

**INVENTORY MANAGEMENT PRACTICES AND OPERATIONAL  
PERFORMANCE OF GOVERNMENT HOSPITALS IN KENYA**

**By**

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**A RESEARCH PROJECT PRESENTED IN PARTIAL FULFILLMENT OF THE  
REQUIREMENT FOR THE AWARD OF THE DEGREE OF MASTER OF  
BUSINESS ADMINISTRATION, SCHOOL OF BUSINESS  
UNIVERSITY OF NAIROBI**

**2018**

## **DECLARATION**

I, the undersigned, declare that this is my original work and has not been presented to any institution or university other than the University of Nairobi for examination.

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## **DEDICATION**

I dedicate this research project to my Parents, Husband, Siblings and In laws for your unfailing love, support and encouragement during the study period.

## **ACKNOWLEDGEMENT**

I would like to take this opportunity to express gratitude to everyone who supported me throughout the course of this MBA.

I would also like to thank my Supervisor Mr. Ernest Akelo for the time, patience and guidance provided to see me through this research proposal.

I extend my gratitude to University of Nairobi especially the School of Business for their support assistance.

I also acknowledge my gratitude to my Parents, Siblings and dear Husband who always supported me morally as well as economically.

May almighty God bless you all.

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## **ABBREVIATIONS AND ACCRONYMS**

<b>ADR:</b>	Average Daily Rate
<b>DRP:</b>	Distribution Resource Planning
<b>EOQ:</b>	Economic Order Quantity
<b>IM</b>	Inventory management
<b>IMP</b>	Inventory management practices
<b>JIT:</b>	Just in Time
<b>MRP:</b>	Material Resource Planning
<b>RIO:</b>	Return on Investment
<b>TCA:</b>	Transaction Cost Analysis
<b>VMI:</b>	Vendor Managed Inventory



## **ABSTRACT**

Government hospitals are key to our economy based on their role in provision of cheap and affordable quality healthcare services to a large part of the Kenyan population especially to the middle class and low class citizens who cannot afford health care in the private hospitals. The study purpose was to establish the extent of implementation of inventory management practices in government hospitals, to establish the effect of IMP on operational performance in government hospitals in Kenya. It was specifically aimed to establish how, VMI, JIT, EOQ and ABC analysis affect operational performance of government hospitals in Kenya. Descriptive research design was used in its methodology. The study was guided by transactional cost analysis and theory of economic order quantity. Data collection was effected by use of structured questionnaires which were distributed through drop and pick method in all the government hospitals in Kenya. Chief supply chain managers, assistants or the equivalent were the targeted population from the 46 government hospitals in Kenya. Analysis of data was by use of descriptive and regression analysis. VMI, ABC, EOQ and JIT were the dependent variables while operational performance was the independent variable. The study findings indicated that the inventory management practices had been implemented in government hospitals to a moderate extent. The results on the second objective indicated that adoption of IMP affects operational performance positively in government hospitals in Kenya. Also 60% of operational performance in public hospitals was affected by implementation of inventory management practices. The major limitation of the study is that it was based on government hospitals in Kenya and not all other hospitals. Other future academicians should research on inventory management practices in other firms rather than government hospitals in Kenya.

Key words: inventory management practices, operational performance and government hospitals.

# CHAPTER ONE

## INTRODUCTION

### 1.1 Background

Based on the importance of inventory in a firm due to its ability to tie up a big percentage of funds in it, there is need for close and proper management of it to facilitate improved levels of productivity in the firm by ensuring that the quality of goods produced is high and all processes use little resources (Nsikan, Etim & Uduak, 2015). There are a number of methods that enable a firm to accomplish these objectives; however, the key and usually “hidden” technique is to trim down firm inventory. The Inventory Management' implies supervision and control of the ordering, storage, as well as use of components that a firm used in the process of producing items it sold over and above supervision and control of quantities of the finished products. Bicheno (2016), in his study asserted that there are high expenses incurred by firms in their quest to hold inventory due to high risks of obsolescence involved and the high levels of demand for the various goods stored while the stock levels are small and unsubstantial. This imposes a big challenge to the top management and other stakeholders in markets that are rapidly changing and are experiencing situations whereby the markets have low demands of various products that are stored which makes them very expensive to store. To curb this there is need for implementation of IMP by firms to help ensure efficiency in the storage of goods by firms at all times whether the demands are low or they are high.

The study will be anchored by theory of economic order quantity (EOQ), Transaction Cost Analysis (TCA) and Stochastic Inventory Theory. TCA is crucial in all studies of inventory

management as it explains all the cost implications that are involved in the day to day transactions of a firm in the storage of goods at the least cost. Stochastic Inventory Theory by Porteus Evan (1990) deals with the management of stock levels of goods, with the intent of effectively meeting demands for those goods. Demands for goods are made by buyers and are met by sellers, regardless of whether monetary exchange is involved

Over the years the health sector has been faced with an alarming high expenditures that inhibit the operation ability of the sector this is posed too by an ever changing and emerging increase in the diseases that arise in the population. To be able to curb this, there is need for ensuring that the set expenditures are adequate to meet the day to day demand. Out of the total budgets that are set specifically to the health sector, a large percentage goes to the pharmacy department where medicines and drugs are bought. To achieve efficiency and effectiveness in the operations, there is need for adequate and smooth flow of operations and drugs in the health sector (Shah & Ward, 2003).

### **1.1.1 Inventory Management Practices**

Inventory Management entails ensuring that the customers have the required goods and services at the right time. To attain this the inventory managers and other departmental heads have to ensure that there is coordination between purchasing, manufacturing and distribution functions so that the goals of the firm are met (Nsikan, Etim & Uduak , 2015). According to Lenny et al. (2006), inventory management practices are activities and functions used by organizations to manage stocks. Minimization of wastes and cost cuttings is facilitated by adoption of the IMP. These practices include; Just-in-Time (JIT), Materials Requirement Planning (MRP), Vendor Managed Inventory (VMI) forecasting, Economic

Order Quantity (EOQ), collaborative planning and replacement and automatic replenishment.

The major aim of IM, is to ensure that there is customer satisfaction by ensuring that there are adequate high quality items available to serve customer needs According to Combs et al. (2006), out of the total amount of current assets a firm has, inventory makes up the highest percentage. Because of the relative largeness of inventories maintained by Government Hospitals in Kenya, a high expenditure is incurred due to holding inventory and hence there is need for adoption of adequate strategies to facilitate the firm's ability to be competitive in the market by ensuring that the firm adopts strategies that will help it in cutting of costs to avoid unnecessary expenses

### **1.1.2 Operational Performance**

Operational performance (OP) is the performance of an organization against standards or prescribed indicators for effectiveness, efficiency and environmental responsibilities like productivity, waste reduction, cycle time among others which are critical to the overall competitiveness (Akintonye, 2014). Effectiveness is the level that the customer's requirements are met and efficiency monitors usage of firm's resources while providing customer satisfaction at a pre specified level (Nsikan, Etim & Uduak, 2015). Key performance indicators for health institutions include occupancy rate, average daily rate (ADR), online ratings, revenue, advertising return on investment (RIO) and patient satisfaction. Performance measure is critical in judging whether an operation is good, bad or indifferent. Internal and external factors influence operational quality performance.

Gakuru (2012) argued that internal OP relates to internal functioning of health institutions such as productivity, improvement in efficiency, reduction in cost and waste. Operational

performance alludes to the procedures equipped towards coordination and upgrade of work exercises and results inside an association. Proficient and powerful operational execution is required to augment an organization's competitive edge through improvement of value, cost reduction quality, persistence, time to market, and item development, client lead times, stock levels, and conveyance time (Kitheka, 2012). Indicators of effective operational performance include: enhanced financial performance, lead time performance, enhanced responsiveness, client unwaveringness, advancement, quality items, and decrease in abundance stock levels and upgrades in item/prepare outline. Assessment of operational performance of associations ought to use both budgetary and non-monetary measures, albeit most associations have not made utilization of an adjusted system for money related and non-monetary indicators (Lapinde, 2010). Njoroge (2015) distinguished request lead time as the most vital operational measure. Njoroge (2015) characterized request lead time as the time that breaches between the receipt of a request and shipment of the item to the client. Njoroge (2015) distinguished other performance measures as usefulness of request era, arranging, generation booking, inventory management and quality.

### **1.1.3 Government Hospitals in Kenya**

Public Health is a growing area of study with high levels of diversity in the ever changing environment. The health sector personnel re faced with challenges to curb very highly complex health related issues and diseases. They are basically much concerned with ways that they can prevent and cure so many alarming diseases and how they can control already infected patients. According to Lenny et al. (2006), public health helps in serving both the local and international personnel of all types which helps in the protection of the public sector not only in the local context but also the international context By so doing it forms

a way of fulfillment of the patients since they provide services in a manner that improves one's health.

Kiima and Jenkins (2010), indicates that the government under the Ministry of Health works closely with public hospitals to ensure that goods and services are delivered on time in order to provide quality health care services to the citizens. According to the Kenya Constitution (2010) the Mandate of the Ministry of Health is to not only coming up with policies, but also providing standards, which in the long run, creates a good working environment. County health services and pharmacies together with the primary health care and all other activities related to health care are provided by County Government.

## **1.2 Research Problem**

The inventory management practices that are implemented by organizations are associated with various advantages and disadvantages. Inventory management practices are considered to be the major assets because it helps business to improve its operational performance by lowering the cost of goods sold or increasing the sales. Agus and Noor (2016) in their research indicated that a firm's performance is predetermined by adoption of inventory management techniques that are best suit for the specific situation and inventory. In the same line of argument, Githendu, Nyamwange and Akelo (2017) provide that most of the Kenyan health facilities face difficulties owing to selecting a poor IMP or inadequate information on which IMP should be adopted at a specific point of time and how they affect OP. Inability by a firm to select IMP that are suitable or integrating relevant information in the process of implementing these practices in the most effective way usually lead to poor performance of organizations. Bicheno (2016) accentuates that the growth of organizations is mainly dependent on high continuous performance of the firms.

The role of IM has increased consistently in the Government Hospitals in Kenya. Health institutions in Kenya therefore know that proper IM starts with an understanding how to purchase the right products in the right quantity at the right price, and the right time from the right vendor. Implementation of inventory management concepts in Government Hospitals in Kenya along with the practices such as the right stock valuation ensures customer satisfaction (Muia, 2013). Using these IMP enhances good record keeping, higher accuracy levels and turnover levels of inventory in the of Government Hospitals in Kenya and goes a long way to improve optimal inventory management as well as operational performance of Government Hospitals.

Various studies related to inventory management practices and operational performance has been carried out. Lapinde (2010) did a study on IM on service firms. He was able to come to a conclusion that the use of technology in inventory management improved efficiency of service firms. Akintonye (2014) did a study on effect of IM on performance of German service firms. He found that IM led to improved performance of German Service firms. Furthermore, the research by Nsikan, Etim and Uduak (2015) in his study ascertained that IMP adoption facilitates the firm's ability to curb instances of material shortages, product stock outs; however, this study was carried out among consumer goods manufacturing firms (specifically, flour milling firms) operating in Lagos, Nigeria.

Locally, Ng'ang'a (2013) also conducted a study on inventory management systems concept. The study focused on effectiveness of inventory management in Ministry of State for Provincial Administration and internal security in Nairobi. The study concluded that delay in procurement and frequent stock outs affected the organization performance. Gitau (2016) did a study on effect of inventory management practices on operational performance

of warehousing firms in Mombasa County. The research design applied was the cross-sectional descriptive census survey of 48 Warehousing firms in Mombasa County. From the findings, it was clear that there was a significant relationship between IMP and OP. Similarly, Kiboko (2017) did a study on inventory management practices and operational performance of hotels in Mombasa, Kenya. The study used a descriptive research design where it concluded that the predictor variables did not give significant level of explanation on the relationship between IMP and OP of hotels in Kenya.

From the local studies, little has been done on the relationship between inventory management practices and operational performance in government hospitals in Kenya. This study hence seeks to answer this question: What is the relationship between inventory management practices and operational performance in Government Hospitals in Kenya?

### **1.3 Research objective**

#### **1.3.1 General Research Objective**

To determine the relationship between inventory management practices and operational performance of Government Hospitals in Kenya

#### **1.3.2 Specific Research Objectives**

The specific objectives that will guide this study include

- i. To establish the inventory management practices used by Government Hospitals in Kenya.
- ii. To determine the relationship between inventory management practices and operational performance of Government Hospitals in Kenya.



- iii. To determine the challenges faced when implementing inventory management practices in Government Hospitals in Kenya.

#### **1.4 Value of the Study**

Future academicians and scholars will be in a position to gain more skills from the findings of this study on the concept of Inventory Management. The research findings will be helpful to the government as it will inform the key players in the government on the different adjustments they need to start making in the Government Hospitals in regard to the inventory management practices and how it can be used to boost the operational performance. This will help the government to take the course of action to make the necessary changes.

The policy makers will also benefit from the study. They will benefit from the study because they will be enlightened on the different changes they need to make on the policy framework that govern the inventory management practices at the Government Hospitals.

## **CHAPTER TWO**

### **LITERATURE REVIEW**

#### **2.1 Introduction**

It entails the literature review which is generally organized under: theoretical framework, conceptual framework on Inventory Management Practices and its impact on Operation Performance

#### **2.2 Theoretical Literature Review**

Theoretical review compares how different theories address inventory management practices and operation performance. The theories are Theory of Economic Order Quantity and Stochastic Inventory Theory. These are discussed as under:

##### **2.2.1 Theory of Economic Order Quantity**

EOQ model was developed by F.W.Haris in 1913 and is also known as Wilson EOQ model Arsham (2006).Based on the EOQ model, there is a tendency of inverse relationship between various costs that make up the total inventory costs of a firm. This model is arrived at a point that there are minimum total inventory costs and this is directly perpendicular to the point where the holding costs and the ordering costs are equal. According to Coleman (2002) and Ogbo (2011) this model orders quantities that minimize the balance of cost between inventories holding costs and re-order costs.

Demands for a quantity of a good are considered to be met when that quantity is physically transferred, out of the units on hand to the buyer. Shortages are demands that are not met immediately. Shortages are backorders if the buyers are willing to wait, and lost sales if not. This paper breaks down the stochastic request amount reorder point model in

correlation with a comparing deterministic EOQ model. In light of necessary optimality conditions for the control variables inferred in the paper, and the investigation is done, and various fundamental subjective properties are set up for the ideal control parameters (Ngatia, 2013). The primary results incorporate the accompanying: (1) as opposed to the deterministic EOQ model, the controllable expenses of the stochastic model because of choice of the requested amount (accepting the reorder point is picked ideally for each requested amount). Also, the aggregate expenses are plainly bigger; the ideal request amount is greater. However, the distinction is little when the amount is substantial; the cost execution is even less touchy to decisions of the required amount. Secondly, the relative increment of the expenses brought about by utilizing the amount dictated by the EOQ rather than the ideal from the stochastic model is close to  $1/8$ , and vanishes when the requesting expenses are critical in respect to other costs (Donaldson, 2001).

### **2.2.2 Transaction Cost Analysis (TCA)**

Implementation of (TCA) helps facilitate the firm's ability to cut on all costs to a minimum level. Halldorsson et al (2007), states that (TCA) facilitates the firm's ability to minimize costs incurred in the SC. In the early 1970s, the mathematical economist, Williamson, used it in the general equilibrium model where he came up with a transaction cost economics in the new theory of the firm. According to Williamson (1975, 1981), firms are in a position to reduce their transaction costs through carrying out integration vertically and horizontally at the same time increasing trust among the partners. Integration helps in cost cutting in the IM process of a firm and at the same time helps in the facilitation of higher levels of service to the customers both internal and external (Skjoett-Larsen (1999)).

This theory is related to this topic of study based on the fact that various managers in various firms are in a position to adopt various IMP that are geared towards ensuring that the firms cut on costs and they are in a position to meet customer requirements at all times.

### **2.3 Inventory Management Practices**

The manner in which products in a firm are monitored, reconciled through tracking and management. The inventory management techniques that are universally adopted by firms include Just-In-Time model, Economic Order Quantity (EOQ) model, Vendor Managed Inventory (VMI) and ABC model as emphasized by Agus and Noor (2016), these inventory management practices enable a practitioner respond quickly to reduced inventory levels.

Mehra and Inman (2000) define just-in-time (JIT) entails all the efforts put in place in a firm to ensure that there is waste minimization at the least costs. Waste reduction is the major aim of implementation of JIT in a firm which is got by evaluation of all processes carried out by a firm and ironing out those that do not add value. This facilitates the firm's ability to lower the levels of inventories through meeting time and place utilities at low costs. By so doing, the overall efficiency of operations in a firm will improve and generally the quality of goods and services will be better at the lowest costs, (Stock & Lambert ,2001).JIT helps in elimination of non-value-added activities from any operation with objectives of producing high quality products. Stock and Lambert (2001), asserts that there is need for ensuring that the minimum requirements of products and services is met since whenever there are excesses in terms of inventory, then that results to wastes which are costs to the firm.

ABC Analysis is used in categorizing of all inventory as per their importance in terms of how crucial to the firm they are, their value and the amount of attention that is required by them by the top management. The class A items are 15-20% of the items that account for 75% of the total inventory value, are those that are very critical to the firm and require top management's attention in terms of management. They are few items but consume high value in terms of usage. The class B items: 30-40% of the items that account for approximately 15% of total value (Croom and Jones, 2010). are those that require moderate attention by management and they are moderate in terms of quantities used and the annual usage. While the class C items are those that need little attention, they are non-critical items and need little attention by top management.

The Economic Order Quantity (EOQ) is majorly aimed at minimization of inventory levels minimizing the inventory itself (Stock and Lambert, 2001). Gonzalez and Gonzalez (2010) ascertain that (EOQ) is the order quantity which helps in the minimization of total holding and ordering costs for the year. Use of EOQ helps in ascertaining whether there is efficiency in the order quantities that are used by firms at the moment. According to Porteus (2008) based on this model, the main assumption is that the firm at all, times has knowledge on how much should be kept in terms of stock and what quantities will be used in the firm. According to Shapiro (2009), the main assumption of EOQ is that all products in the stock are constant and whenever there are stock outs experienced by the firm, and then it will automatically have replenished to avoid stock outs. According to Lysons and Gillingham (2003), there is need for adoption of a true mathematical model that reflects the true situation on the ground based on the fact that the assumptions placed on the EOQ are not

applicable in real life situations. To achieve the best out of this model there is need for ensuring that the demand and lead time are stable.

Vendor Managed Inventory is a model of IM that entails coordination between the suppliers and the distributors and other supply chain partners in the ensuring that the inventory levels of the firm are kept at the minimal level. By recharging of stock in light of opportune POS data to the purchasers (retailer). By so doing, this facilitates making the market free which in the long run helps in giving the fulfillment to end client by benefiting the coveted item when required. According to Guillaume et al. (2008) the quality of purchaser-supplier relationship and trust, nature of the Information Communication Technology framework and force of data sharing has a positive effect on VMI execution. Marloes et al. (2008) preceding executing VMI, it is essential to examine the level of instability of client interest because a high vulnerability sought after adversely impacts the execution accomplished through VMI. Kazim Sari (2007) identifies that information shared in the SC upstream is exchanged to suppliers such as the current stock level by use of VMI.

## **2.4 Empirical Literature Review**

Akintonye (2014) did a study on effect of IM on performance of German service firms. Ascertaining the effect of IM on performance of German service firms was the purpose of the study. The study used descriptive research design where descriptive statistics and inferential analysis were used in data analysis. The findings concluded that inventory management led to improved performance of German Service firms. This study focused more on inventory management rather than inventory management practices.

Lapinde (2010) did a study on inventory management on service firms. The study sought to find out the inventory management technique used in service firms and challenges faced when implementing inventory management. The study used a descriptive research design. He was able to come to a conclusion that the use of technology in inventory management improved efficiency of service firms. The study also posits that firms have attained better SC performed due to the implementation of IMP by elimination of wastes. This study focused on inventory management and not inventory management practices.

Sari (2017) carried out a research on importance of adopting VMI in various scenarios and in varying capacity requirements. There is need for putting in practice what the various capacity requirements are at a particular time in the quest of implementation of VMI. From the results whenever there are very many uncertainties in the external environment, there is less in terms of benefits realized from adoption of VMI.

Nsikan, Etim and Uduak (2015) did a study on IMP and OP of flour milling firms in Lagos, Nigeria. The specific objectives of this study are to examine the nature of current inventory management practices ascertain whether a correlation exists relationship exists between implementation of scientific IMP and OP. Primary data was used in the study which was collected by use of questionnaires, while mean and standard deviation was used to analyze descriptive data. The study established that scientific IMP facilitate the firm's ability to cut on costs and improve the levels to which they utilize their materials by avoiding shortages. However, this study was carried out among consumer goods manufacturing firms (specifically, flour milling firms) operating in Lagos, Nigeria. The study was based in Nigeria while this one was based in Kenya.

Ngatia (2013) did a study on SCMP and performance of Kenya Tea Development Authority managed factories. The study sought to achieve two specific objectives: to determine the supply chain management practices of KTDA managed factories in Kenya and to establish the relationship between SCMP and performance of KTDA managed factories in Kenya. The study took the form of a survey of the tea factories. Primary data was successfully collected from 40 tea factories out of the 63 targeted factories. The findings reveal that good customer relationship management, outsourcing of noncore products and activities, reduction of cycle times across the supply chain and supplier development are the most common and popular among the tea factories followed by other supply chain management practices such as sharing information across the supply chain, purchasing quality products, reduction of lead time and process integration that are adopted to a very great extent. The study was on supply chain management practices and performance while the current study focuses on inventory management practices.

Gitau (2016) did a study on effect of Inventory Management Practices on Operation Performance of warehousing firms in Mombasa County. The main objective of the study was to determine the effect of Inventory Management P on operational performance of warehousing firms in Mombasa County. The research design applied was the cross-sectional descriptive census survey of 48 Warehousing firms in Mombasa County. From the findings, it was clear that there was a significant relationship between inventory management practices and operational performance. The study only focused on the Warehousing firms in Mombasa County while the current study focuses on Government Hospitals.



Kiboko (2017) did a study on IMP and OP of hotels in Mombasa, Kenya. The specific objectives were to determine the relationship between inventory management practices and operational performance and determine challenges faced when implementing inventory management practices in hotels in Mombasa, Kenya. The study used a descriptive research design. Descriptive statistics and regression analysis were used to analyze the data. The results concluded that the predictor variables did not give significant level of explanation on the relationship between inventory management practices and operational performance of hotels in Kenya. The study only focused on the hotels in Mombasa County while the current study focuses on Government Hospitals.

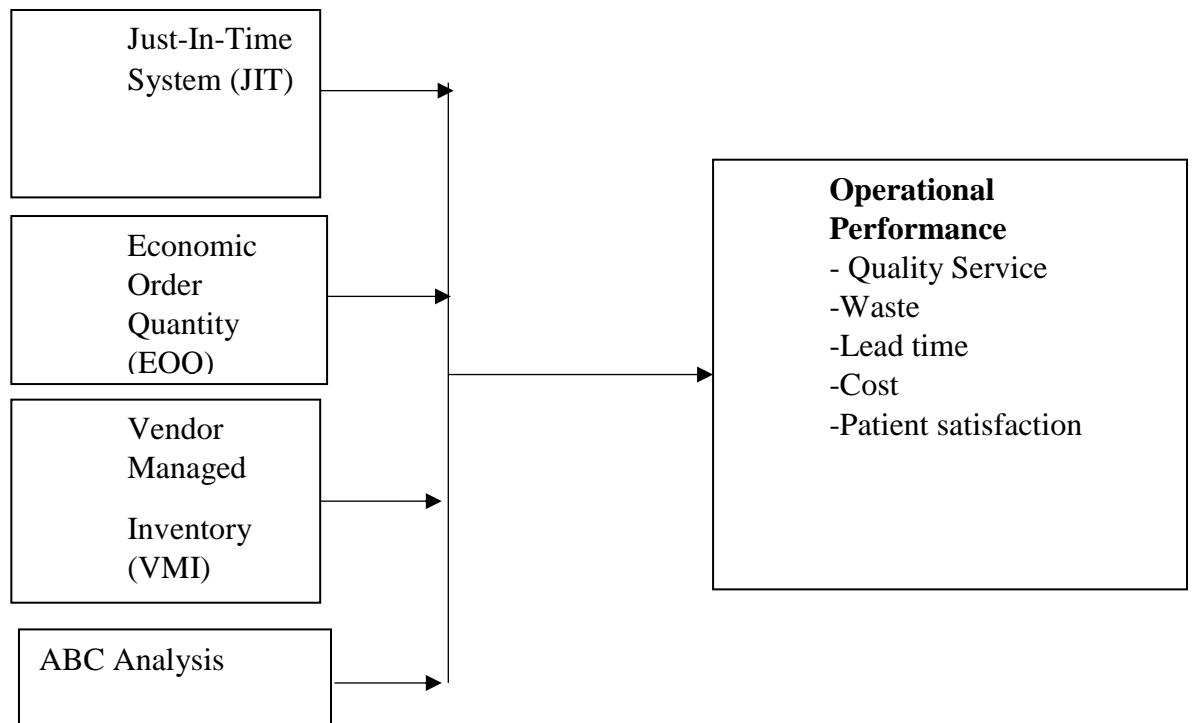
## **2.5 Summary of the Literature**

There is an existence of both weak and strong relationship between adoption of IMP and OP in firms from studies carried out by previous researchers. Besides the factors that gear firms to adopt the various IMP have also been looked at by various scholars and the challenges faced. There is a clear explanation of the impact that IMP has on OP and this formed the basis of this study based on the fact that the previous studies faced to look at public hospitals in Kenya.

## **2.6 Conceptual Framework**

Based on the conceptual framework, the independent variables are practices which include: Just in Time, ABC analysis, EOQ and VMI. The dependent variable is operational performance of Government Hospitals in Kenya. Therefore, the conceptual framework shows that operational performance Government Hospitals in Kenya depends on inventory management practices used as presented in Figure 2.1

**Figure 2.1: Independent and Dependent Variables Independent Variables**



**Source: Author (2018)**

## **CHAPTER THREE**

### **RESEARCH METHODOLOGY**

#### **3.1 Introduction**

This section gives an outline of the research methodology that will be used for the study. It comprises the research design, study population, data collection instruments, and data collection procedure and data analysis.

#### **3.2 Research Design**

Descriptive research design was adopted in this study. By adopting a descriptive research design, a firm or a researcher is in a position to get opinion and views from the respondents, Koul (1992).

#### **3.3 Population of the Study**

All the public hospitals (Appendix II) made up the study population. The study was made up of 46 hospitals where inventory management is mostly carried out. A census was carried out since the population is small.

#### **3.4 Data Collection**

Primary data that was collected through a semi-structured questionnaire to collect information for quantitative and qualitative analysis was adopted for this study. This choice is considered due to its ability to cover a considerable number of respondents within a very short period and with minimal cost while at the same time questionnaires it ensured confidentiality is maintained hence respondents remaining anonymous and their honesty in their responses is prominent (Kasomo, 2007). The questionnaires had four sections; A, B, C, and D. Section A will include general information while section B covered inventory management practices used in Government Hospitals in Kenya. Section C included

questions on relationship between IMP and OP of Government Hospitals in Kenya. Section D will be the last section which included questions on challenges faced when implementing inventory management practices in Government Hospitals in Kenya.

The respondents of this study were: Chief Supply Chain Management Officer, Senior Supply Chain Management Officer or Chief Supply Chain Management Officer from each hospital. The researcher adopted drop and pick later method to distribute the questionnaires. The questionnaires were picked after 5 days. This gave the respondent enough time to study the tool and give the desired information.

### **3.5 Data Analysis**

The aim of this study was to determine the relationship between IMP and OP of Government Hospitals in Kenya. The first and the third objective was analyzed using descriptive statistics. Regression analysis were used to examine the relationship between IMP and operational performance.

The regression model was used for determining the relationship between IMP and OP of Government Hospitals. The regression model consisted of seven variables: The independent variables: IMP (Just in Time, Economic Order Quantity, Vendor Managed Inventory (VMI) and ABC Analysis) and the dependent variable OP of Government Hospitals) as provided in the model below:

$$Y = a + b_1 X_1 + b_2 X_2 + b_3 X_3 + b_4 X_4 + \epsilon$$

Y = operational performance of Government Hospitals

A = Y intercept when x is zero

$b_1, b_2, b_3$  and  $b_4$  = Regression weights attached to the variables

$X_1 \dots X_n$  = Coefficients

$X_1$  = Just In Time

$X_2$  = Economic Order Quantity

$X_3$  = Vendor Managed Inventory

$X_4$  = ABC Analysis

$\varepsilon$  = Error

## **CHAPTER FOUR**

### **DATA ANALYSIS, FINDINGS, AND DISCUSSION**

#### **4.1 Introduction**

This chapter entails: data analysis, findings and interpretation of the study findings on the objectives of the study which were to ascertain the extent of inventory management implementation in government hospitals in Kenya and the impact of the IMP on operational performance of government hospitals in Kenya.

#### **4.2 Response Rate**

The population of the study was made up of all the 46 government hospitals in Kenya. Structured questionnaires were issued to the respondents who were made up of the chief supply chain managers, chief supply chain officers, or their equivalent in the various hospitals in Kenya. Out of 46 questionnaires that were issued, only 35 were dully filled and returned for data analysis and were checked for completeness. The response rate for this study was 76% where out of 46 questionnaires that were distributed, the 35 firms dully filled the questionnaires and were deemed fit for data analysis.

#### **4.3 Biographic Information**

Biographic data entails data on the gender, education background and experience of the respondents which helps in evaluating the weight and the viability of the study to the respondents. Background checks were carried out to establish the relationship between the information gathered on their experience, education level and the knowledge sought. Background data was sought on:

### 4.3.1 Gender

Based on gender the findings indicate:

**Table 4.1 Gender**

<b>Gender</b>	<b>Frequency</b>	<b>Percentage</b>
Male	15	43
Female	20	57
<b>Total</b>	<b>35</b>	<b>100</b>

Research data, (2018)

From the table above it can be seen that,43% of the respondents were male while 57% were female an indication that the government hospitals in Kenya had all the gender types represented in the procurement department They all adhere to the government regulations on the gender rule.

### 4.3.2 Education

Based on education level the results show:

**Table 4.2 Education**

<b>Education level</b>	<b>Frequency</b>	<b>Percent</b>
Certificate	4	12
Diploma	23	65
Degree	8	23
<b>Total</b>	<b>35</b>	<b>100</b>

Research data, (2018)

From the table above, it can be seen that 12% of the respondents had a certificate, 65% had diploma and 23%: degree holders an indication that they had knowledge on inventory management practices implemented in public government hospitals in Kenya and this was key in facilitating the success of this study.

#### 4.3.4 Position Held

The study sought to have knowledge on the position held by the respondents in their various firms. The table 4.3 below shows the findings.

**Table 4.3 Position**

<b>Position Held</b>	<b>Frequency</b>	<b>Percent</b>
CSCMO	6	17
CSCMO	9	26
SCMA	20	57
<b>Total</b>	<b>35</b>	<b>100</b>

Research data, (2018)

From the table above :17% of the respondents were chief supply chain management officers in their respective hospitals, 26% were senior supply chain management officers while 57% of the respondents were supply chain management assistants. Hence they had adequate knowledge and experience on the data sought on IMP and operational performance.

#### 4.4 Implementation of Inventory Management Practices

The first purpose of this study was to establish the extent to which the various government public hospitals in Kenya had implemented inventory management practices. The study made use of descriptive statics in data analysis to get data on the extent of implementation as indicated below:

##### 4.4.1 Just In Time

Based on the extent JIT as an inventory management practice had been implemented in government hospitals in Kenya the study findings indicate:



**Table 4.4 Just-In-Time**

<b>JIT</b>	<b>Mean</b>	<b>Std. Deviation</b>
This hospital uses JIT to hold adequate material the right time	3.8	0.63
This hospital uses JIT improves the return on investment of the institution	3.62	0.8
The hospital uses JIT stock control system	3.48	0.7
The hospital use JIT system to reduce mishandling of raw materials.	3.4	0.69
The hospital uses the JIT system to eliminate waste	3.11	0.63

Research data, (2018)

Implementation of JIT is key to the firm's performance. The study was aimed at ascertaining the extent to which JIT has been adopted in their operations. The results from the data analysis indicate that public hospitals in Kenya manage their inventories by use of JIT to a moderate extent: JIT to hold adequate material at the right time indicated (M=3.80,SD=0.63), This hospital uses JIT improves the return on investment of the institution to a moderate extent (M=3.62,SD=0.80), the hospital uses JIT stock control system to a moderate extent, (M=3.48, SD=.70), The hospital use JIT system to reduce mishandling of raw materials to a moderate extent:(M=3.40, SD=0.69), the hospital uses the JIT system to eliminate waste to a moderate extent:(M=3.11, SD=0.63). The findings show that the mean values obtained are above 3.0 (moderate extent) and below 4.0 (great extent), which indicates that government hospitals in Nairobi implement JIT as an inventory management practice to a moderate extent. The standard deviation is below one standard deviation of the mean meaning that a majority of the respondents concur with these findings.

These findings hence indicated that JIT as an IMP had been implemented, to a moderate extent, in government hospitals in Nairobi. Implementation of JIT as an inventory

management practice is supported by various studies (Stock & Lambert, 2001; Mehra & Inman, 2000).

The studies depict the implementation of JIT as an inventory management practice for purposes of waste elimination. Furthermore, implementation of JIT as an inventory management practice is evident in warehousing firms in Mombasa County, whereby it's used to facilitate the firms' ability to cut on inventory costs (Gitau, 2016).

#### 4.4.2 Economic Order Quantity

Based on the level that EOQ as an inventory management practice had been adopted in government hospitals in Kenya as indicated below:

**Table 4.5 Economic Order Quantity**

<b>EOQ</b>	<b>Mean</b>	<b>Std. Deviation</b>
This hospital use EOQ to Minimizes Storage and Holding Costs	3.82	0.74
This hospital use EOQ to provide specific numbers particular to the business	3.62	0.77
The hospital observes periodical replenishment of stocks	3.57	0.55
The hospital maintain a minimum stock levels	3.51	0.61
This hospital use The EOQ as part of a continuous review inventory system	3.34	0.48

Source: Author (2018)

EOQ implementation facilitates the firm's ability to cut on inventory costs by ensuring that the goods ordered are of the right quantity and minimize on the overall costs of holding inventory. The study was aimed at establishing to what extent EOQ has been adopted by public hospitals in the management of their stock items. As indicated in the table above: this hospital use EOQ to Minimizes Storage and Holding Costs indicated to a moderate extent: (M=3.82, SD=.70), these hospitals use EOQ to provide specific numbers particular

to the business to a moderate extent (  $M=3.62, SD=0.77$ ), the hospital observes periodical replenishment of stocks to a moderate extent: (  $M=3.57, SD=0.55$ ), the hospitals maintain a minimum stock levels to a moderate extent: ( $M=3.51, SD=0.61$ ). The findings show that the mean values obtained are above 3.0 (moderate extent) and below 4.0 (great extent), which indicates that government hospitals in Nairobi implement EOQ as an inventory management practice to a moderate extent. The standard deviation is below one standard deviation of the mean meaning that there's minimal deviation and a majority of the respondents concur with these findings. As indicated in the table above, EOQ has been adopted to a moderate extent in the management of inventory by ensuring that they stock economic order quantities that lead to low costs of holding inventory in public hospitals.

The practice of implementing EOQ for inventory management is evident from various extant studies including Blackburn (2010) and Nga'nga' (2013). Blackburn (2010) findings show that EOQ is a widely used model in many industries, which is adapted to aid in inventory management. Additionally, Nga'nga' (2013) depicts similar findings for the Ministry of State (Provincial Administration and Internal Security) in Nairobi where EOQ was implemented to a moderate extent for purposes of inventory management.

#### **4.4.3 Vendor Managed Inventory**

Based on the extent to which VMI as an inventory management practice has been implemented in government hospitals in Kenya the findings indicate:

**Table 4.6 Vendor Management Inventory**

<b>VMI</b>	<b>Mean</b>	<b>Std. Deviation</b>
Vendors are fully tasked with the responsibility of replenishing inventory on time.	4.48	0.75
The vendors and the buyers are linked through a POS system	3.6	0.88
The vendors replenish inventory based on information from the buyers through the POS system	3.45	0.91
Once an item of stock has been bought the same information is passed to the vendor through the POS system for replenishment	4.48	0.75

Research data, (2018)

VMI implementation is key in ensuring continuous supplies of goods in a firm. It facilitates a seamless flow of goods between the suppliers and distributors in a firm by monitoring of the stock levels at the distributors point by the manufacturers up in the supply chain. The study was aimed at identifying the extent to which public hospitals use VMI in their inventory management. The results of the data analysis as indicated above indicate that to a moderate extent and great extent the government hospitals in Kenya had implemented VMI as an inventory management practice and they collaborated in the supply chain in management of inventory between the manufacturers and the distributors whereby: Vendors are fully tasked with the responsibility of replenishing inventory on time to a great extent (M=4.48,SD=.75), the vendors and the buyers are linked through a POS system to a moderate extent,( M=3.60, SD=.88), the vendors replenish inventory based information from the buyers through the POS system to a moderate extent: (M=3.45, SD=0.91).

Mean scores from two parameters (first and last VMI variables) are above 4 (great extent) and below 5 (very great extent) indicating that government hospitals in Nairobi implement VMI as an inventory management practice to a great extent. Mean scores from the second and third VMI parameters are above 3.0 (moderate extent) and below 4.0 (great extent)

indicating that government hospitals in Nairobi implement VMI as an inventory management practice to a moderate extent. The standard deviations of all parameters are below one standard deviation of the mean meaning that a majority of the respondents concur with these findings. An indication that various government hospitals in Kenya manage their inventory levels by coordination of information from the distributor and the manufacturers of various drugs and medicine who monitor the distributors' stock levels.

The results are in-line a study by Kiboko (2017) on IMP and performance of hotels in Mombasa County. The author established that it's evident that VMI was implemented in the management of inventory levels in the hotels. Furthermore, Shapiro (2009) corresponds with the findings of this study that VMI is implemented in organizations for inventory management such there is transparency in the organization.

#### **4.4.4 ABC Analysis**

Based on the implementation type ABC analysis as an inventory management practice had been implemented in government hospitals in Kenya

For effective and efficient management of inventory levels in a firm, there is need for proper classification of inventory as per how critical they are to the firm and their value to the firm through classifying them as either A, B or class C items. The study was aimed at ascertain to what extent ABC analysis had been implemented in the government hospitals in Kenya. For effective and efficient management of inventory levels in a firm, there is need for proper classification of inventory as per how critical they are to the firm and their value to the firm through classifying them as either A, B or class C items. The study was aimed at ascertain to what extent ABC analysis had been implemented in the government

hospitals in Kenya. On average, the results indicated that it had been implemented to a moderate extent: the hospital uses ABC analysis to classify items according to their stock value indicated to a moderate extent ( M=4.02, SD=0.89), ABC is use by planners to forecast for demand to a moderate extent (M=3.82,SD=0.70), optimizing inventory is a popular benefit of ABC analysis in this hospital, to a moderate extent (M=3.77,SD=0.80), the hospital uses ABC analysis to reduce the investment in material: to a moderate extent (M=3.60, SD=0.88),it helps in price settings of a firm: to a moderate extent ( M=3.48, SD=0.70).

**Table 4.7 ABC analysis**

<b>ABC analysis</b>	<b>Mean</b>	<b>Std. Deviation</b>
The hospital uses ABC analysis to classify items according to their stock value	4.02	0.89
ABC is use by planners to forecast the demand for products beforehand and manage the stock levels accordingly.	3.82	0.7
Optimizing inventory is a popular benefit of ABC analysis in this hospital	3.77	0.8
The hospital uses ABC analysis to reduce the investment in material.	3.6	0.88
ABC analysis of inventory helps in setting the prices very strategically for products which bring more value to the institution.	3.48	0.7

Research data, 2018

Mean score of the first ABC analysis parameter is above 4.0 (great extent) and below 5.0 (very great extent) which indicates that government hospitals in Nairobi implement ABC analysis as an inventory management practice to a great extent. Mean scores for the other ABC analysis parameters are above 3.0 (moderate extent) and below 4.0 (great extent), which indicates that government hospitals in Nairobi implement ABC analysis as an inventory management practice to a moderate extent. The standard deviation values of all

ABC analysis parameters are below one standard deviation of the mean meaning that a majority of the respondents concur with these findings. An indication that government hospitals in Kenya classify their items according to their order of priority and the amount of management effort required in their management.

The findings of this study on classification based on stock value corresponds to Lysons and Gillingham (2003) findings indicate that all inventory is crucial and should be maintained. Furthermore, this study finding are in line with a study by Lyson (2003); Akitonye (2016) who all established that implementation of ABC analysis is key in the management of inventory in a firm and facilitates cutting of costs through proper attention given to specific classes of inventory in the order of priority.

#### **4.5 Effect of Inventory Management Practices and Operational Performance**

The study adopted use of regression analysis to ascertain this. The independent variables were: ABC analysis, VMI, EOQ and JIT while the dependent variable was: operational performance.

##### **4.5 1. Regression Analysis: Model Summary**

The findings are as indicated that:

**Table 4.8: Regression Analysis**

<b>Model</b>	<b>R</b>	<b>R Square</b>	<b>Adjusted R Square</b>	<b>Std. Error of the Estimate</b>
1	.652 <sup>a</sup>	.426	.351	.61716

Research data, (2018)

- a. Dependent Variable: Operational Performance
- b. Predictors: (Constant), JIT, EOQ, ABC analysis, VMI

The model summary above shows the results of the regression analysis between the independent variables (JIT, EOQ, ABC analysis, VMI) and the dependent variable Operational Performance. From the model summary depicted above it can be seen that an adjusted R square value of 0.426 was obtained. This value means that there was a variation of 43% on operational performance of government hospitals in Kenya due to changes in JIT, EOQ, ABC analysis, and VMI. An adjusted R square value of 0.426 shows that there is a meaningful correlation between the independent variables and dependent variable, and that the relationship is not by chance. The other 57% which is the unexplained variables is explained by variables not included in the model. The correlation coefficient or the study denoted by R (0.652) depicts the relationship between the study variables, which in this study it shows there exists a positive correlation among the variables. Correlation coefficient figure also shows that factors not included in this study account for 35% of operational performance in government hospitals in Kenya. Therefore, it's important for more research to be carried out on affecting operational performance of government hospitals in Kenya accounting for 35 percent.

#### 4.5.2 ANOVA

**Table 4.9: ANOVA**

<b>Model</b>	<b>Sum of Squares</b>	<b>Df</b>	<b>Mean Square</b>	<b>F</b>	<b>Sig.</b>
Regression	8.748	4	2.187	5.742	.000 <sup>b</sup>
Residual	11.808	31	.381		
<b>Total</b>	<b>20.556</b>	<b>35</b>			

Research data, (2018)

a. Dependent Variable: operational performance

b. Predictors: (Constant), JIT, EOQ, ABC analysis, VMI



ANOVA was applied to justify how best the model fits the data; it tests the model's goodness of fit. Findings in the ANOVA model summary show that the overall model was statistically significant at a significance level of 0.000. The findings indicate that the data was ideal for making a conclusion; the independent variables (JIT, EOQ, ABC analysis, VMI) are good predictors of dependent variable (operational performance).

#### 4.5.3 Regression Coefficients

The table 4.8 below summarizes the regression analysis at 5% confidence level indicates that inventory management practices has a positive combined effect on operational performance in government hospitals as indicated by all positive regression coefficients for all independent variables.

#### 4.4.4 Coefficients

**Table 4.10: Coefficients**

Model	Unstandardized Coefficients		Standardized Coefficients	T	Sig.
	B	Std. Error	Beta		
(Constant)	2.038	1.745		1.168	.252
JIT	.581	.243	.362	2.394	.023
EOQ	.715	.199	.517	3.583	.001
ABC analysis	.295	.194	.234	1.522	.038
VMI	.561	.132	.537	4.296	.021

Research data, (2018)

a. Dependent Variable: operational performance

b. Predictors: JIT, EOQ, ABC analysis, VMI

Regression equation  $Y = 2.038 + 0.581X_1 + 0.715X_2 + 0.295X_3 + 0.561X_4 + \epsilon$

The results show that JIT an indication that there is a positive significant relationship between JIT and operational performance: (t=2.394 p=0.023, P<0.05). when JIT is increased by one, operational performance rises by 0.581. From the results: EOQ and operational performance are positively and significantly related: (t=3.583, p=0.001, P<0.05). Whenever EOQ is increased by a unit, the level of operational performance increases by 0.715.

ABC analysis and operational performance are positively and significantly, (t=1.522, p=0.138, P<0.05). Whenever ABC analysis increases by one unit, operational performance rises by 0.295. There is a positive correlation between VMI and operational performance (t=4.296, p=0.021, P<0.05). Whenever an operational performance is increased by a unit, then operational performance is improved by 0.561.

Regression equation  $Y = 2.038 + 0.581X_1 + 0.715X_2 + 0.295X_3 + 0.561X_4 + \epsilon$

**Y**=Operational performance,

**X1**=JIT

**X 2**=EOQ

**X3**= ABC analysis

**X4**=VMI

**ϵ**=error term

**β<sub>ij</sub>** =Regression Coefficients

This finding indicates that operational performance measured by quality, cost reduction, minimization of wastes, and lead time in government hospitals in Kenya is affected by implementation of inventory management practices. In addition, there exists a positive relationship between implementation of IMP in public hospitals in Kenya. These findings are in-line with previous studies: Kiboko (2017), Gitau (2016), Lapinde (2010), who carried out a study on IMP and performance where they established a positive correlation exists between inventory management practices and performance.

## **CHAPTER FIVE**

### **SUMMARY, CONCLUSION AND RECOMMENDATIONS**

#### **5.1 Introduction**

This chapter is made up of summary of the study, conclusions established from the study, recommendations. The study objectives were to find out the extent of IMP implementation in government hospitals in Kenya, to ascertain the effect of implementation of IMP on operational performance in government hospitals in Kenya.

#### **5.2 Summary**

The study made use of primary data questionnaires which were distributed through drop and pick to the various hospitals. A total of 46 questionnaires were administered to respondents who were the chief supply chain managers or their equivalent in the public hospitals in Kenya. The biographic information indicated that there was equal offering of employment opportunities to both male and female in the various supply chain departments of various public hospitals in Kenya. Based on education background, the findings indicated that all the respondents had adequate knowledge in terms of education background on the data sought on inventory management practices

The main purpose of this study was to ascertain the extent to JIT, VMI, ABC Analysis and EOQ as inventory management practices had been implemented in the government hospitals in Kenya, their impact on operational performance which was measured by lead time, costs, quality and waste reduction. From the findings it was established that to a moderate to a large extent, all the four IMP had been implemented in the public hospitals in Kenya as indicated by mean values that were three and above. Hence this is an indication

that the government hospitals in Kenya are able to manage their inventory. The findings of the study established that there exists a positive correlation between implementation of inventory management practices and operational performance as indicated by positive coefficient values in the coefficient table from the regression analysis results. In addition, forty-three of operational performance was affected by implementation of inventory management practices in government hospitals in Kenya.

### **5.3 Conclusion**

Government hospitals are important in our economy based on their role in the provision of health care and other services at low affordable cost compared to the private hospitals. Effectiveness in operations of a firm is highly attributed to the manner in which it manages its inventory. Implementation of inventory management practices in their supply chain management processes is important in facilitating the firm's ability to meet customer requirements on a timely manner at the same time saving on costs. To ascertain the extent to which inventory management practices had been adopted in the government hospitals in Kenya and the effect of inventory management practices on performance of government hospitals in Kenya.

From the study findings we can conclude that on a moderate extent, public hospitals in Kenya have adopted inventory management practices and are in a position to adequately manage their stock levels hence they are in a position to cut on unnecessary costs due to their implementation of inventory management practices. This was indicated by findings from descriptive statistics which indicated to a moderate extent all the practices had been implemented. The results indicate that the regression analysis had been adopted of IMP

which include: JIT, ABC analysis, EOQ and VMI has a positive impact on operational performance which was measured by: lead time, cost, quality and waste minimization this was indicated in the coefficients values from the coefficients table in regression analysis an indication that implementation of inventory management practices results to improved operational performance.

Also forty-three percent of operational performance in public hospitals in Kenya was affected by implementation of inventory management practices. The anova table indicated a statically significant model based on the fact that the p-value indicated a 0.000 value which is less than 5% an indication that inventory management practices are good indicators of operational performance in public hospitals in Kenya.

#### **5.4 Recommendations to Policy and Practice**

Inventory management practices are essential to the attainment of improved performance due to reduced costs of operations. The government hospitals in Kenya had implemented inventory management practices to a moderate extent. There is need for adequate resources to avail to all government hospitals and even private hospitals to facilitate their ability to implement inventory management practices to a large extent. Challenges of lack of adequate skills and knowledge on the management of inventory using modern practices like JIT, ABC, EOQ and VMI should be managed by adequate training being offered to the staff on the importance of inventory management practices. Management needs to incorporate the IMP into their system.

### **5.5 Limitations of the Study**

Study purpose is to establish the extent of IMP implementation of operational performance of government hospitals in Kenya and the effect of implementation of IMP on operational performance of government hospitals in Kenya. The major limitation of the study was based on the fact that the time allocated for the study was limited and travelling in all the counties in country to collect data was a challenge. The researcher experienced challenges in data collection from the respondents based on the fact that the respondents were unwilling to participate in the study. The study focused solely on public hospitals and hence the findings would not be applicable to the private hospitals. Also the study failed to look at all the hospitals both private and public. It was solely based on how implementation of inventory management practices affects operational performance and not supply chain performance as a whole.

### **5.6 Suggestions for further Research**

The study was solely based on government hospitals in Kenya. The aim of this study was to establish the extent to which inventory management practices had been implemented in government hospitals in Kenya. A cross sectional study of public hospitals in Kenya should be carried out on other sectors. A further research needs to be done on other firms other than public hospitals. More research needs to be done on hospitals mission, public and private hospitals to ascertain the degree to which implementation of inventory management practices affects operational performance.

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# **APPENDIX I:**

## **RESEARCH QUESTIONNAIRE**

### **INTRODUCTION**

This questionnaire has been designed for the sole purpose of collecting data on the effect of inventory management practices and operational performance of Government Hospitals in Nairobi County and former Central province, Kenya. The data collected will be treated with a very high degree of confidentiality and it is meant for academic purpose only.

### **SECTION A: GENERAL INFORMATION**

1. What's your Gender?
  - a)Male [ ]
  - b)Female [ ]
  
2. What is your position in this institution?
  - a) Chief Supply Chain Management Officer [ ]
  - b) Senior Supply Chain Management Officer [ ]
  - c) Supply Chain Management Assistant [ ]
  
3. What is your highest professional qualification in supply chain management?
  - a) Degree [ ]
  - b) Diploma [ ]
  - c) Certificate [ ]

### **SECTION B: INVENTORY MANAGEMENT PRACTICES**

4. Does this institution use just-in-time system (JIT) as an inventory management practice?

a) Yes [ ]

b) No [ ]

Please indicate the extent to which you agree with the following statements on the Just-In-Time System (JIT) used by Government hospitals in Kenya. The scale below will be applicable: 1=very small extent, 2= small extent, 3= moderate extent, 4= Large extent, 5= to a very large extent

	1	2	3	4	5
This hospital uses JIT to maintain just enough material in just the right place at just the right time					
This hospital uses JIT improves the return on investment of the institution					
The hospital uses JIT stock control system					
The hospital use JIT system to reduce mishandling of raw materials.					
The hospital uses the JIT system to eliminate waste					

5. Does this institution Economic Order Quantity (EOQ) as an inventory management practice?

a) Yes [ ]

b) No [ ]

Please indicate the extent to which you agree with the following statements on the Economic Order Quantity (EOQ) used by Government Hospitals. The scale below

will be applicable: 1=very small extent, 2= small extent, 3= moderate extent, 4= Large extent, 5= to a very large extent

Statement	1	2	3	4	5
This hospital use EOQ to Minimizes Storage and Holding Costs					
This hospital use EOQ to provide specific numbers particular to the business					
The hospital observes periodical replenishment of stocks					
The hospital maintain a minimum stock levels					
This hospital use The EOQ as part of a continuous review inventory system					

6. Does this institution Vendor Managed Inventory (VMI) as an inventory management practice?

a) Yes [ ]

b) No [ ]

Please indicate the extent to which you agree with the following statements on the Vendor Managed Inventory (VMI) used by Government Hospitals. The scale below will be applicable: 1=very small extent, 2= small extent, 3= moderate extent, 4= Large extent, 5= to a very large extent

	1	2	3	4	5
Vendors are fully tasked with the responsibility of replenishing inventory on time.					
The vendors and the buyers are linked through a POS system					
The vendors replenish inventory based information from the buyers through the POS system					
Once an item of stock has been bought the same information is passed to the vendor through the POS system for replenishment					

7. Does this institution ABC Analysis as an inventory management practice?

a) Yes [ ]

b) No [ ]

Please indicate the extent to which you agree with the following statements on the ABC Analysis used by Government Hospitals. The scale below will be applicable:  
 1=very small extent, 2= small extent, 3= moderate extent, 4= Large extent, 5= to a very large extent

	1	2	3	4	5
The hospital uses ABC analysis to classify items according to their stock value					

ABC is use by planners to forecast the demand for products beforehand and manage the stock levels accordingly.					
Optimizing inventory is a popular benefit of ABC analysis in this hospital					
The hospital uses ABC analysis to reduce the investment in material.					
ABC analysis of inventory helps in setting the prices very strategically for products which bring more value to the institution.					
The hospital uses ABC Analysis to reduce stock holding cost					

**SECTION C: OPERATIONAL PERFORMANCE**

Please indicate the extent to which the following operational performance measures are true in your institution.

Kindly state the extent to which you agree with the following statements concerning quality service delivery in your hospital.

Use the scale of: 1= strongly agree 2= Agree 3= Not certain 4= Disagree 5=strongly disagree

	<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>5</b>
Processes in this pharmacy meet the hospital's defined quality standards?					



Processes documented in this hospital pharmacy and have defined owners?					
Patients are issued quality drugs matching the doctor's prescription?					
We have a low complication rate in our process					
Performance reviewed on regular basis and the results used to change process					

Kindly state the extent to which you agree with the following statements concerning Waste in your hospital.

Use the following rating; 1 = Very Small extent, 2 = Small Extent, 3 = Moderate Extent, 4 = Large Extent, 5 = Very Large Extent

	<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>5</b>
You have expired drugs in the hospital's pharmacy inventory					
You have Medicine not prescribed for over one year?					
You have many drugs disposed frequently because they are obsolete?					
You have proper inventory ordering system and records of excess and obsolete drugs?					
You have proper inventory storage for excess drugs?					

Kindly state the extent to which you agree with the following statements concerning the lead time operational performance in your hospital.

Use the scale of: 1= strongly agree 2= Agree 3= Not certain 4= Disagree 5= strongly disagree

	1	2	3	4	5
The hospital has multiple suppliers of various products and services					
The hospital has enough inventory to cover the expected demand over the lead time					
The hospital has safety stock to cover the hospital in times of emergency					
The hospital has an average ordering time					

Kindly state the extent to which you agree with the following statements concerning Cost in this hospital.

Use the following rating; 1 = extremely, 2 = Very, 3 = moderately, 2 = slightly, 1 = Not at all

	1	2	3	4	5
Our medicine costs are Competitive					
Our process Costs are low					
Our hospital pharmacy is generating the desired growth in the hospital's revenue					

Inventory holding costs and re-ordering costs are properly monitored in the hospital					

Kindly state the extent to which you agree with the following statements concerning Patient Satisfaction in this hospital.

Use the scale of: 1= strongly agree 2= Agree 3= Not certain 4= Disagree 5= strongly disagree

	<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>5</b>
Patients feel sufficiently informed about their treatment process					
Patients feel adequately cared for and advised by our Pharmacy staff					
Patients appreciate short waiting time in our hospital pharmacy					
Our hospital Pharmacy department has a small number of patients complaints					

## APPENDIX II:

### List of Public Facilities in Nairobi County and Former Central Province Counties in Kenya (Levels 4, 5, 6 & stand-alone)

<b>FACILITY NAME</b>	<b>DIVISION</b>	<b>TYPE</b>	<b>Owner</b>
1. Kenyatta National Hospital	Kibra	National Referral Hospital	Ministry of Health
2. National Spinal Injury Hospital	Dagoretti North	National Referral Hospital	Ministry of Health
3. TB central Reference Lab	Kibra	Laboratory (Stand-alone)	Ministry of Health
4. National Blood Transfusion Services	Kibra	Laboratory (Stand-alone)	Ministry of Health
5. National HIV Reference Lab	Kibra	Laboratory(Stand-alone)	Ministry of Health
6. National Health Laboratory	Kibra	Laboratory(Stand-alone)	Ministry of Health
7. Microbiology Reference Lab	Kibra	Laboratory(Stand-alone)	Ministry of Health
8. Kari health Clinic	Westlands	Medical Clinic	Ministry of Health
9. Kamiti Maximum Clinic	Roysambu	Medical Clinic	Ministry of Health
10. Westlands District Health Management	Westlands	Medical Clinic	Ministry of Health
11. Amazing Grace Medical Clinic	Oljoro-orok	Medical Clinic	Ministry of Health
12. Mathari Hospital	Mathare	District Hospital	Ministry of Health
13. Mama Lucy Kibaki Hospital – Embakasi	Embakasi West	District Hospital	Ministry of Health
14. Mbagathi District Hospital	Kibra	District Hospital	Ministry of Health
15. Pumwani Maternity Hospital	Eastleigh	District Hospital	Ministry of Health
16. Nairobi East Hospital	Eastleigh North	District Hospital	Ministry of Health
17. Sinai Mount Hospital	Ongata Rongai	District Hospital	Ministry of Health

18. St Francis Community Hospital	Mwiki	District Hospital	Ministry of Health
19. St. Mary's Mission Hospital	Langata	District Hospital	Ministry of Health
20. Armed Forces Memorial Hospital	Nairobi	District Hospital	Ministry of Health
21. Kiambu District Hospital	Kiambu	District Hospital	Ministry of Health
22. Thika District Hospital	Thika	District Hospital	Ministry of Health
23. Gatundu District Hospital	Gatundu	District Hospital	Ministry of Health
24. Tigoni District Hospital	Limuru	District Hospital	Ministry of Health
25. Kerugoya District Hospital	Kirinyaga Central	District Hospital	Ministry of Health
26. Maragua District Hospital	Murang's South	District Hospital	Ministry of Health
27. Murang'a District Hospital	Kiharu	District Hospital	Ministry of Health
28. Nyeri Provincial General Hospital	Nyeri Municipality	District Hospital	Ministry of Health
29. Karatina District Hospital	Mathira East	District Hospital	Ministry of Health
30. Mukurweini District Hospital	Mukurweini	District Hospital	Ministry of Health
31. Engineer District Hospital	Nyandarua South	District Hospital	Ministry of Health
32. Kihara Sub-District Hospital	Kiambu	Sub-District Hospital	Ministry of Health
33. Igegania Sub-District Hospital	Gatundu North	Sub-District Hospital	Ministry of Health
34. Nyathuna Sub-District Hospital	Kikuyu	Sub-District Hospital	Ministry of Health
35. Ruiru Sub-District Hospital	Ruiru	Sub-District Hospital	Ministry of Health
36. Kimbimbi Sub-District Hospital	Kirinyaga South	Sub-District Hospital	Ministry of Health
37. Kianyaga Sub-District Hospital	Kirinyaga East	Sub-District Hospital	Ministry of Health
38. Sagana Sub-District Hospital	Kirinyaga West	Sub-District Hospital	Ministry of Health
39. Kirwara Sub-District Hospital	Gatanga	Sub-District Hospital	Ministry of Health

40. Kigumo Sub-District Hospital	Kigumo	Sub-District Hospital	Ministry of Health
41. Kandara Sub-District Hospital	Kiandara	Sub-District Hospital	Ministry of Health
42. Kangema Sub-District Hospital	Kiharu	Sub-District Hospital	Ministry of Health
43. Muriranjias Sub-District Hospital	Kahuro	Sub-District Hospital	Ministry of Health
44. Ol Kalou Sub-District Hospital	Nyandarua Central	Sub-District Hospital	Ministry of Health
45. Mt. Kenya Sub-District Hospital	Nyeri	Sub-District Hospital	Ministry of Health
46. Othaya Sub-District Hospital	Nyeri	Sub-District Hospital	Ministry of Health

**Source: Kenya Health Policy 2014-2015**