendor managed systems and just in time systems (Onwubolu and Dube 2006). The reduction in safety tocks leads to reduced obsolescence and storage (Frazelle, 2002). Stocks out costs are reduced as a result of parties in the chain sharing information which reduces demand variability (Simatupang and Sridharan, 2008).

Akridge ,2009 in a further observations asserts that the desire by the organizations to increase the levels of their service delivery amidst challenges like economic pressure, need to increase publicity about saving opportunity and the complex nature of logistic implementation is forcing the organizations to ramp up their logistics management function by use of outsourcing services. This is aimed at making Organizations to better understand the impact of reducing the costs involved in transport and logistics. Logistic service customers expect a lot of transparency in costing and they are looking at the logistics management as total cost of a product.

According to Bradley et al (2001), they point out that inventory expenditure is at between 3 to 6 percent of the product cost. In his research, he points out that organizations that are implementing effective logistic management practices look at logistic management practices from the logistics management view which is helping them in delivering products or services at a friendly cost thus resulting into an increase in customer satisfaction. He says that organizations are realizing minimal time and resources when they use a 3PL Company to handle their freight. However, Dawe (2000) cautions that in most cases, cost saving opportunities that are associated with 3PL freight management is not clearly evident and this is complicating the understanding of some people who may not be part of the details when it comes to freight handling process or management.

Having the desired products on hand when the customer wants them is critical to satisfy customer needs. More and more chain partners are using inventory-management information to improve their ability to fulfill key customer demand and having the right product at the right time (Gallego and Ozer, 2001). Understanding consumer behaviors and market trends can help chain partners to satisfy customer needs and to manage inventory information efficiently (Lee and Kleiner, 200l). Customers will return the product if it does not meet their requirements (Stuart,

2005). Products are returned on the sequential consideration of product condition, obsolescence, back-order status and when products are not environmentally compliant (Stuart, 2005).

Customers are interested in getting defect free products (Goldsby and Martichenko, 2005). This means that chain partners have to be flexible and responsive, so that they can be adapted to meet rapidly changing customer expectations (Goldsby and Martichenko, 2005).There is need for commitment, cooperation and integration among manufacturer, distributors and retailers to meet the changing customer expectations (Coyle et al.,2003). In order to satisfy customers, it is crucial to meet their moment of value which means delivering the right product at the right time and in the right place (Lam and Postle, 2006). Chain partners ensure timely delivery of a product that the customer really wants through the use of systems like just in time systems.

Customers are satisfied when suppliers (retailers, distributors and manufacturers) are able to deliver products or services as and when required. Chain partners maintain high levels of inventories at their stock point (Koumanakos, 2008). These reduce the amount of time it takes to deliver the product to the consumer (Goldsby and Martichenko, 2005). However having these high levels of inventories only works for standardized products (Goldsby and Martichenko, 2005). Chain partners have to be flexible in order to satisfy customers' needs immediately (Gunasekaran, 2001). In order to be flexible, chain partners may be required to maintain high stock levels or using information technology which helps chain partners to be flexible through providing timely information which leads to better customer service and inventory management (Hakarsson and Persson,2004).

The above literature reflects that inventory optimization had an effect on financial performance of retail pharmacies. However, the major gap indentified in the literature reviewed is that it generally ignored the situation in retail pharmacies found in Rubaga division. This was the basis

of undertaking a study like this to access whether there is an effect of inventory optimization on financial performance of retail pharmacies in Rubaga division.

2.5 Inventory control and financial performance

This is referred to continuous process of ensuring that the orders are fulfilled and costs/expenses are clearly controlled (Buxey, 2006). According to Fox and Tyler (2003), the main objective of inventory control is to minimize the relevant costs to ensure profitable operations. Koumanakos (2008) agitates that usually if financial performance is to improve for a retail pharmacy, its inventory systems must be designed to achieve a balance between the costs of acquiring and holding inventory. These costs are the ones that affect the retail pharmacy profitability. He adds that inventory turns refer to the number of times inventory is converted into cash. Gruen and Corsten (2002) further point out that retail pharmacies and chain partners boost earnings by addressing stock issues. High levels of inventories mean that there are low levels of inventory turns (Koumanakos, 2008). Non availability of stocks results into losses to all chain partners because customers may decide to buy another brand, buy items from another store or delay purchase. This comes as a result of poor inventory controls that bring about information inefficiencies where the order information sent up the chain does not reflect the true consumer demand Gruen and Corsten (2002). A lack of inventory record accuracy clearly reduces chain profits due to lost sales and inventory carrying costs, which may run as high as 10 percent of existing profits (Raman et al., 2001).

Rogers et al. (2008) further noted that retail pharmacies utilizing information systems get information which enables them to accommodate selected customer request and provide a greater number of services to customers which will in turn improve their profits. Gruen and Corsten (2002) adds that systems like automatic purchase ordering systems enable chain partners not to

evaluate inventories by moving down the stores and making orders based on intuition and also improve inventory turns of component stocks, and uniform the deviation between components. Gallego and Ozer, 2001 argued that inventory controls through collaborative efforts enables retail pharmacies' focus on co-managed inventory by considering different levels of demand uncertainty which enables them to improve fill rate, increase inventory turnover and enhance sales. They improve fill rates ensuring that all customer orders are delivered on time. McLaren et al (2002) in line with Gallego and Ozer, 2001 argues that this leads to sales enhancement through repeat purchases and increased number of customers. It also leads to increased responsiveness to market demands, customer service and increases market share.

McLaren et al (2002) agitates that inventory control enables the pharmacies to compress lead times, improve faster product to market cycle times, higher flexibility in dealing with supply and demand uncertainties. With collaboration, customers are able to specify the kind of product they want and in what quantities.

Onwubolu and Dube (2006) asserts that inventory control enables pharmacies to compress lead times and know how much they should have in stocks to meet customer demands. These stocks enable pharmacies to provide deliveries on time to their customers. Holmstrom (2002) further argue that product to market cycles times are reduced when businesses collaborate closely with the downstream partners to obtain customer information and seize new market opportunities.

The above literature reflects that inventory control had an effect on financial performance of retail pharmacies. However, the major gap indentified in the literature reviewed is that it generally ignored the situation in retail pharmacies found in Rubaga division. This was the basis

of undertaking a study like this to access whether there is an effect of inventory control on financial performance of retail pharmacies in Rubaga division.

2.6 Summary of the Literature Review

The literature reviewed clearly indicates that there are a number of studies in place that have viably established that the relationship between inventory management and financial performance do exist, however, key gaps have been indentified that calls for conducting of this study. Most of the gaps are in form of historical, methodological, conceptual, theoretical and contextual. Contextually, it is clear that inventory management have a relationship with finance performance, however, the literature ignored the basic indicators of inventory planning, inventory optimization and inventory control as adopted in this study and does not address retail pharmacies in Rubaga Division. Methodologically, the literature reviewed was designed as a research paper which qualifies it to lack the required empirical basis of evaluating the study variables in a setting like retail pharmacies in Rubaga Division. Additionally, the literature reviewed seems to have been done previously in the years below 2015, we are currently in 2016 and this study is called to verify what may be happening currently about inventory planning, inventory optimization and inventory control and finance performance of retail pharmacies in Rubaga Division. Theoretically, the study findings seem to be limited much on such inventory planning that are not much indicated in the conceptual basis of this study. Therefore, this study was undertaken to measure the exact dimensions and indicators to come up with empirical basis of the study while closing the trends of disparity observed in the literature above while using retail pharmacies in Rubaga Division. This study endeavored to fill these gaps.

CHAPTER THREE

RESEARCH METHODOLOGY

3.0 Introduction

This chapter comprises of research design, area of study, study population, sampling procedures, sample size, data collection methods and instruments, quality control methods, data management and processing, data analysis, ethical considerations and anticipated limitations to the study.

3.1 Research Design

This study used a Cross-Sectional research design. A Cross-Sectional research design enables the researcher to find out the relationship between the study variables (Sekeran, 2003). This type of research design was selected as ideal for this research because the study intends to identify predictive relationships by using correlations (Amin, 2005). The study hence used both qualitative and quantitative approaches during sampling, data collection, quality control, and analysis. At data collection stage, qualitative design involved administering open ended interview and questionnaire questions to the respondents, whilst the quantitative design involved administering closed ended interview and questionnaire questions to respondents

3.2 Research Study Area

The study was limited to retail pharmacies in Rubaga division, Kampala district. Kampala was chosen because it was both easily accessible to the researcher and is home to 30% of private pharmacies in Uganda (NDA, 2014).

3.3 Study Population

The targeted study population was 120 licensed retail pharmacies found in Rubaga Division (NDA, 2014) which included Managers, Dispensers and Pharmacists found in Rubaga Division. The Managers and Dispensers were selected because they were aware of the inventory

management process adopted by the pharmacy and were aware the challenges facing the inventory management process and how it affects financial performance.

3.4 Sampling procedures

3.4.1 Sample Size

The sample size was determined using the table in Appendix C from a study by (Krejcie & Morgan, 1970), as cited in (Amin, 2005). The model uses a table which has two columns {population column (N) and Sample column (S)}. In this model, the population study is related with the corresponding sample to the nearest estimate. Therefore, basing on the study population of 120 respondents, the study used a sample of 92 respondents.

3.4.2 Sampling Techniques

The study used simple random sampling technique to select respondents in selected retail pharmacies in Rubaga division. This technique was chosen because the category of respondents in selected retail pharmacies had a large population size and as such warranted simple random sampling to minimize sampling bias (Mugenda & Mugenda, 2003).

3.5 Data Collection Methods and instruments

3.5.1 Data types

The type of data in this study was primary data. Primary data was sourced from respondents. The advantage of primary data is its originality. Primary data was collected using questionnaire and interview guide. Secondary data was also utilized.

3.5.2 Data collection instruments

3.5.2.1 Questionnaire

Questionnaires were used to collect data from respondents in selected retail pharmacies in Rubaga Division. The questionnaire was used in this case because it had proved to be an invaluable method of collecting a wide range of information from a large number of individuals especially when it came to people like these (Sekeran, 2003). The questionnaires are popular because the respondents filled them in at their own convenience and are appropriate for large samples. The questionnaires were designed with both open and closed ended questions (Amin, 2005).

3.6 Data Collection Procedures

Upon obtaining the requisite authorization from supervisors, the researcher proceeded with data collection starting with giving out questionnaires.

3.7 Quality control methods

Controlling quality is about ensuring acceptable levels of reliability and validity of the study through proper control of extraneous variables. An extraneous variable is any other independent variable which can also affect the dependent variable (Sekeran, 2003).

3.7.1 Validity

A validity test was carried out prior to the administration of the questionnaires. Three experts were used. This was done in order to find out whether the questions are capable of capturing the intended responses. Content Validity Index (CVI) was calculated in order to establish the validity of the questionnaire. The researcher used the following formula to establish validity of the research instruments as seen below.

Table 3.2: Validity of instrument

Variable	Description	Anchor	Content validity index
Independent	Inventory planning	5point	.832
	Inventory optimization	5point	.876
	Inventory control	5point	.743
Dependent	Financial performance	5point	.799

3.7.2 Reliability

Gay (1996) defined reliability as the degree of consistency that the instrument demonstrates. After pilot testing in the field, reliability of the instrument, on multi-item variables (i.e. inventory management and financial performance) was tested via the Cronbach Alpha Method provided by Statistical Package for the Social Scientists (Foster, 1998). The researcher used this method because it was expected that some items or questions would have several possible answers. The researcher established reliability of the questionnaires by computing the alpha coefficient of the items (questions) that constituted the dependent variable and that of the items that constituted the independent variable. The results are as on Table 3.3:

Table 3.3: Reliability indices for the respective sections of the questionnaire

Variable	Description	Anchor	Cronbach alpha
Independent	Inventory planning	5point	.831
	Inventory optimization	5point	.767
	Inventory control	5point	.786
Dependent	Financial performance	5point	.767

According to Cronbach Alpha Coefficient Test (Cronbach, 1971), the questionnaire was considered reliable since all the coefficients in Table 4 were above 0.7 which is the least recommended CVI in survey studies (Amin, 2004; Gay, 1996).

Research assistants were selected to help in distribution and collection of questionnaires to and from respondents.

3.8 Data management and processing

The data was organized and summarized in one place. The researcher then checked for completeness and accuracy. The raw data was then captured in Excel (spread sheet) before it was entered into Statistical Package for Social Scientists version 20 for quantitative analysis and interpretation. Cleaning and editing was done before and after entering data into the computer software to examine outliers and inconsistencies of responses.

3.9 Data Analysis

Statistical Package for Social Scientists version 20 was used in detailed analysis of data. Analysis was done at Univariate, Bivariate and Multivariate levels. Diagnostic tests were also carried out on the data to check normality and correlation between variables and where necessary data was transformed.

3.9.1 Univariate analysis

Here the researcher looked at how many subjects fell into a given categories and they were given simpler unit of analysis. Data collected was systematically organized to facilitate analysis. The unit of analysis was the individuals who responded to the survey. The raw data was edited to ensure completeness. Thereafter, it was coded using statistical figures to enable quantitative analysis in Statistical Package for Social Scientists version 20.

3.9.2 Bivariate analysis

Responses were grouped into repeated subjects. The repeated subjects were presented in the results based on the study objectives. Here a Pearson correlation coefficient was used to determine the relationship between the two variables. The Pearson coefficient was 0.05 level of significance.

3.9.3 Multivariate analysis

The statistical package was used to analyze quantitative data that goes beyond two variables in this study was SPSS Version 20.

Here, multiple regressions were used to determine the degree of relationships between more than two variables. Correlation coefficient was computed to establish the degree of the relationships between the independent variables and the dependent variable and to determine the strength and direction of their relationship. The correlation coefficients results were obtained at 0.01 level (2-tailed) significance and at 0.05 level (2-tailed) significance.

3.9.4 Model Specification and Estimation

Multiple linear regression models were used to predict financial performance using the three independent variables in the study: inventory planning, inventory optimization and inventory control. In addition, the β coefficients for each independent variable generated from the model was subjected to a z –test, in order to test each of the hypotheses under study. The regression model used to test is shown below:

$$Y = \alpha + \beta 1X1 + \beta 2X2 + \beta 3X3 + Ɛ$$

Where;

Y= Financial Performance

α = is the constant

β1, β2, β3- Coefficient indicating rate of change of financial performance as inventory planning, inventory optimization and inventory control

X1 – inventory planning

X2 – inventory optimization

X3 – inventory control

Ɛ - Error term

All the above statistical tests were analyzed using SPSS Version 20. All tests were two-tailed. Significant levels were measured at 95% confidence level with significant differences recorded at $p < 0.05$.

3.9.5 Model estimation

The model was estimated using the method of maximum likelihood estimation. This is because of the categorical nature of the data. The maximum likelihood estimation was used in order to produce minimum variance unbiased estimators for the actual parameters that best fitted the data.

3.10 Ethical Consideration

Informed consent was sought from the respondent before any interview. The data was collected by use of reliable and valid tools, coded and data collection tools which were burnt to avoid any form of information misuse. The researcher ensured that all citations and references of different authors are acknowledged. The researcher maintained confidentiality of the respondents and protect their privacy at all times. The researcher was professional when presenting himself to the respondents as this might affect the attitude and expectations of the respondents. The researcher used the language that was as neutral as possible regarding the terminology involving people and avoided discriminative language. Lastly, the researcher tried to be considerate during the interactions with respondents.

3.11 Limitations of the study

Some respondents deliberately failed to answer the questionnaire. This gave the researcher hard time but he had to resource and replaced such people with the same people in the target population. Secondly, some respondents wrongly filled the questionnaires. This came as a result of time constraints as some of them rushed to answer the question and attend to their work. But the researcher managed to recover most of the questionnaires well filled. Those which were wrongly filled were ignored. Time was one of the study's major constraints as the researcher couldn't meet some people as expected.

In spite of all these challenges however, the researcher did everything he could to undertake it successfully.

CHAPTER FOUR:
PRESENTATION AND DISCUSSION OF FINDINGS

4.1 Introduction

This chapter presents results of the study based on the formulated objectives and hypotheses as presented in chapter one. The chapter analyzes the variables involved in the study and estimate the conceptual model described in chapter one. In the first two sections data description and analysis is presented. The model estimation and the analysis of the results are then discussed. Finally concluding remarks are made. Data description involves a discussion on the sources of data and definitions of the dependent and the independent variables. Data collected was quantitatively analyzed and presented in tables. Hypotheses are also tested with the study accepting or failing to accept them depending on the p values and t test value.

4.2 Response Rate

Table 4.1: Showing Response Rate

Instruments	Frequency	Percent
Number of questionnaires distributed	92	100%
Number of questionnaires returned	86	93.5%

Source: Primary data 2016

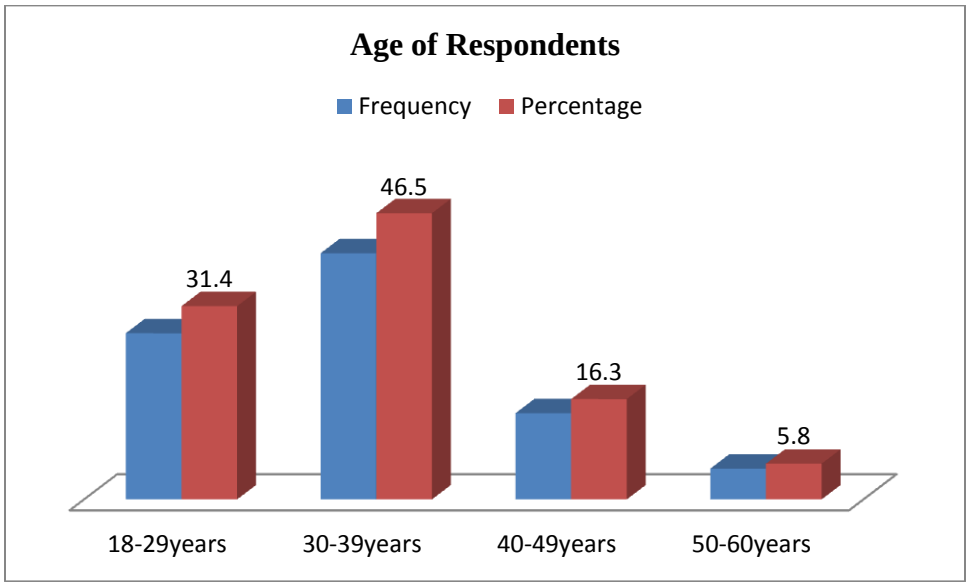
The researcher used questionnaires to collect data from the respondents. Out of the 92 questionnaires that were distributed, 92 were returned making 93.5% return rate. The test of significance was performed at the probability level of $p< 0.05$. However, according to Amin (2005), 70% of the respondents are enough to represent the sample size set for the study. This means that 93.5% was enough for this study.

4.3 Demographic Information of respondents

The demographics information shows the characteristics of the elements in the sample size. As such, the researcher sought to establish the general information of the respondents, which forms the basis under which the interpretations were made.

4.3.1 Age of respondents

Figure 4.1: Age of the Respondents



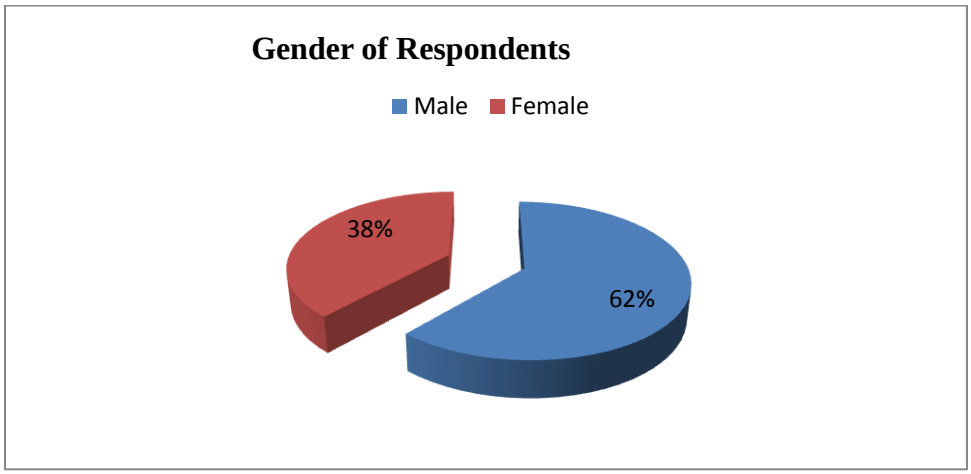
Source: primary data, 2016

It was established that all the respondents that took part in the study were between the ages of 18-60 years old. 46.5% were between ages of 30-39 years; 31.4% were between the ages of 18-29 years, 40-49years had 16.3% and those 50-60years were represented by 5.8% (figure 1 has more details). This implies that shows that they were mature enough to analyze issues relating to financial performance. The respondents adequately responded to the questions put forward and by virtue of their experience, their responses were sound enough such that the researcher was able to generate adequate data from them for the researcher's study. The majority of respondents were between the ages of 30-39 (46.5%) because most retail pharmacies employ people below the age of 35 to do the basic work in the institution because they want productive and energetic

young men and women who can accomplish tasks on time and can easily be driven, coordinated and controlled. This explains why the majority of the respondents were between 30 to 40 years.

4.3.2 Gender of Respondents

Figure 4.2: Gender of respondents

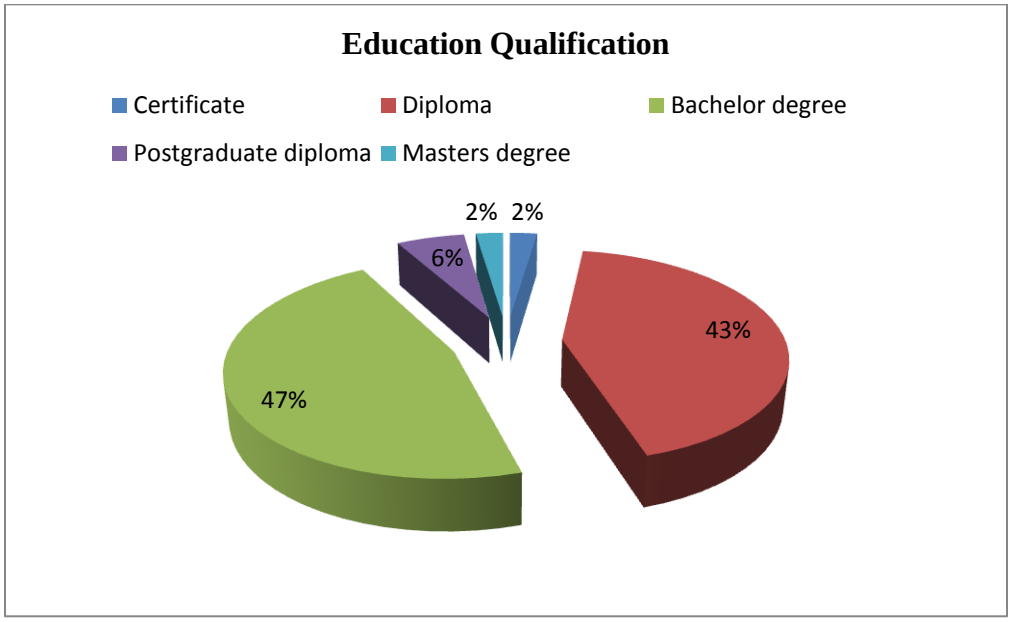


Source: primary data, 2016

Demographic factor 2 analyzed the gender of the respondents. This information was necessary to enable the researcher to obtain information on whether the respondents were either male or female. The majority of the respondents were male (62%) and were female (38%). These results show that gender representation indicated a small variation between the male and female with a difference of 26%.Very few females are involved in the running and management of retail pharmacies. This type of work is dominated by the male.

4.3.3 Academic qualifications of the respondents

Figure 4.3: Education level of respondents

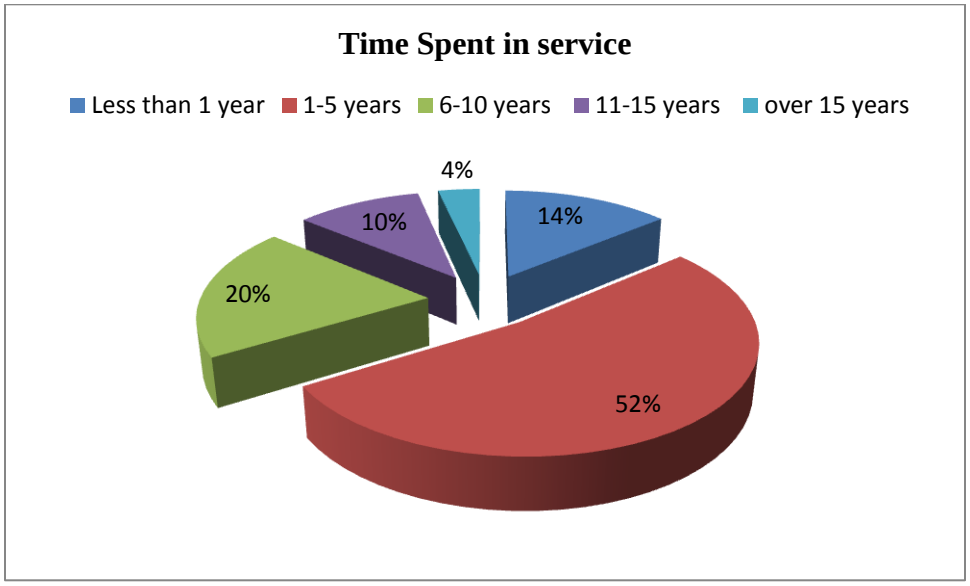


Source: primary data, 2016

Demographic factor 3 examines the academic qualifications of the respondents. The information is necessary to enable the researcher to know whether the respondents are educated or illiterate. Information on the academic qualifications of the respondents is statistically shown in figure 4.3 above. Many of the respondents were degree holders (47%) compared to 2% master's degree, 43% diploma holders.These results indicate that the respondents had reasonably good education qualifications and the desired skills and knowledge to deliver. Besides, on the basis of the education levels, the respondents were able to read, understand the questionnaire and gave appropriate responses.

4.3.4 Time spent while working selected retail pharmacies

Figure 4.4: Time spent working with selected retail pharmacies



Source: primary data, 2016

Demographic factor 4 shows the time spent while working with selected retail pharmacies. The figure 4.4 above shows that majority of 52.3% of the respondents had worked with selected retail pharmacies for 1-5years while 19.8% has worked with the pharmacies for 6-10 years. The least number of respondents (3.5%) had worked with the selected retail pharmacies for over 15 years. The implication was that the respondents have attained adequate experiences with selected retail pharmacies given the reasonable time they had worked with the company and therefore knowledgeable about inventory management and financial performance in selected retail pharmacies.

4.4 Univariate analysis

This theme presents empirical findings presented on observations of inventory planning, inventory optimization and inventory controls and financial performance of selected retail pharmacies in Rubaga Division.

4.4.1 Inventory Planning practices in retail pharmacies

In an effort to find out whether retail pharmacies practiced inventory planning, respondents were asked to react on different preconceived statements and table 4.2 below shows the summary of the responses.

Table 4.2: Inventory planning practices

Questionnaire items	N	Min	Max	Mean	Std Deviation
Our pharmacy always has enough quantity to meet the customer needs	86	3	5	4.03	959
There is an inventory plan in our pharmacy	86	4	5	4.09	835
Inventory demand forecasting in our pharmacy is always accurate	86	3	5	4.11	826
Collaboration with our customers enables us make accurate forecasts	86	1	5	4.18	.735
We share information on delivery schedules with our distributors	86	1	5	4.21	705
We make accurate forecasts for our inventories which match with our customer demand in the pharmacy	86	1	5	4.25	.698
Order processing is well stipulated out in our inventory management plans	86	2	5	4.30	.675
Transportation modes are well defined in our inventory plans	86	1	5	4.31	.559

Source: primary data, 2016

Basing on the scale of 1-strongly disagree to 5-strongly agree, any data mean of above 3.5 indicates existence of the variables understudy. This thus, statistically means that a big number of retail pharmacies that were selected for this study fully practiced inventory planning. The items that confirmed the above statistical claim included; Transportation modes are well defined in our inventory plans (4:31); Order processing is well stipulated out in our inventory management plans (4.30); We make accurate forecasts for our inventories which match with our

customer demand in the pharmacy (4.25); We share information on delivery schedules with our distributors (4.21); Collaboration with our customers enables us make accurate forecasts (4.18); Inventory demand forecasting in our pharmacy is always accurate (4.11); There is an inventory plan in our pharmacy (4.09); Our pharmacy always has enough quantity to meet the customer needs (4.03). The above statements implied that retail pharmacies widely conduct inventory planning. This thus, statistically means that a big number of retail pharmacies that were selected for this study fully practiced inventory planning.

4.4.2 Inventory Optimization practices in retail pharmacies

In an effort to find out whether retail pharmacies practice inventory optimization, respondents were asked to react on different preconceived statements and table 4.3 shows the summary of the responses.

Table 4.3: Inventory Optimization

Questionnaire items	N	Min	Max	Mean	Std Deviation
We face stock out periods which affect our ability to meet customer needs	86	1	4	3.54	1.707
Purchase order changes are made	86	1	5	3.55	1.554
We always have high inventory turns because customers are satisfied with our products	86	1	4	3.55	.846
Inventory schedules are well shared with suppliers	86	1	4	3.55	.799
Carrying costs are part of the company overall expenses	86	1	4	3.58	.767
We endeavor to avoid paying stock costs	86	1	4	3.64	.747
Ordering costs are well stipulated	86	1	5	4.58	.705
We use inventory management systems to manage our inventories	86	1	5	4.59	.669

Source: primary data, 2016

It was found out that all 8-items that were introduced to respondents were indicated with a data mean above 3.5. Based on the scale of 1-strongly disagree to 5-strongly agree, any data mean of above 3.5 indicates existence of the variables understudy. Among the items that had means above 3.5 included; We use inventory management systems to manage our inventories (4.59); We face stock out periods which affect our ability to meet customer needs (4.58); We endeavor to avoid paying stock costs (3.64); Carrying costs are part of the company overall expenses (3.58); We always have high inventory turns because customers are satisfied with our products (3.55); Ordering costs are well stipulated (3.55); Purchase order changes are made (3.55); Inventory schedules are well shared with suppliers (3.54). The above responses thus mean that retail pharmacies have adequately managed their inventory level.

This thus, statistically means that retail pharmacies conduct inventory optimization and have vividly managed their inventory levels.

4.4.3 Inventory control practices in retail pharmacies

In an effort to find out whether retail pharmacies n Rubaga division practiced inventory controls, respondents were asked to react on different preconceived statements and table 4.4 shows the summary of the responses.

Table 4.4: Inventory control practices

Questionnaire items	N	Min	Max	Mean	Std Deviation
Supervision checklists are used to often track whether the quality, costs and time agreed upon are being implemented.	86	2	5	3.33	1.069
We deliver according to the delivery lead times of our customers	86	2	5	3.42	.994
Audits are done at regular intervals on the quality and costs of inventories	86	2	5	3.54	.658

There is adequate equipment to facilitate stock management	86	1	4	3.57	.585
There is a reliable system to track the movement of materials flow in our pharmacy	86	1	4	3.70	.585
Proper records management is carried out during delivery of materials and payments made at the right time	86	1	5	4.01	.585
We keep inventory buffers in order to meet our customers' needs	86	1	5	4.12	.489
A supervision checklist on inventory systems is in place, against which timely and quality indicators are checked.	86	1	5	4.14	.474

Source: primary data, 2016

The results in table 4.4 reveal that the means for most of the items were above 3.5. It was found out that out of the 8-items that were introduced to respondents, 6-items were indicated with a data mean above 3.5 and 2-items had data means below 3.5. Based on the scale of 1-strongly disagree to 5-strongly agree, any data mean of above 3.5 indicates existence of the variables understudy. This thus, statistically means that inventory control was being practiced in selected retail pharmacies in Rubaga Division. Among the items that had means above 3.5 included; A supervision checklist on inventory systems is in place, against which timely and quality indicators are checked (4.14); We keep inventory buffers in order to meet our customers' needs (4.12); Proper records management is carried out during delivery of materials and payments made at the right time (4.01); There is a reliable system to track the movement of materials flow in our pharmacy (3.70); There is adequate equipment to facilitate stock management (3.57); Audits are done at regular intervals on the quality and costs of inventories (3.54). These thus implied retail pharmacies had highly adopted the use of inventory controls in their operations. The findings from the interviewees seemed congruent to what Ndubisi et al (2007) had earlier indicated that improving financial performance, it is important that retail pharmacies have in

place inventory controls. This thus, statistically means that inventory control was being practiced in selected retail pharmacies in Rubaga Division.

4.4.4 Financial Performance of retail pharmacies

To understand the perceived financial performance of retail pharmacies, respondents were asked to react on different preconceived statements and table 4.5 shows the summary of the responses.

Table 4.5: Perceived financial Performance of Retail Pharmacies

Questionnaire items	N	Min	Max	Mean	Std Deviation
The percentage of losses incurred by the company are very minimal	86	2	5	3.54	.790
The pharmacy pays no obsolescence costs	86	2	4	3.73	.787
Our profit margin has increased in the past three years	86	4	5	4.00	.632
Ordering costs are within limits	86	4	5	4.02	.578
The pharmacy makes normal profits	86	4	5	4.07	.576
Costs paid on stock is enough	86	3	5	4.11	.545
Our sales have showed an upward trend for the last three years	86	3	5	4.37	.449
Our customers have increased for the last three years	86	3	5	4.43	.466

Source: primary data, 2016

The results in table 4.5 reveal that the performance of retail pharmacies was very much convincing. Basing on the scale of 1-strongly disagree to 5-strongly agree, any data mean of above 3.5 indicates existence of the variables understudy. This thus, statistically means that the financial performance of retail pharmacies in Rubaga Division was promising. Among the items that had means above 3.5 included; Our customers have increased for the last three years (4.43); Our sales have showed an upward trend for the last three years (4.37); Costs paid on stock is enough (4.11); The pharmacy makes normal profits (4.07); Ordering costs are within limits (4.02); Our Return on Equity has increased for the past three years (4.00); Our profit margin has

increased in the past three years (3.73); The percentage of losses incurred by the company are very minimal (3.54). These thus mean that retail pharmacies have enough liquidity, increased on its assets and profitability is perceived as increasing. These are indicators of prevailing good financial performance of retail pharmacies in Rubaga Division. This thus, statistically means that the financial performance of retail pharmacies in Rubaga Division was promising.

4.5 Bivariate Analysis

The study analyzed the relationships that are inherent among the independent and dependent variables as well as among the independent variables as presented below;

4.5.1 The relationship between inventory planning and financial performance of retail pharmacies in Rubaga Division

To test if there was a relationship between inventories planning and financial performance of retail pharmacies in Rubaga Division, a Pearson correlation coefficient was done by the study and the results are shown in Table 4.6 below. To verify this hypothesis, a null hypothesis was derived that "There is no significant relationship between inventory planning and financial performance of retail pharmacies in Rubaga Division."

Table 4.6: Correlation results

		Inventory planning	Financial performance
Inventory planning	Correlation Coefficient	1.000	.777**
	Sig. (2-tailed)	.	.007
	N	86	86
Financial performance	Correlation Coefficient	.777**	1.000
	Sig. (2-tailed)	.007	.
	N	86	86

**. Correlation is significant at the 0.05 level (2-tailed).

Source: primary data, 2016

Findings show that there was a positive correlation (r= .777) between inventory planning and financial performance of retail pharmacies. These findings were subjected to a test of significance (p) and it is shown that the significance of the correlation (p = .007) is less than the recommended critical significance at 0.05. Thus, the relationship was significant. Because of this, the hypothesis "There is no significant relationship between inventory planning and financial performance of retail pharmacies in Rubaga Division." was rejected. Thus, the implication of the findings was that inventory planning has a positive relationship with financial performance of retail pharmacies. The positive influence implies that a change in inventory planning relates to a significant change in financial performance of retail pharmacies. The positive nature of the correlation implied that inventory planning must be ensured if financial performance of retail pharmacies is to be achieved.

This study finding is in agreement with Gillerman and Browning (2000) who had earlier indicated that retail pharmacies can meet their financial performance by developing an inventory plan and planning to grow. They had pointed out that developing an effective and efficient inventory plan involves developing what Saenz called "best-practices solutions" and defining in future plan requirements. Regardless of the approach which can be used by the company, developing an inventory plan is a critical step in the right direction. Nyangau et al (2014) further in line with the study findings adds that there are factors that retail pharmacies can consider in inventory planning so as to provide customer satisfaction which improves its profitability in long run.

4.5.2 The relationship between inventory optimization and financial performance of retail pharmacies in Rubaga Division

To test if inventory optimization had a relationship with financial performance of retail pharmacies, a Pearson correlation coefficient was done by the study and the results are shown in Table 4.7 below. To verify this hypothesis, a null hypothesis was derived that "There is no significant relationship between inventory optimization and financial performance of retail pharmacies in Rubaga Division."

Table 4.7: Correlation results

		Inventory optimization	Financial performance
Inventory optimization	Correlation Coefficient	1.000	.676**
	Sig. (2-tailed)	.	.017
	N	86	86
Financial performance	Correlation Coefficient	.676**	1.000
	Sig. (2-tailed)	.017	.
	N	86	86

**. Correlation is significant at the 0.05 level (2-tailed).

Source: primary data, 2016

Findings show that there was a significant positive correlation (r= .676**) between inventory optimization and financial performance of retail pharmacies. These findings were subjected to a test of significance (p) and it is shown that the significance of the correlation (p = .017) is less than the recommended critical significance at 0.05. Thus, the relationship was significant. Because of this, the hypothesis "There is no significant relationship between inventory optimization and financial performance of retail pharmacies in Rubaga Division." was rejected. The implication of these findings is that there exists a positive influence between inventory optimization and financial performance of retail pharmacies. The significant influence implied

that a change in inventory optimization contributed to a significant change in financial performance of retail pharmacies.

This is in agreement with study earlier done by Samaranayake (2008), where he had ascertained that inventory optimization enables retail pharmacies to plan properly, avoid inventory bottlenecks in the chain and avoid unsafe stocks both for all the channel members which improves on profitability of a firm. The findings are also congruent with what Alverson (2003) suggests that a retail pharmacy's financial performance depends on how it manages its inventory levels. According to Frazelle (2002), inventory has the biggest cost hidden in most chain partners' businesses.

4.5.3 The relationship between inventory control and the financial performance of retail pharmacies in Rubaga division

To test if inventory control had an influence the financial performance of retail pharmacies, a Pearson correlation coefficient was done by the study and the results are shown in Table 4.8 below. To verify this hypothesis, a null hypothesis was derived that "There is no significant relationship between inventory control and financial performance of retail pharmacies in Rubaga Division."

Table 1: Correlation results

		Inventory control	Financial performance
Inventory control	Correlation Coefficient	1.000	.449
	Sig. (2-tailed)	.	.023
	N	86	86
Financial performance	Correlation Coefficient	.449	1.000
	Sig. (2-tailed)	.023	.
	N	86	86

		Inventory control	Financial performance
Inventory control	Correlation Coefficient	1.000	.449
	Sig. (2-tailed)	.	.023
	N	86	86
Financial performance	Correlation Coefficient	.449	1.000
	Sig. (2-tailed)	.023	.
	N	86	86

**. Correlation is significant at the 0.05 level (2-tailed).

Source: primary data, 2016

Findings show that there was a moderate positive correlation (r= .449) between inventory control and financial performance. Thus, findings show that Inventory control for 7.6% change in financial performance of retail pharmacies. These findings were subjected to a test of significance (p) and it is shown that the significance of the correlation (p = .023) is less than the recommended critical significance at 0.05. Thus, the relationship was significant. Because of this, the hypothesis that "There is no significant relationship between inventory control and financial performance of retail pharmacies in Rubaga Division" was rejected.

The implication of these findings is that Inventory control has a positive relationship on the financial performance of retail pharmacies. The positive relationship implied that a change in inventory control can contribute to financial performance of retail pharmacies. The positive nature of the relationship implied that managers in retail pharmacies needs to ensure that inventory control is fully installed and implemented if financial performance of retail pharmacies is to improve and vice versa.

This is in agreement with Fox and Tyler (2003) who had indicated that the main objective of inventory control is to minimize the relevant costs to ensure profitable operations. Koumanakos (2008) agitates that usually if financial performance is to improve for a retail pharmacy, its inventory systems must be designed to achieve a balance between the costs of acquiring and holding inventory. These costs are the ones that affect the retail pharmacy profitability. He adds that inventory turns refer to the number of times inventory is converted into cash. Gruen and Corsten (2002) in line with study findings further point out that retail pharmacies and chain partners boost earnings by addressing stock issues. High levels of inventories mean that there are low levels of inventory turns (Koumanakos, 2008).

4.6 Multivariate analysis

Regression was used to establish the multivariate results of the study. Table 4.9 presents the details.

Table 4.9: Model summary

R	R Square	Adjusted R Square	Std. Error of the estimate	Durbin-Watson statistic value
0.777	**0.705**	**0.779**	**1.88884**	**3.144**

a) Predictors: (Constant), inventory planning, inventory optimization and inventory control.
b) Dependent Variable: financial performance
Source: (Survey Data, 2016)

A Multiple linear regression model was used to predict the financial performance of retail pharmacies in the study. The prediction was carried out basing on the impact of the three independent factors: inventory planning, inventory optimization and inventory control. In addition, the beta coefficients for each independent variable generated from the model was

subjected to a t-test, in order to test each of the hypotheses under study. The study thus came up with a model summary, the ANOVAs for the effect sizes and the regression model as presented in table 4.9, 4.10 and 4.11.

From table 4.9, the findings indicated that the model correlation coefficient was 0.779 which indicated that the model predicted over 77.9% of the change in the independent variable. This means that the remaining percentage of 12.1% was determined by other factors outside the study. The model was adequate in this case as indicated by the Durbin-Watson statistic value of 3.144 which is in the range of 0 to 9.

Table 4.10: ANOVA Model

	Sum of Squares	**df**	**Mean squares**	**F**	**Sig.**
Regression	277.18	**5**	33.45	67.007	0.001
Residual	64.133	800	0.433		
Total	328.255	849			

a) Dependent Variable: financial performance

b) Predictors: (Constant), inventory planning, inventory optimization and inventory control.

Source: (Survey Data, 2016)

The ANOVA model in table 4.10 showed that the regression model was also adequate. The effect size of the regression model was shown to be over 67 that contributed by the residual mean sum of squares. The F-ratio was 67.007 at 4 degrees of freedom which are the four factors. This represented the effect size of the regression model and was significant with a p-value of 0.001.

4.7 Coefficients Model

Table 4.11: Coefficients model

	Unstandardized Coefficients		**Standardized Coefficients**			**Collinearity Statistics**	
	B	**Std. Error**	**Beta**	**T**	**Sig.**	**Tolerance**	**VIF**
(Constant)	-1.003	1.097		-2.086	0.176		
Inventory planning	-1.275	0.234	0.287	5.650	0.001	0.888	1.500
Inventory optimization	0.477	0.061	0.597	7.033	0.001	0.527	1.248
Inventory control	0.223	0.004	0.210	3.098	0.001	0.872	1.220

Dependent variable: **Financial performance**

$Y=\alpha+ \beta_1X_1+ \beta_2X_2+ \beta_3X_3+\varepsilon$…….. (2)

The regression results in table 4.11 show that each of the predicted parameters in relation to the independent factors were significant; $\beta1= .287$ (p-value = 0.001 which is greater than $\alpha = 0.05$) which implies that we accept the null hypothesis stating that there is a positive relationship between inventory planning and financial performance of retail pharmacies. This indicates that for each unit increase in the positive relationship of inventory planning and financial performance, there is .287 units increase in financial performance level. Furthermore, the effect of inventory planning was stated by the t-test value = 5.650 which implies that the standard error associated with the parameter is greater than the effect of the parameter.

The table also shows that $\beta2 = 0.597$ (p-value = 0.001 which is less than $\alpha = 0.05$) which indicates that we reject the null hypothesis stating that there is a positive relationship between inventory optimization and financial performance of retail pharmacies. This implies that for each unit increase in inventory optimization offered in retail pharmacies, there is up to 0.597 unit

increase in financial performance. Also the effect of inventory control is shown by the t-test value of 7.033 which implies that the impact of inventory optimization surpasses that of the error by over 5 times.

The value of $\beta 3 = 0.210$ (p-value = 0.001 which is less than $\alpha = 0.05$) which implies that we accept the null hypothesis stating that there is a positive relationship between inventory control and financial performance of retail pharmacies. This indicates that for each unit increase in inventory control, there is up to 0.210 units increase in financial performance of retail pharmacies. The impact of inventory control is stated by the t-test value = 3.098 which indicates that the impact of inventory control is over 8 times that of the error associated with it.

The rule of thumb was applied in the interpretation of the variance inflation factor (VIF). From table 4.11, the VIF for all the estimated parameters was found to be less than 4 which indicate the absence of multi-Co linearity among the independent factors. This implies that the variation contributed by each of the independent factors was significantly independent and all the factors should be included in the prediction model.

4.8 Discussion of the findings

As stated by **Hypothesis 1** that there is a positive relationship between inventory planning and financial performance of retail pharmacies, research findings show consistency with the hypothesis hence, there is a positive relationship between inventory planning and financial performance of retail pharmacies (coefficient estimate ($\beta 1 = 0.287$, p value =0.001). Inventory planning in retail pharmacies has been found to diminish with the diminishing levels of performance in terms of liquidity, profitability, sales volume and losses incurred. This study finding is in agreement with Gillerman and Browning (2000) who had earlier indicated that retail

pharmacies can meet their financial performance by developing an inventory plan and planning to grow. She had pointed out that developing an effective and efficient inventory plan involves developing what Saenz called "best-practices solutions" and defining in future plan requirements. Regardless of the approach which can be used by the company, developing an inventory plan is a critical step in the right direction. Nyangau et al (2014) further in line with the study findings adds that there are factors that retail pharmacies can consider in inventory planning so as to provide customer satisfaction which improves its profitability in long run. They point out that the key for improving profitability and general financial performance of a retail pharmacy is to determine their needs accordingly and to meet and exceed the need in a consistent manner. They argue that retail pharmacies can adopt strategic and proactive plans that focuses on customer service basing on the understanding of the customers own logistics process and to design a logistics system which will meet customer needs with the ultimate goal of creating value for customers that enables them to achieve their financial objectives efficiently (Nyangau et al, 2014).

Hypothesis 2 states that there is a positive relationship between inventory optimization and financial performance of retail pharmacies. Research findings are in agreement with the hypothesis (coefficient estimates ($\beta 2 = 0.597$, p value =0.000). inventory optimization contributes adequately to financial performance of retail pharmacies. This is in agreement with study earlier done by Samaranayake (2008), where he had ascertained that inventory optimization enables retail pharmacies to plan properly, avoid inventory bottlenecks in the chain and avoid unsafe stocks both for all the channel members which improves on profitability of a firm. The findings are also congruent with Alverson (2003) suggests that a retail pharmacy's

financial performance depends on how it manages its inventory levels. According to Frazelle (2002), inventory has the biggest cost hidden in most chain partners' businesses. In addition, Atali et al., 2006 in support of the study findings above had also found out that poor inventory optimization results into inventory inaccuracies which increases the chain partners' holding costs and increases the out-of stock situations. In response, chain partners seek for cost improvements and this affects the financial performance of a retail pharmacy (Verwijmeren, 2006).

Hypothesis 3 states that there is a positive relationship between inventory control and financial performance of retail pharmacies. Research findings are in agreement with the hypothesis since inventory control adopted by retail pharmacies has coefficient estimate ($\beta 3 = 0.210$, p value =0.001), hence hypothesis 3 do hold. This is in agreement with Fox and Tyler (2003) who had indicated that the main objective of inventory control is to minimize the relevant costs to ensure profitable operations. Koumanakos (2008) agitates that usually if financial performance is to improve for a retail pharmacy, its inventory systems must be designed to achieve a balance between the costs of acquiring and holding inventory. These costs are the ones that affect the retail pharmacy profitability. He adds that inventory turns refer to the number of times inventory is converted into cash. Gruen and Corsten (2002) in line with study findings further point out that retail pharmacies and chain partners boost earnings by addressing stock issues. High levels of inventories mean that there are low levels of inventory turns (Koumanakos, 2008). Non availability of stocks results into losses to all chain partners because customers may decide to buy another brand, buy items from another store or delay purchase (Raman et al., 2001). This comes as a result of poor inventory controls that bring about information inefficiencies where the order information sent up the chain does not reflect the true consumer demand Gruen and

Corsten (2002). A lack of inventory record accuracy clearly reduces chain profits due to lost sales and inventory carrying costs, which may run as high as 10 percent of existing profits (Raman et al., 2001).

CHAPTER FIVE

SUMMARY, CONCLUSION AND RECCOMENDATIONS

5.1 Introduction

This chapter provides a summary of the findings from the study in view of the research objectives and stated hypotheses. The researcher's conclusions are presented and finally recommendations made for future studies on the subject of management and financial performance of retail pharmacies.

5.2 Summary of findings

5.2.1 Demographic factors

The study was able to receive 93.5% response rate. It was established that all the respondents that took part in the study were above the age of 18. The majority of respondents were between the ages of 30-39 (46.5%). On side of gender, the majority of the respondents were males (62%) and female (38%). Academically, many of the respondents were degree holders (43%) compared to 2% master's degree, 43% diploma holders and no doctorate holders. On time spent, it was found out that majority of 52.3% of the respondents had worked with retail pharmacies for 1- 5 years. These respondent's bio data thus implied that most of the respondents had the required ages, with balanced gender variations and academic qualifications to respond to the study.

5.2.2 The relationship between inventory planning and financial performance of retail pharmacies in Rubaga Division

The study findings indicated that there is a positive relationship between inventory planning and financial performance of retail pharmacies, research findings show consistency with the hypothesis hence, there is a positive relationship between inventory planning and financial performance of retail pharmacies (coefficient estimate ($\beta 1 = 0.287$, p value =0.001). Inventory planning in retail pharmacies has been found to diminish with the diminishing levels of

performance in terms of liquidity, profitability, sales volume and losses incurred. This study finding is in agreement with Gillerman and Browning (2000) who had earlier indicated that retail pharmacies can meet their financial performance by developing an inventory plan and planning to grow. She had pointed out that developing an effective and efficient inventory plan involves developing what Saenz called "best-practices solutions" and defining in future plan requirements. Regardless of the approach which can be used by the company, developing an inventory plan is a critical step in the right direction.

5.2.3 The relationship between inventory optimization and financial performance of retail pharmacies in Rubaga Division

The study findings indicated that there is a positive relationship between inventory optimization and financial performance of retail pharmacies. Research findings are in agreement with the hypothesis (coefficient estimates ($\beta 2 = 0.597$, p value =0.000). inventory optimization contributes adequately to financial performance of retail pharmacies. This is in agreement with study earlier done by Samaranayake (2008), where he had ascertained that inventory optimization enables retail pharmacies to plan properly, avoid inventory bottlenecks in the chain and avoid unsafe stocks both for all the channel members which improves on profitability of a firm. The findings are also congruent with what Alverson (2003) suggests that a retail pharmacy's financial performance depends on how it manages its inventory levels.

5.2.4 The relationship between inventory control and financial performance of retail pharmacies in Rubaga Division

The study findings indicated that there is a positive relationship between inventory control and financial performance of retail pharmacies. Research findings are in agreement with the hypothesis since inventory control adopted by retail pharmacies has coefficient estimate ($\beta 3 = 0.210$, p value =0.001), hence hypothesis 3 do hold. This is in agreement with Fox and Tyler

(2003) who had indicated that the main objective of inventory control is to minimize the relevant costs to ensure profitable operations. Koumanakos (2008) agitates that usually if financial performance is to improve for a retail pharmacy, its inventory systems must be designed to achieve a balance between the costs of acquiring and holding inventory. These costs are the ones that affect the retail pharmacy profitability. He adds that inventory turns refer to the number of times inventory is converted into cash. Gruen and Corsten (2002) in line with study findings further point out that retail pharmacies and chain partners boost earnings by addressing stock issues. High levels of inventories mean that there are low levels of inventory turns (Koumanakos, 2008).

5.3. Conclusion

The study findings indicated that there was a significant positive relationship between inventory planning and financial performance of retail pharmacies in Rubaga Division, a significant strong positive relationship between inventory optimization and financial performance of retail pharmacies in Rubaga Division, a significant strong positive relationship between inventory control and financial performance of retail pharmacies in Rubaga Division.

The study findings revealed that a significant positive relationship between inventory planning and financial performance meant that if retail pharmacies implement inventory planning and collaborate among each other, then financial performance could improve.

The research findings also revealed a significant positive relationship between inventory optimization and financial performance of retail pharmacies this implies that in order to obtain high levels of financial performance, there is need for better inventory optimization.

The research findings further showed significant positive relationship between inventory control and financial performance of retail pharmacies. This implies that increased levels of inventory controls among retail pharmacies lead to improved levels in financial performance.

5.4 Recommendations

i) It is recommended that retail pharmacies should implement improve inventory management techniques and information systems. Techniques like quick books and Systems like EDI (electronic data interchange), ERP systems (enterprise resource planning systems), POS (point of sale systems and many others should be installed to provide information that will then be used to manage inventories very well among retail pharmacies hence leading to financial performance. These systems will be used to manage inventory levels, reduce inventory costs, lead time, increase inventory turns and customer service. They will promote flexibility, on time delivery hence leading to increased financial performance.

ii) Retail pharmacies should also become more cognizant of slow moving items in their possession. Every day that these items are not used or sold, they occupy space, utilize labor and resources, run the risk of obsolescence and should they expire, they greatly reduce profits.

iii) There is need for retail pharmacies to make accurate demand forecasting while applying basic technologies in the stock planning and usage. This is too important because it will reduce on late inventories and provision of accurate and timely delivery and hence meeting customer needs that are too vital for improving financial performance of retail pharmacies.

5.5 Areas for further research

i) In future, researchers should replicate this study to cover the whole country.

ii) A study on the self-assessment system can also be carried out to determine its effectiveness on enhancing the performance of retail pharmacies.

iii) Further the study should also put into consideration the influence of other factors other than inventory management on the performance of retail pharmacies.

REFERENCES

Agaba, E & Shipman, N. (2007). Public Procurement Reform in Developing Countries: The Ugandan Experience.

Aissaoui, N., Haouari, M., & Hassini, E. (2007). Supplier Selection and Order Lot Sizing Modeling: A Review. Computer & Operations Research, 34, 3516-3540.

Alverson, C. (2003). Beyond Purchasing—Managing Hospital Inventory. [Online]. Available from: http://www.managedhealthcaresystems executive.com [Accessed 22/08/2016]

Amin, M.E, (2005), Social Science Research Methods: Conception, methodology and analysis, MUK Printery.

Andaleeb, Syed Saad (1995) "Dependence Relations and the Moderating Role of Trust: Implications for Behavioral Intentions in Marketing Channels," International Journal of Research in Marketing, 12 (2), 157-72

Arrowsmith& A. Davies (Eds.), Public Procurement: Global Revolution (pp. 139-157). London:

Basheka, B. C. (2009). 'Procurement planning and local governance in Uganda: a factor analysis approach', International Journal of Procurement Management, Vol. 2, No. 2, pp.191-209

Blackstone, J. H., Jr., & Cox, J. F. (1985). Inventory Management Techniques. Journal of Small Business Management, 4(1), 27-33.

Borade and Bansod (2007) Domain of supply chain management-a "State of art journal of technology and research innovations volume 2

Brennan, N. M., and J. Soloman. (2008). Corporate Governance, Accountability and Mechanisms of Accountability: An overview. Accounting, Auditing & Accountability Journal.

Brigham, Eugene F., and Phillip R. Daves. 2009. Intermediate Financial Management. Cengage Learning.

Buxey, G. (2006). Reconstructing inventory management theory. International Journal of Operations & Production Management, 26(9), 996-1012.

Chen, F. and B. Yu. 2005. Quantifying the value of leadtime information in a single-location inventory system. Manufacturing & Service Operations Management 7,144-151.

Chopra, S., & Meindl, P. (2001). Supply Chain Management: Strategy, Planning, and Operation. Englewood Cliffs: Prentice-Hall.

Chopra, S., & Meindl, P. (2001). Supply Chain Management: Strategy, Planning, and Operation. Englewood Cliffs: Prentice-Hall.

CIPS Text book (2013). Supplier Development, Kaplan Publishing.

Cooper, M.C., Lambert, D.M. and Pagh, J.D. (1997), ”Supply Chain Management: More Than a New Name for Logistics,” The International Journal of Logistics Management, Vol. 8, No. 1, pp. 1-14.

Coyle, J. J., Bardi, E. J., & Langley, C. J. Jr. (2003). The Management of Business Logistic: A Supply Chain Perspective (7th ed.). Mason: South-Western

R. Peter, (2008) "A relationship approach to construction supply chains", Industrial Management & Data Systems, Vol. 108 Iss: 3, pp.310 - 327

Fox, R. and Tyler, S. (2003). Managing drug shortages: Seven years' experience at one health system. Am J Health Syst Pharm 60(3):245-53.

Frazelle, E. H. (2002). Supply Chain Strategy: The Logistics of Supply Chain Management. New York: McGraw-Hill.

Gallego, G. and O.Ozer. 2001. Optimal use of demand information in supply chain management. Ch. 5 in Supply Chain Structures: Eds. J. Song and D. Yao. 2001, 119-160.

Gerrit S and Mohammad J. A (2010), Monitoring effects of the internal Audit Function: Agency Theory versus other explanatory variables. *International Journal of Auditing*. Blackwell Publishing Ltd

Gillerman, G. and Browning, A. (2000). Drug use inefficiency: A hidden source of wasted health care dollars. Anesth Analg 91(4):921-4.

Goldsby, T., & Martichenko, R. (2005). Lean Six Sigma Logistics: Strategic Development to Operational Success. Boca Raton: J. Ross Publishing, Inc.

Gruen, T.W., Corsten, D. and Bharadwaj, S. (2002), Retail Out of Stocks: A Worldwide Examination of Causes, Rates, and Consumer Responses, Grocery Manufacturers of America, Washington, DC.

Gunasekaran.A, Patel .C and Tirtiroglu. E, (2001) Performance measures and metrics in a supply chain environment International Journal of Operations &Production Manageme1ll Vol. 21,pp: 71-87

Hakansson, H., & Persson, G. (2004). Supply Chain Management: The Logic of Supply Chains and Networks. The International Journal of Logistics Management, 15(1), 11-26.

Helms, M. M., Ettkin, P. L., & Chapman, S. (2000). Supply chain forecasting-Collaborative forecasting supports supply chain management. Business Process Management Journal, 6(5), 392-407.

Holstrom.F.etal (2002) collaborative an, forecasting and replenishment new solutions needed for mass collaboration. Supply chain management an international journal vol7 pp136-145

Kang, Y. and Gershwin, S.B. (2005), "Information inaccuracy in inventory systems: stock loss and stockout", lIE Transactions, Vol. 37, pp. 843-59.

Koumanakos.P (2008) The effect of inventory management on firm performance International Journal of Productivity Performance Management Vol. 57 No.5, pp. 355-369

Krajewski, L., & Ritzman, L. (2002). Operations Management. New Jersey: Pearson Education Inc.

Kulp, S.C., Lee, H.L. and Ofek, E. (2004), "Manufacturer benefits from information integration with retail customers", Journal of Management Science, Vol. 50 No, pp. 431-44.

Kwon.G and suh .T (2004) Factors affecting the level of trust and commitment in supply chain relationships journal of supply chain management: global review of purchasing and supply

Lam, J., & Postle, R. (2006). Textile and apparel supply chain management in Hong Kong. International Journal of Clothing Science and Technology, 18(4), 265-277.

Lee and Kleiner (2001) Inventory management in the women's retail and clothing industry. Volume 24

McCarthy, T. M. and Golicic, S. L (2002). Implementing Collaborative Forecasting to Improve Supply Chain Performance, International Journal of Physical Distribution and Logistics Management, 32(6), 431-454.

McLaren, T., Head, M. and Yuan, Y. (2002), "Supply chain collaboration alternatives: understanding the expected costs and benefits", Journal of Internet Research, Vol. 12 No.4, pp. 348-6j.

Mugenda, A., and Mugenda, O.,(2003). Research Methods, Quantitative and Qualitative approaches. African Centre for technology studies, Nairobi.

Muhwezi, M. (2009).Horizontal Purchasing Collaboration in developing Countries: Behaviour Issues: Journal of Global Business Issues Vol 11 (2)

Ndubisi.N.(2005) Supplier selection and management strategies and manufacturing flexibility The Journal of Enterprise Information Management Vol. 18 No.3, pp. 330 349

Norman.C.V. (1998). Financial Management for Pharmacists: A decision making approach 2nd edition Baltimore William Willkins: pp. 10-78.

Ntayi. M .J., Eyaa .S., Zeija . F & Gerrit.R. (2010).Contract enforcement in Uganda business transactions: the case for small and medium Entreprises. A report submitted to Trust Africa Investment Climate and Business Environment (ICBE) Research Fund.

Onwubolu, G. C., & Dube, B. C. (2006). Implementing an Improved Inventory Control System in a Small Company: A Case Study. Production Planning & Control, 17(1), 67-76.

Pandey.I.M (2005), "Financial Management" (9th edition), Vikas Publishing House, Delhi.pp. 330-342.

Pramatari .K, (2007) Collaborative supply chain practices and evolving technological approaches Supply Chain Management: An International Journal 12/3 (2007) 210-220

Presutti, W. (2003), "Supply management and e-procurement: creating value added in the supply chain", Industrial Marketing MaRagement, Vol. 32 No, pp. 219-27.

Raman, A., DeHoratius, N. and Ton, Z. (2001), "Execution, the missing link in retail operations", California Management Review, Vol. 43 No, pp. 136-52.

Samaranayake (2005), Supply Chain Management: An International Journal Volume pp.47-59

Sebbowa B, (2009), *The role of internal audit function in Organizations.*

Sekeran (2003): Research Methods for Business, A skill Building Approach, Fourth edition, p. 87

Silver, E.A., Pyke, D.F. and Peterson, R (1998), Inventory Management and Production Planning& Scheduling, 3rd ed., John Wiley, New York, NY.

Simatupang.M and Sridharan.R (2008). The role of trust in supply chain governance Business Process Management Journal Vol. 14 No, 2008 pp. 453-470

Simatupang.M and Sridharan.R The collaboration index: a measure for supply chain collaboration International Journal of Physical Distribution &Logistics Management Vol. 35 No.1, 2005

Simchi-Levi, D., Kaminsky, P., & Simchi-Levi, E. (2004). Managing The Supply Chain: The Definitive Guide For The Business Professional. New York: McGraw-Hill

Skjoen-Larsen, T., Thernoe, C. and,Andresen, C. (2003), "Supply chain collaboration: theoretical perspectives and political evidence", Interernational Journal of Physical Distribution &Logistics Management, Vol. 33 No, pp. 531-49.

Smaros, 1. (2003), "Collaborative forecasting: a selection of practical approaches", International Journal of Logistics: Research and Applications, Vol. 6 NO.4.

Stanford, CA, November 2001.

Stuart .J (2005) Reducing costs through improved returns processing. International. Journal ofPhysical Distribution &Logistics Management Vol. 35 No.7, pp. 468-480

Tachizawa and Ginemez (2005) Drivers and sources of supply flexibility: An exploratory study http://www .recercat. catlbitstream/2072/ 16 70/ 1/889. pdf.

Taylor.D (2000) Demand amplification: has it got us beat? International Journal of Physical Distribution &Logistics Management, Vol. 30 No.6, 2000, pp. 515-533.

Toomey, J. W. (2000). Inventory Management: Principles, Concepts and Techniques. Norwell: Kluwer Academic Publishers.

Verwijmeren, Vander Yoist and Donselaar,(1996) Networked inventory management information systems: terializing supply chain management International Journal of Physical Distribution &Logistics Management, Vol. 26 No.6,

Wang (2002) How to implement Customer Relationship Management system in third party logistics companies http://www.bschool.nus.edu.sg/staff/bizteocp/jonathan.doc

Wang (2007) Inventory management for Customers with alternative lead times http://www.asom.sjtu.edu.cn/upload/publish/img/I 07112514650.

APPENDIX I:

QUESTIONNAIRE FOR RETAIL PHARMACY ATTENDANTS

Introduction

Dear Respondent,

The researcher is a student of Masters in Business Administration (MBA) at Uganda Martyrs University (UMU), Kampala, Uganda. He is undertaking a research to generate data and information on "Inventory Management and Financial Performance Of retail pharmacies in Uganda: A case study of retail pharmacies in Rubaga Division."Kindly spare some of your valuable time to answer these questions by giving your views where necessary or ticking one of the alternatives given. Indeed your name may not be required. Thank you for your time and cooperation.

SECTION A: BACKGROUND DATA

Please circle the numbers representing the most appropriate responses for you in respect of the following items:

1. Your gender a) Male b) Female

2. What is your age group?

a) 18-29, b) 30-39, c) 40-49, d) 50 and 60

3. What is your highest level of education?

a) Post Grad Diploma, b) Bachelor's degree, c) Masters' degree d) Doctorate

e) Others (specify) ----------

4. Time spent in retail pharmacy service? ----------

SECTION B: INDEPENDENT VARIABLE: INVENTORY MANAGEMENT

i) Inventory/stock planning

In this section please tick in the box that corresponds to your opinion/view according to a scale of 1 = strongly Disagree, 2 = Disagree, 3 = Not Sure, 4 = Agree, 5 = Strongly Agree

No	Statement	1	2	3	4	5
1	We make accurate forecasts for our inventories which match with our customer demand in the pharmacy					
2	There is an inventory plan in our pharmacy					
3	Inventory demand forecasting in our pharmacy is always accurate					
4	Collaboration with our customers enables us make accurate forecasts					
5	Our pharmacy always has enough quantity to meet the customer needs					
6	Order processing is well stipulated out in our inventory management plans					
7	Transportation modes are well defined in our inventory plans					
8	We share information on delivery schedules with our distributors					

ii) Inventory/stock optimization

In this section please tick in the box that corresponds to your opinion/view according to a scale of 1 = Strongly Disagree, 2 = Disagree, 3 = Not Sure, 4 = Agree, 5 = Strongly Agree

No.	Statement	1	2	3	4	5
1	Inventory schedules are well shared with suppliers					
2	Purchase order changes are made					
3	Ordering costs are well stipulated					
4	We always have high inventory turns because customers are satisfied with our products					

No.	Statement	1	2	3	4	5
5	Carrying costs are part of the company overall expenses					
6	We endeavor to avoid paying stock costs					
7	We face stock out periods which affect our ability to meet customer needs					
8	We use inventory management systems to manage our inventories					

iii) Inventory control

In this section please tick in the box that corresponds to your opinion/view according to a scale of 1 = strongly Disagree, 2 = Disagree, 3 = Not Sure, 4 = Agree, 5 = Strongly Agree

No.	Statement	1	2	3	4	5
1	Supervision checklists are used to often track whether the quality, costs and time agreed upon are being implemented.					
2	We deliver according to the delivery lead times of our customers					
3	Audits are done at regular intervals on the quality and costs of inventories					
4	There is adequate equipment to facilitate stock management					
5	There is a reliable system to track the movement of materials flow in our pharmacy					
6	Proper records management is carried out during delivery of materials and payments made at the right time					
7	We keep inventory buffers in order to meet our customers' needs					
8	A supervision checklist on inventory systems is in place, against which timely and quality indicators are checked.					

SECTION C: INDEPENDENT VARIABLE: FINANCIAL PERFORMANCE

In this section please tick in the box that corresponds to your opinion/view according to a scale of 1 = strongly Disagree, 2 = Disagree, 3 = Not Sure, 4 = Agree, 5 = Strongly Agree

No.	Statement	1	2	3	4	5
2	The pharmacy makes normal profits					
3	Our profit margin has increased in the past three years					
4	The percentage of losses incurred by the company are very minimal					
5	Our sales have showed an upward trend for the last three years					
6	Our customers have increased for the last three years					
7	Costs paid on stock is enough					
8	Ordering costs are within limits					
8	The pharmacy pays no obsolescence costs					

THANK YOU FOR YOUR PARTICIPATION!

APPENDIX II:

DOCUMENTARY REVIEW CHECKLIST

Documents to be reviewed	**Information expected**
Pharmacy reports and records	• Ordering costs • Carrying costs • Stock costs • Obsolescence costs • Holding costs
Pharmacy Strategic plan	- Inventory/stock planning - Demand forecasting - Order processing - Supplier selection - Transportation mode - Optimal quantity - Inventory/stock optimization - Inventory Control - Buffer stocks - Pest control activities used - Reordering level - Waste and disposal - Temperature control - Issuing Procedures
MOH reports	- Inventory management - Performance of pharmacies
Private Sector Foundation Uganda Report (2014)	- Performance of pharmacies
NDA Report	- Pharmacy Act

APPENDIX III:

TABLE FOR DETERMINING SAMPLE SIZE FROM A GIVEN POPULATION

N	S	N	S	N	S
10	10	220	140	1200	291
15	14	230	144	1300	297
20	19	240	148	1400	302
25	24	250	152	1500	306
30	28	260	155	1600	310
35	32	270	159	1700	313
40	36	280	162	1800	317
45	40	290	165	1900	320
50	44	300	169	2000	322
55	48	320	175	2200	327
60	52	340	181	2400	331
65	56	360	186	2600	335
70	59	380	191	2800	338
75	63	400	196	3000	341
80	66	420	201	3500	346
85	70	440	205	4000	351
90	73	460	210	4500	354
95	76	480	214	5000	357
100	80	500	217	6000	361
110	86	550	226	7000	364
120	92	600	234	8000	367
130	97	650	242	9000	368
140	103	700	248	10000	370
150	108	750	254	15000	375
160	113	800	260	20000	377
170	118	850	265	30000	379
180	123	900	269	40000	380
190	127	950	274	50000	381
200	132	1000	278	75000	382
210	136	1100	285	1000000	384

Source: Krejcie & Morgan (1970, as cited by Amin, 2005)

Note.—N is population size.

S is sample size.

APPENDIX IV:
TABLE OF RANDOM SAMPLES

	1 2 3 4	5 6 7 8	9 10 11 12	13 14 15 16	17 18 19 20	21 22 23 24	25 26 27 28	29 30 31 32
1	8 0 9 4	2 5 2 5	8 2 4 7	1 3 4 7	7 4 3 3	3 6 2 0	1 8 9 7	2 1 3 4
2	3 5 6 3	2 1 9 6	8 2 1 1	9 0 4 5	2 6 1 8	2 7 5 1	2 6 2 7	1 0 9 5
3	1 3 3 0	6 3 3 1	3 7 5 3	9 6 9 3	8 7 3 8	6 6 1 5	1 5 3 8	8 5 4 3
4	3 5 6 5	0 0 1 6	2 2 4 3	6 4 3 2	4 7 9 6	6 0 9 5	5 2 8 3	1 6 2 0
5	7 8 5 0	5 9 2 5	5 5 8 8	7 3 1 1	2 1 9 2	4 5 4 5	3 5 3 0	5 5 8 9
6	4 4 9 0	5 4 1 7	9 7 2 7	6 1 5 3	5 9 0 1	4 8 7 8	9 9 8 0	9 8 7 7
7	6 5 4 5	9 1 0 4	9 3 1 8	8 8 1 9	7 5 3 7	2 7 8 5	9 3 7 3	2 4 4 5
8	3 6 2 6	5 9 9 5	1 2 1 5	9 7 5 3	9 2 2 3	5 6 5 8	2 9 4 4	2 8 9 9
9	4 8 6 5	4 8 2 0	7 5 5 4	0 6 1 2	9 6 8 3	4 2 5 1	9 1 3 8	1 7 0 9
10	6 4 9 8	7 5 1 9	0 4 7 4	7 8 1 8	6 8 3 2	9 6 8 3	9 8 7 2	4 0 9 0
11	6 7 2 2	9 8 6 9	9 3 6 1	7 8 7 5	4 8 8 3	1 3 1 5	9 6 7 9	8 8 3 4
12	9 7 4 8	5 9 3 2	5 1 1 5	2 7 2 1	0 0 3 3	9 3 0 3	9 7 1 3	4 0 1 2
13	5 6 4 1	1 4 1 7	1 4 1 9	7 4 3 4	8 1 6 5	7 3 6 8	1 2 1 8	5 0 3 9
14	7 4 4 4	9 2 0 0	8 8 4 0	5 8 8 2	4 3 9 8	3 9 0 4	9 1 9 9	9 3 3 6
15	8 2 7 9	3 0 1 9	4 6 7 2	3 7 4 3	3 9 7 9	4 6 8 9	9 0 2 1	6 9 9 0
16	0 1 6 1	7 6 1 7	1 0 2 4	2 3 8 7	2 8 9 1	6 6 7 7	1 5 8 5	2 4 8 2
17	7 3 8 8	9 7 5 9	7 5 5 5	6 8 2 4	9 9 7 7	2 0 0 8	5 5 9 6	9 7 4 0
18	7 8 3 0	4 7 1 4	3 6 9 5	2 9 1 9	1 8 0 4	4 0 4 4	1 0 3 4	2 5 9 7
19	9 8 8 7	4 2 1 6	6 5 2 6	4 5 3 5	8 4 3 0	5 2 7 0	9 6 0 5	0 7 8 8
20	1 2 6 1	2 5 1 6	8 5 6 9	2 3 1 0	3 9 3 9	8 7 0 3	9 8 4 1	0 3 5 3
21	3 9 4 7	4 9 3 7	7 6 3 4	2 5 4 3	6 2 3 9	7 4 5 5	2 0 5 5	7 7 9 5
22	4 5 5 0	8 1 0 3	1 2 5 0	2 3 0 4	1 1 3 8	9 7 8 8	9 1 4 4	4 5 2 6
23	1 3 4 4	9 6 9 7	2 3 8 3	6 9 7 6	6 2 5 1	4 2 0 1	2 0 3 8	6 5 5 2
24	8 9 7 6	5 8 2 3	8 4 8 7	0 4 5 0	3 1 0 6	9 1 6 6	2 7 1 7	7 6 0 1
25	7 7 1 0	9 9 4 3	6 9 7 8	8 2 7 3	9 7 1 4	9 7 0 0	1 5 6 6	2 8 8 9
26	6 9 5 9	6 0 0 8	8 4 4 2	2 2 8 2	1 5 2 4	2 5 1 7	5 8 1 8	0 0 8 1
27	7 9 4 1	2 3 1 2	2 4 3 1	6 7 0 2	9 9 8 4	3 4 6 9	3 0 8 5	4 7 6 2
28	2 2 8 4	0 8 9 6	9 1 0 7	5 5 4 2	7 3 1 9	3 7 8 2	1 0 6 8	9 5 7 4
29	9 5 9 4	7 4 1 6	9 3 6 5	6 0 4 5	1 1 8 3	5 9 1 6	9 5 9 9	1 1 4 3
30	4 6 1 3	8 5 4 9	6 3 6 9	3 2 0 8	5 1 0 9	9 6 8 0	1 1 6 8	6 1 3 3