THE EFFECT OF INVENTORY MANAGEMENT PRACTICES ON SERVICE DELIVERY AT ST. MARTIN'S HOSPITAL, AGROYESUM, AMANSIE-WEST

By

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DECLARATION

I hereby declare that this submission is my own work towards the Master of Business Administration in Logistics and Supply Chain Management and that, to the best of my knowledge, it contains no material previously published by another person, nor material which has been accepted for the award of any other degree of the University, except where due acknowledgements have been made in the text.

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DEDICATION

I dedicate this thesis to the Glory of the Almighty God through whose undeserved kindness I have been able to complete this work. It is also dedicated to my husband and child.

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I am grateful to Almighty God for giving me strength and wisdom to undertake this work. His grace and sufficiency has brought me this far and I really appreciate the life and successes he has helped me chalked thus far.

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ABSTRACT

Managing stock effectively is important for any organization, running a hospital is no exception because without enough stock, services to patients will come to a halt. Stock represents the largest single investment in assets for most organizations. Health facilities must provide 24 hour services and accordingly, the need to keep stocks of certain medicines and other medical supplies to be able to discharge their duties effectively. It is a generally held opinion that where stock management by health facilities is poor, delivery of healthcare is normally affected. Hence, this study examined the effect of inventory management practices on healthcare delivery using St. Martin's Catholic Hospital, Agroyesum, Amansie-West as a case. A sample of 60 staff and 30 patients, was selected for the study. Questionnaires were used as the main instrument of data collection. The study revealed that the hospital ensures agreements with supplier for short cycle deliveries (items which do not take long to deliver), ensures accurate prediction of supplier delivery dates and operate Materials Requirements Planning system (MRP). The study also revealed that the hospital ensures Strategic Supplier Partnerships as an Inventory management practice and strictly uses Information Technology in its inventory management practices. The patients were satisfied with the hospital's reliability of healthcare service (24 hour service and full complement of medical staff), completeness of healthcare service, empathy of healthcare staff and affordability of healthcare service and physical appearance of healthcare service. However, among the challenges the hospital faced with inventory management was poor storage of drugs leading to insufficient inventories, bureaucratic process in procurement, loss of drugs through inventory shrinkages, conflict of interest, weak management system and insufficient funds for procurement. It was therefore recommended that there is a need for management to emphasize the importance of inventory management and the hospital should improve the demand forecasting of major medical supplies and adoption of advanced information system such as Electronic Data Interchange (EDI) to link their inventory practices with their service delivery.

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CHAPTER ONE

INTRODUCTION

1.1 Background to the Study

Managing stock effectively is important for any organization, running a hospital is no exception because without enough stock, health services to patients will come to a halt. Stock represents the largest single investment in assets for most organizations. In most organizations, employees have become habituated with high levels of commodity availability resulting in higher stock holding levels (Chopra and Meindl, 2007). The terms "stock" and "inventory" can be used interchangeably. Coyle et al (2003), defines inventory as raw materials, work-in-progress, finished goods and supplies required for creation of a company's goods and services. It is also the number of units and/or value of the stock of goods a company holds. The basic reason why stock is held is so as to avoid stock out and it resulting problems. The extent of the stock is influenced by operational needs of the organization, time required to obtain deliveries of stock, availability of capital, cost of storage and the need for detailed records in the form of stock issues which should be kept through the use of store records. Having considered funds available, storage facility available, rate of consumption of materials, lead time, margin of safety, and the stock level can then be set for each material. Stock levels should also be indicated on the stock records. Items should not be issued unless covered by Materials Requisition form.

According to Gudum (2002), the uncertainty and variability of the timing and content of information flow and goods flow leads to uncertain planning, increased costs, stock outs and delays. Therefore, there is the need to take measures especially on inventory to deal with uncertainties and dynamics on the operational level of business. However, in order for this to be effective, there is the need for strategies applied at the tactical and strategic levels of

organizations which will steer their supply chain strategy to achieve competitive strategy and excellence.

Although there have been several research in the area of inventory and supply chain management in ensuring organizational performance, little studies have been done to view the role of inventory control in healthcare delivery especially in Ghana. However, considering the issue of costs, supplier selection, variability and uncertainty in demand and supply, there is the need for a focal study in this area as they are most often positively correlated to major supply chain issues within organization such as inventory stock levels, delivery frequency, etc. (Aissaoui et al., 2007).

Public sector in Ghana and across other developing countries mostly leave inventory decision to departments as well as stores management, as a result there are relating problems in terms of high cost of inventory, selection of suppliers, delivery problems, stock obsolescence, stock-out, etc. Meanwhile Act 654, Financial Administration Act 2003 provides regulations governing the acquisition receipt, custody, control, issue and disposal by the minister of finance. Government stores are to be procured from Value Added Tax registered persons except where there is a waiver by the minister of finance or an enactment and there should be to a justification for a request of any waiver or exemption. Intermittent and emergency purchases are common procurement practices in most of the public institutions as against the public procurement laws as proper procurement procedures are not duly followed.

The St. Martin's Catholic Hospital, Agroyesum, Amansie West has a daily hospital attendance of over 500 patients a day. This has made it necessary for the hospital to buy and store medical and non-medical materials to be able to serve the clients (patients). Typical problems faced by hospitals in relation to stock management are; shortages of items, the holding of excessive stock, large amount of obsolete stock and stock losses.

This research is aimed at assessing the effect of inventory management practices on healthcare service delivery at the St. Martin's Catholic Hospital, Agroyesum, Amansie-West.

1.2 Statement of the Problem

The efficient operation of any organization demands a planned flow of materials to service its activities. This can be successful when the organization holds stock of materials it uses. The St. Martin's Catholic Hospital, Agroyesum, Amansie West is a service rendering institution and one that keeps stock to facilitate operations.

To meet the expectations of the people, one can think of how to control inventory in the hospitals to ensure availability of medical supplies at the right time and at their right quantity in other to avoid expiry of drugs and misuse of the supplies. The resources are limited and hence the need to find the possible and effective ways of reducing cost of purchase and the cost of holding inventory in health sector. Public sector in Ghana and across other developing countries mostly leave inventory decision to departments as well as stores management, as a result there are relating problems in terms of high cost of inventory, selection of suppliers, delivery problems, stock obsolescence, stock-out, etc. Inventory management has now become the major concern of the public sector since inventory is said to be the solid cash of resources been expanded annually without proper accountability.

Health facilities must provide 24 hour services and accordingly, the need to keep stocks of certain medicines and other medical supplies to be able to discharge their duties effectively. It is generally held opinion that where stock management by health facilities is poor, delivery of healthcare is normally affected. The issue is how has St. Martin's Catholic Hospital managed their stocks? How effective has their methods been? What effect is it having on their ability to provide healthcare services? These are among the issues that the study seeks to find

answers to. In view of the above, the fundamental question that is addressed by this study is; 'Does inventory management has an effect on health care delivery'?

1.3 Objectives of the Study

The main research objective is to assess the effect of inventory management practices on service delivery at St. Martin's Catholic Hospital, Agroyesum, Amansie-West. In order to achieve this general objective, the following specific objectives need to be met:

1. To examine the inventory management practices of St. Martin's Catholic Hospital.
2. To evaluate the healthcare service delivery level of St. Martin's Catholic Hospital.
3. To determine the effect inventory management practices has on the healthcare service delivery level of the hospital.
4. To determine the challenges with inventory management at St. Martin's Catholic Hospital.

1.4 Research Questions

1. What are the inventory management practices in St. Martin's Catholic Hospital?
2. What is service delivery level of the St. Martin's Catholic Hospital, Agroyesum?
3. What effect does inventory management practices has on the service delivery level of the hospital?
4. What are the challenges with inventory management at St. Martin's Catholic Hospital?

1.5 Justification of the Study

A research into the area of the effect of inventory management on healthcare delivery is relevant for several reasons. First, it is going to help the health sector to fashion out efficient and effective inventory policies for the hospitals. Thus, the study will bring out how the

hospitals will manage its inventory policies so as to be responsive and at the same time efficient in its downstream activities thereby increasing the value chain of the supply chain (which is also known as supply chain profitability).

The study will also be beneficial to the general public and the entire population because it will come up with appropriate suggestions on how timely and in the right quantities that inventory would be managed in healthcare delivery so as to be able to satisfy their requirement. The economy of the country also stands to benefit from the research in this area since it is going to help the public institutions improve in their inventory control.

The benefit of sharing information among researchers is another reason for the study. Thus, the information provided in the study will be useful to researchers who might want to undertake further research into the area of inventory control in the public sector. This study is undertaken to enhance the frontiers of knowledge by adding up to literature on inventory management practices in service industries (health sector) and its effect on the service that is delivered in the hospital.

Furthermore, the study will serve as management policy guide for the Stakeholders in the Health Sector since the study will reveal the state of the hospital's inventory management practices and also the level of service delivery to the clients (patients). Management can hence use the results to determine how best to run operations.

1.6 Research Methodology

The research is a case study of a service rendering organization (St. Martin's Catholic Hospital, Agroyesum, Amansie-West). Data were gathered primarily from clients (Patients) of the Hospital and the employees of the organization (the stores staff, Pharmacists, medical

assistants, and procurement officers) using questionnaires. Secondary data was gathered from journals and articles. Data gathered from the questionnaires administered would be analysed by the help of computer software such as SPSS and Microsoft Excel.

1.7 Scope of the Study

This study focuses on inventory management at St. Martin's Catholic Hospital. The management of medicines and non-medical supplies were also covered by this study. Data were gathered from management and staff of the hospital with specific focus on those officers responsible for acquiring and managing the hospital stocks.

1. 8 Limitations of the Study

Firstly, there was challenge of apathy of some respondents in taking part of the study. As a result, the study only focused on a single private hospital. Secondly, time constraints and inadequate financial and material resources were challenges that limited the depth of coverage of the research work. A longer time and enough resources would have helped to unearth more findings especially with other healthcare institutions in other regions of the country to determine how inventory management affect their service delivery level.

1.9 Organization of the Study

Generally, the study is organized into five chapters. Chapter one starts with general introduction about stock and stock management followed by statement of the problem and continues with the research objectives and questions, the scope and limitations of the study, significance of the study and the organisation of the study. Chapter two reviews related studies and literatures on stock management and service level in service firms. Chapter three provides the methodology used in the study and the organisation profile. Chapter four presents the analysis of the findings and interpretation of the data generated. Chapter five provides the summary of the findings, recommendations and conclusions.

CHAPTER TWO

LITERATURE REVIEW

2.0 Introduction

This chapter reviews relevant literature on inventory and its management in healthcare service delivery. In detail, it captures the meaning of inventory, the reasons for holding inventory, importance of inventory to an organization, inventory cost, inventory management and inventory management techniques as well as the broad concept of supply chain management.

Inventory management is primarily about specifying the size and placement of stocked goods. Inventory management is required at different locations within a facility or within multiple locations of a supply network to protect the regular and planned course of production against the random disturbance of running out of materials or goods.

The scope of inventory management also concerns the fine lines between replenishment lead time, carrying costs of inventory, asset management, inventory forecasting, inventory valuation, inventory visibility, future inventory price forecasting, physical inventory, available physical space for inventory, quality management, replenishment, returns and defective goods and demand forecasting. Balancing these competing requirements leads to optimal inventory levels, which is an on-going process as the business needs shift and react to the wider environment.

2.1 Meaning of Inventory

Inventory is defined as a stock or store of goods (Stock and Lambert, 2001). These goods are maintained on hand at or near a business's location so that the firm may meet demand and fulfill its reason for existence. If the firm is a retail establishment, a customer may look

elsewhere to have his or her needs satisfied if the firm does not have the required item in stock when the customer arrives. If the firm is a manufacturer, it must maintain some inventory of raw materials and work-in-process in order to keep the factory running. In addition, it must maintain some supply of finished goods in order to meet demand.

Coyle et al (2003) defines inventory as "raw materials, work- in- progress, finished goods and supplies required for creation of a company's goods and services".

Davis et al (2003) also defines inventory as "the stock of any item or resource used in an organization". In a broader context, inventory can include inputs such as financial, energy, human, equipment, and physical items such as raw material; inputs such as parts, components, and finished goods; and interim stages of the process, such as partially finished goods or work-in-progress.

Inventories are the physical resources that a firm holds in stock with the intent of selling it or transforming it into a more valuable state.

Inventory represents the largest single investment in assets for most manufacturers, wholesalers and retailers (Stock and Lambert 2001). It is said to be any idle resource held for future use (Dilworth, 1993).

2.2 Types of Inventory

Stock and Lambert (2001) categorized inventories into six main types, namely:

i. Cycle Stock is the inventory that results from the replenishment process and is required in order to meet demand under conditions of certainty. That is when the firm can predict demand and replenishment times (lead times) perfectly.

ii. In-Transit Inventory (Pipeline) is the inventory that is en route from one location to another. It may be considered part of cycle stock even though it is not available for sale and or shipment until after it arrive at the destination.

iii. Safety or Buffer Stock is the stock held in excess of cycle stock because of uncertainty in demand or lead time. The notion is that a portion of average inventory should be devoted to cover short-range variations in demand and lead time.

iv. Speculative Stock is inventory held for reasons other than satisfying current demand. That is inventories purchased as a result of speculations of price hikes.

v. Seasonal Stock is a form of speculative stock that involves the accumulative of inventory before a season begins in order to maintain a stable labour force and stable production runs or in the case of agriculture products, inventory accumulated as a result of a growing season that limits availability throughout the year.

vi. Dead (obsolete) Stock is the set of items for which no demand has been registered for some specified period of time. They are out of date, deteriorated or no longer useful as a result of advancements in technology.

2.3 Reasons for Holding Inventory

Stock and Lambert (2001) outlined five reasons for holding inventory. The first is to enable the firm achieve economies of scale. Inventory is required if a firm is to realize economies of scale in purchasing, transportation, and manufacturing.

Secondly, it balances supply and demand. Seasonal supply and/or demand may make it necessary for a firm to hold inventory.

Thirdly, inventory enables specialization in manufacturing. Inventory makes it possible for each of a firm's plants to specialize in the products that it manufactures.

Fourthly, it provides protection from uncertainties in demand and order cycle.

Inventories in excess of those required to support production can result from speculative purchases made because management expects either a future price increase or a strike, for example.

Finally, inventory acts as a buffer between critically interfaces within the supply chain. Since members of the supply chain are separated geographically, it is necessary for inventory to be held throughout the supply chain in order to successfully achieve time and place utility. Though these reasons for holding inventory are very good and important for organizations, holding of inventory still draws some skepticism.

Ballou (1999), lists three reasons why holding inventories draws skepticism.

The first is that inventories are considered wasteful because they absorb capital that might otherwise be put to good use.

Secondly, inventories held, if not properly stored can result in deterioration of otherwise high quality products leading to poor customer satisfaction and loss of revenue.

Thirdly, according to Ballou (1999), why holding inventories draws skepticism is that keeping inventories promotes insular attitudes within the entire logistics chain.

Schroeder (2000), also stressed that there are three motives for holding inventories, which are transactional, precautionary and speculative motives. The transaction motive occurs when there is a need to hold stock to meet production and sales requirements. A firm might also decide to hold additional amounts of stock to cover the possibility that it may have under estimated its future production and sales requirements. This represents a precautionary motive, which applies only when future demand is uncertain. The speculative motive for

holding inventory might entice a firm to purchase a larger quantity of materials than normal in anticipation of making abnormal profits. Advance purchase of raw materials in inflationary times is one form of speculative behavior.

These theories are relevant to this study, in that it suggests that though inventory is important in an organization, it must be properly managed to avoid wastage and deterioration, since the capital used in the procurement of inventory can otherwise be used profitably.

2.4 Importance of Inventory to Public Institutions

Inventory management is concerned with every aspect of the movement or flow of commodities in an organization. This is to be done by:

i. Eliminating handling wherever possible.
ii. Minimizing travel distance.
iii. Providing uniform flow free of bottlenecks.
iv. Minimizing losses from waste, breakage, spoilage, and theft.

An organization including public institutions incur costs every time an item is handled. Since handling generally adds no value to a product or service, it should be kept to a lowest minimum. By carefully analyzing material flows, inventory control can save a public institution significant amount of money.

Inventory is a major use of capital and for this reason; efficient inventory management is to increase organizational profitability, to predict the impact of organizational policies on inventory levels, and to minimize the total cost of logistics activities. Stock and Lambert (2001) explained that, corporate profitability can be improved by increasing sales volume or cutting inventory costs. Increased sales are often possible if high levels of inventory lead to

better in-stock availability and more consistent service levels. Low inventory levels can reduce fill rates on customer orders and result in lost sales.

Stock and Lambert (2001) further explained that, better inventory management can increase the ability to control and predict the reaction of inventory investment to changes in management policy. Therefore, inventory managers must determine how much inventory to order and when to place the order.

Chopra and Meindl (2003) explained that inventory exists in an organizational operation because of the mismatch between supply and demand. Therefore, inventory's role is to increase the amount of demand that can be satisfied by having the product or service ready and available when the customer wants it. Another important role, inventory plays is to reduce cost by exploiting economies of scale that may exist during production and distribution, but managers should use actions that lower the amount of inventory needed without increasing cost.

Chopra and Meindl (2003), suggests that since inventory plays a significant role in a supply chain's ability to support a firm's competitive strategy and that the firm's competitive strategy requires very high level of responsiveness, a company can achieve this responsiveness by locating large amounts of inventory close to the customer. Another very important role that inventory plays in an organization is to avoid stock-out costs (the costs of being out of inventory). This is very important to all organizations, especially in the healthcare delivery where delay by a few seconds can cost a life.

2.5 Benefits of Inventory

Inventory is a major use of capital and, for this reason; the objectives of inventory management are to increase profitability, to predict the impact of corporate policies on inventory levels, and to minimize the total cost of logistic activities (Stevenson 2009; Stock and Lambert, 2001).

Stock and Lambert (2001) assert that inventory serves five purposes in the firm. Thus, inventory provides protection from uncertainties in demand and order cycle, enables the firm to achieve economies of scale, balances supply and demand, enables specialization in manufacturing, and acts as a buffer between critical interfaces within the supply chain.

2.5.1 Protection from Uncertainties

Inventory is held as protection from uncertainties. Raw materials inventories in excess of those required to support production can result from speculative purchases made because management expects either a future price increase or a strike, for example (Stock and Lambert, 2001).

Raw materials will allow the firm to achieve the following benefits:

i. To take advantage of quantity discount of market prices

ii. To guard against inflation.

iii. To provide strategic stocks of items which could be in short supply due, for instance, to strikes or other supply problems

iv. As a form of investment when price increases are anticipated

v. To cater for the variability of supply (Stevenson, 2009; Stock and Lambert, 2001).

Work-in-progress inventory is often maintained between manufacturing operations within a plant to achieve the following benefits:

i. To avoid a shut down if a critical piece of equipment were to break down

ii. To equalize flow, since not all manufacturing operations produce at the same rate

iii. To improve the utilization of plant, processes and labor.

Finished goods can be used as a means of improving customer service levels by reducing the likelihood of a stock out due to unanticipated demand or variability in lead time. Increased inventory investment will enable the manufacturer to offer higher levels of product availability and less chance of a stock out. Provides off- the- shelf customer service, and finally, provides an insurance against plant or equipment breakdown and in some instances, against internal or suppliers' strikes (Stock and Lambert, 2001).

2.5.2 Economies of Scale

Inventory is required if a firm is to realized economies of scale in purchasing, transportation and manufacturing. For example, raw materials inventory is necessary if the manufacturer is to take advantage of the per unit price reductions associated with purchases.

However, increasingly when purchase volumes are sufficiently large, purchase contracts are been negotiated based on annual volumes not the amount purchased on an individual order. Nevertheless, purchase materials have a lower transportation cost per unit if ordered in larger volumes. The reason for this lower per unit cost is that full truckload and railcar shipments receive lower transportation rates than smaller shipment of less than truckload or less than carload quantity (Stock and Lambert, 2001).

2.5.3 Balancing Supply and Demand

Seasonal supply and/ or demand may make it necessary to hold inventory. For example, a producer of a premium line of boxed chocolate experiences significant sales volume increase at Christmas, Valentine's Day, Easter and Mother's day.

In contrast, demand for a product may be relatively stable throughout the year but raw materials may be available only at certain times during the year. Such is the case for producers of canned fruits and vegetables (Stevenson, 2009). This makes it necessary to manufacture finished products in excess of current demand and hold them in inventory, unless the raw materials can be purchased from part of the world within with different growing seasons (Stock and Lambert, 2001).

2.5.4 Acts as a Buffer

Buffer stock is a stock allowance to cover errors in forecasting the lead time or the demand during the lead time (Lucey, 2009). It is held in individual workstations against the possibility that the upstream workstation may be a little delayed in long setup or change over time. This stock is then used while that changeover is happening. These classifications apply along the whole Supply chain, not just within a facility or plant.

Where these stocks contain the same or similar items, it is often the work practice to hold all these stocks mixed together before or after the sub-process to which they relate. This 'reduces' costs. Because they are mixed up together there is no visual reminder to operators of the adjacent sub-processes or line management of the stock, which is due to a particular cause and should be a particular individual's responsibility with inevitable consequences. Some plants have centralized stock holding across sub-processes, which makes the situation even more acute (Stevenson 2009).

2.6 Inventory Costs

Inventory represents an investment in the organization whether as a result of deliberate policy or not (Lucey, 2009). According to Coyle et al. (2003) Inventory cost are important for three major reasons. First, inventory cost represents a significant component of total logistics cost in many companies. Second, the inventory levels that a firm maintains at points in its logistic system will affect the level of service the firm can provide to its customers. Third, cost trade-off decisions in logistics frequently depend upon and ultimately affect inventory carrying cost.

As with any other investment, the cost of holding stock must be related to the benefits to be gained. To do this effectively, the costs must be identified.

The categories of cost associated with inventory are: costs of holding stock (carrying costs), costs of obtaining stock (ordering cost), stock out costs, and the cost of the stock itself.

2.6.1 Costs of Holding Stock

Costs of Holding Stock, also known as carrying cost, is the variable cost of keeping inventory on hand, and is a combination of the costs associated with opportunity costs, interest on capital invested on the stock, storage charges (rent, lighting etc.), taxes, equipment maintenance and running cost, insurance and security, shrinkage, and other variables. It represents one of the highest costs of logistics (Lucey 2009).

If a firm can determine the cost of holding one unit of inventory for one year, it can determine its annual holding cost by multiplying the cost of holding one unit by the average inventory held for a one-year period. Average inventory can be computed by dividing the amount of goods that are ordered every time an order is placed by two. Thus, average

inventory is expressed as Q/2; annual holding cost can be expressed as H (Q/2). Where H= Holding cost, Q= Quantity (Coyle et al., 2003).

2.6.2 Costs of Obtaining Stock

The costs, sometimes known as ordering or procurement cost is the expense of placing an order for additional inventory and does not include the cost or expense of the product itself. It includes the clerical and administrative costs associated with the purchasing, accounting and goods received departments; transport cost; and set up and tooling costs associated with each production run where goods are manufactured internally. Set up cost refers more specifically to the expense of changing or modifying a production or assembly process to facilitate product line change over's. The fixed portion of set up cost must include use of the capital equipment needed to change over production facilities, while the variable expense might include the personnel costs incurred in the process of modifying or changing the product line (Coyle et al., 2003; Lucey, 2009).

2.6.3 Stock-out Costs

Lucey (2009) defines stock out cost as "the costs associated with running out of stock". Coyle et al. (2003) also asserts that it is the cost of not having product available when a customer demands or needs it. When an item is unavailable for sale, a customer may accept a back order for future availability of the needed product, or perhaps purchase (or substitute) a competitor's product, directly taking profit from the firm experiencing the stock out. If the firm permanently loses the customer to its competitor, the profit loss will be indirect but longer lasting. On the physical supply side, a stock out may result in no new materials or in semi-finished goods or part, meaning idle machine time or even shutting down an entire manufacturing facility.

Determining the cost of not having an item available for sale, however, may be much more challenging. For a company dealing with raw materials or supplies for a production line, a stock out may mean wholly or partially shutting down operations. Such operations cutbacks are particularly critical for firms involved in just – in – time manufacturing or assembly operations.

According to Lucey (2009), stock out costs include lost contribution through the lost sale caused by the stock out, loss of future sales because customers may go elsewhere, cost of production stoppages caused by stock out of work-in-progress and raw materials, and extra costs associated with urgent, often small quantity, replenishment orders.

Lucey (2009) further asserts that stock out cost may be difficult to quantify. The avoidance of stock out cost is the basic reason why stocks are held in the first place.

2.6.4 Cost of the Stock

Cost of the stock also called purchasing cost is the cost of the purchased item itself. These costs according to Coyle et al (2003), are buying in prices or the direct cost of production. These costs are needed to be considered when discount are available for bulk purchases, and when savings in production cost are possible with longer batch runs. If the firm purchases a part that goes into its finished product, the firm can determine its annual purchasing cost by multiplying the cost of one purchased unit (P) by the number of finished product demanded in a year (D), hence, purchasing cost is expressed as purchase * demand (PD).

2.7 Inventory Management

Inventory management is the active control program which allows the management of sales, purchases and payments. According to Coyle et al (2003), inventory is a critical factor for success in many companies. They further stressed that inventory plays a dual role in

companies. Inventory impacts the cost of sales, but it also supports order fulfillment (customer service).

As stated earlier in chapter one, Inventory management is vital for the successful operation of most organizations due to the cost inventory represents. Effective management of inventory is a major concern for firms in all industries (Mentzer, et al., 2007). In order to achieve this, there is therefore the need for firms to effectively and efficiently manage their inventories.

There are two main concerns about inventory management. First, inventory management concerns the level of customer service, that is, to have the right goods in sufficient quantities, in the right place and at the right time. Another concern is the cost of ordering and carrying inventories (Stevenson, 2009).

2.8 Inventory Management Techniques

Inventory management relates to the tracking and management of commodities which includes the monitoring of commodities moved into and out of stockroom locations and the reconciling of the inventory balances. Some of the techniques used in managing inventories were discussed below:

2.8.1 ABC Analysis

This technique assigns items to three groups according to the relative impact or values of the items that makes up the group. Those thought to have the greatest impact, or value, for example, constituted the 'A' group, while those items thought to have a lesser impact or value were contained in the 'B ' and 'C' groups respectively (Coyle et al., 2003).

In many ABC analysis, a common mistake is to think of the 'B' and 'C' items as being for less important than the 'A' items and, subsequently, to focus most or all of management's attention on the 'A' items. A decision might be made to assume very high in-stock levels for

the ‘A’ items and little or no availability for the ‘B’ and ‘C ‘items. The fallacy here relates to the fact that all items in the A, B and C categories are important to some extent and that strategy to assure availability at an appropriate level of cost.

The purpose of this classification is to ensure that purchasing staff use resources to maximum efficiency by concentrating on those items that have the greatest potential savings. Selective control will be more effective than an approach that treats all items identically (Lysons and Gillingham, 2003).

The relevance of this theory to this study is that it suggests that though all categories of inventory is important, inventory must be categorized or classified in accordance to their relative impact or value and treated differently.

2.8.2 Economic Order Quantity (EOQ)

Plasecki (2001) defines Economic Order Quantity as an accounting formula that determines the point at which the combination of order costs and inventory costs are the least. Lysons and Gillingham (2003), also defines Economic Order Quantity as the optimal ordering quantity for an item of stock that minimizes cost.

According to Lysons and Gillingham (2003), to calculate the Economic Order Quantity, a mathematical model of reality must be constructed. All mathematical models make assumptions that simplify reality. The model is valid only when the assumptions are true or nearly true. When an assumption is modified or deleted, a new model must be constructed.

Economic Order Quantity approaches have proven to be effective inventory management technique when the demand and lead time are relatively stable, as well as when significant variability and uncertainty exist.

This theory is relevant to this study in that it suggests that the appropriate or optimum level of stock or inventory that an organization should keep or store must help to reduce the cost of doing business.

2.8.3 Material Requirement Planning (MRP I)

Ballou (1999), defined material requirement planning as a mechanical method of supply scheduling where the timing of purchase or of production output is synchronizing to meet period by period operations requirement. Ballou (1999), explained further that material requirement planning methods try to avoid carrying more inventory than is needed at a time. Thus the emphasis is on carrying only the quantities of stock needed at any point in time, and this is achieved through precise timing of material flows to meet requirements.

Lysons and Gillingham (2003), defined material requirement planning as a product- oriented computerized technique aimed at minimizing inventory and maintaining delivery schedules. It relates the dependent requirements for the materials and components comprising an end product to time periods known as ‘buckets’ over a planned horizon (typically one year) on the basis of forecasts provided by marketing and sales and other input information.

Coyle et al. (2003), explained material requirement planning as a set of logically related procedures, decision rules, and records designed to translate a master production schedule into time-phased net inventory requirements for each component item needed to implement this schedule.

Lysons and Gillingham (2003), outlined the aims of material requirement planning as follows:

i. To synchronize ordering and delivery of materials and components with production requirements.

ii. To achieve planned and controlled inventories and ensure that required items are available at the time of usage or not much earlier.

iii. To promote planning between the purchaser and the supplier to the advantage of each.

iv. To enable rapid action to be taken to overcome material or component shortage due to emergencies, late delivery and so on.

Coyle et al. (2003) also explained the goals of material requirements planning as follows: Ensure the availability of materials, components and products for planned production and for customer delivery.

i. Maintain the lowest possible inventory level.

ii. Plan manufacturing activities delivery schedule, and purchasing activities.

In doing so, the material requirement planning system considers current and planned quantities of parts and inventory products, as well as the time used for planning.

2.8.4 Manufacturing Resource Planning (MRP II)

Manufacturing resource planning (MRP II), has been defined by the American Production and inventory Control Association as a system built around materials requirement planning and also including the additional planning functions of production planning, master production scheduling and capacity requirement planning.

Lysons and Gillingham (2003), explained that, manufacturing resource planning (MRP II) has wider implications than material requirements planning (MRP I).

Stock and Lambert (2001), also explained that, material requirements planning (MRP I) developed into manufacturing resource planning (MRP II) with the addition of financial, marketing and purchasing components.

According to Coyle et al. (2003), manufacturing resource planning (MRP II) allows a firm to integrate financial planning and operations/logistics. They further explained that manufacturing resource planning (MRP II) serves as an excellent planning tool, and it helps describe the likely results of implementing strategies in areas such as logistics, manufacturing, marketing, and finance. Thus, it helps a firm to conduct "what if? Analysis and to determine appropriate product movement and storage strategies at and between points in the firm's logistics system.

Both material requirements planning (MRP I) and manufacturing resource planning (MRP II) are relevant to this study in that they place emphasis on carrying quantities of stock that is needed at any point in time and avoid unnecessary stock. This therefore helps reduce holding or carrying cost.

2.8.5 Enterprise Resource Planning (ERP)

Stock and Lambert (2001), explained that Enterprise resource planning (ERP) is a system that includes the core accounting functions of accounts payable, accounts receivable, and general ledger, coupled with logistics functions, to manage the organization.

Lysons and Gillingham (2003), defines Enterprise resource planning (ERP) as a business management system that, supported by multi-module application software integrates all the departments of functions of an enterprise.

Lysons and Gillingham (2003) further explained that Enterprise resource planning (ERP) is the latest and possibly the most significant development of material requirement planning (MRP I) and manufacturing resource planning (MRP II). While MRP I and MRP II allowed manufacturers to track supplies, work in progress and the output of finished goods to meet sales orders, ERP is applicable to all organizations and allows managers from all functions or

departments to have a consolidated view of what is, or is not taking place throughout the enterprise.

2.8.6 Distribution Resource Planning (DRP)

Lysons and Gillingham (2003) defined Distribution Resource Planning as an inventory control scheduling technique that applies material requirements planning principles to distribution inventories. It may also be regarded as a method of handling stock replenishment in a multi-echelon environment.

Vollman et al. (1997), observed that Distribution resource Planning (DRP) serves a central role in co-coordinating the flow of goods inside the factory with the system modules that place goods in the hands of the customers, and provides the basis for integrating the manufacturing resource planning (MRP II) system from the firm to the field.

According to Coyle et al. (2003), Distribution resource planning is a widely used and potentially powerful technique for outbound logistics systems to help determine the appropriate level of inventory. They further explained that, DRP helps companies to improve customer service (decrease stock out situations), reduce the overall level of finished goods, and improve distribution center operations.

The underlying rationale for Distribution resource planning (DRP) is to more accurately forecast demand and to explode that information back for use in developing production schedules. In that way, a company can minimize inbound inventory by using material requirements planning (MRP) in conjunction with production schedules. Outbound inventory is minimized through the use of Distribution resource planning (MRP) (Coyle et al, 2003).

The relevance of this theory to this study is that it suggests that inventory quantities are determined by comparing inventory status with the total number of items needed to meet the production schedule.

2.8.7 Just-In-Time System (JIT)

Coyle et al. (2003), defined Just-In-Time (JIT) System as an inventory control system that attempts to reduce inventory levels by coordinating demand and supply by the point where the desired item arrives just in time for use. Ideally, products should arrive exactly when a firm needs it, with no tolerance for late or early deliveries.

Lysons and Gillingham (2003), also defined Just-In-Time System as an inventory control philosophy whose goal is to maintain first enough material in just the right place at just the right time to make just the right amount of product.

It is a lean production system used mainly in repetitive manufacturing. The Just-In-Time System suggests that inventories should be available when an organization needs them, not any earlier, nor any later.

Stock and Lambert (2001), defined Just-In-Time System as a program which seeks to eliminate non-value-added activities from any operation with objectives of producing high-quality products, high productivity levels, lower levels of inventory, and developing long-term relationships with channel members.

Stock and Lambert (2001), further explained that in Just in time (JIT) System, anything over the minimum amount necessary for a task is considered wasteful. Thus, Just-In-Time (JIT) attempts to minimize inventories through the elimination of safety stock.

This theory is relevant to this study because it focuses on the identification and elimination of manufacturing system. This therefore helps to eliminate unnecessary inventory and reduce cost throughout the entire supply chain system.

Among the techniques of inventory management discussed above, ABC Analysis seek to categorize all inventory in accordance to relative impact and value, so that the more value placed on an item, the more of that particular item held in stock.

The Economic Order Quantity (EOQ), focuses more on minimizing inventory cost rather than minimizing the inventory itself (Stock and Lambert, 2001).

Material Requirement Planning (MRP I), Manufacturing Resource Planning (MRP II) and Enterprise Resource Planning (ERP) try to manage inventory by avoiding unnecessary inventory, and place more emphasis on only needed stock (Stock and Lambert, 2001).

Distribution resource planning (DRP) avoids unnecessary inventory and also compare inventory status with the total number of items needed to meet operational schedule (Stock and Lambert, 2001).

The Just-In-Time (JIT) System ties to eliminate waste by maintaining just enough inventories at the right place at the right time to make just the right amount of product.

All these inventory management techniques discussed above reveals that carrying unnecessary stock of goods and materials adds to the operational cost of the organization and therefore reduces its profitability. Therefore, the solution to reducing overall cost of holding inventory lies with adopting the use of efficient procedures to manage and control physical inventory of goods. Thus, the organization must invest thoroughly in ensuring that the right stock is available when and where it is needed. This helps to reduce the loss of sales

opportunities and thereby improve upon the profitability of the organization (Stock and Lambert, 2001).

2.9 Need for Inventory management in Hospitals

Hospitals are complex organisations providing large number of services of patients, physicians and staff. These services include dietary, linen, housekeeping, pharmacy, laboratory, surgery, administration, and others. Each area has specific and unique material and supply need creating a requirement in these facilities for supply management system that can provide the necessary supplies when needed. In the current scenario of increasing health care costs, systems inventory must be optimised without sacrificing the level of service provided.

Good inventory management is essential to the successful operation of any health care organization, for a number of reasons. One of the most important is the proportion of the organizations' budget that represents money spent for inventory. Although the amounts and dollar values of the inventories carried by different types of health care providers vary widely, in a typical hospital's budget 25 to 30 percent goes for medical supplies and their handling. On the national scene, health care supplies constitute 8 to 9 percent of health care expenditures. According to Burns (2002), of supply costs, 15 to 23 percent is for pharmacy, 30 to 50 percent is for medical-surgical supplies, and 11 to 24 percent is for equipment. Clearly, medical supplies require significant attention in health care budgeting. Furthermore, a widely used measure of managerial performance is the return on investment (ROI), which is profit after taxes, divided by total assets. Because the inventory of medical supplies may comprise a significant portion of a health care organization's total assets, reducing its inventories significantly raises its ROI, and hence its position in the financial markets. Health care managers must be able to manage the inventory of medical supplies effectively.

Drugs & Medicines being expensive and resources limited, it becomes imperative to improve their supply, increase the use, and minimize the cost through a pharmaceutical management system to be effectively put in place. There are some 3000-4000 drugs at any point in time, registered in any country; of which almost 70% are non-essential (WHO, 2010). Ideally, a National list of essential drugs should have 300400 drugs; a district hospital needs some 150 to 200, while a health centre can manage with 4050 drugs.

Shorter the list, it is easier to manage, procure and offer to the patients within the resources available. A typical hospital spends 25-30% of its budget on medical supplies and their handling. Similarly, a recent survey on health care providers found that each year these providers spent more than $100 million on supply chain activities, which was "nearly one-third their annual operating budget." Furthermore, about half of health care providers had supply chains that were described as "immature" based on those providers' survey responses.

A survey of large retailers showed that on average they have "high success" in both controlling supply chain costs and maintaining flexible capacity to meet market needs predicted considerable efficiency gains through adoption of retail best supply chain practices in healthcare.

2.10 Empirical Review of Effect of Inventory Management on Healthcare Delivery

Inventory management systems obtain and move supplies and equipment to places where they are needed in a timely manner and at an optimum cost. Supplies and equipment usually cannot go directly from their source to the end user. They frequently must be held in the warehouse at some points along the way. In view of this warehouse of supplies maintained and inventory of supplies and equipment are held at all levels in the Ghana Health Service (GHS).

The inventory management system recognizes that staffs at all levels have a wide range of responsibilities (USAID, 2013). Access to essential medicines and supplies is fundamental to the good performance of the Healthcare facility and is commonly cited as the most important element of quality by healthcare consumers and, the absence of medicines and supplies is a key factor in the underuse of government health services. In Ghana health system all commodities procured at the National level are stored at the Central Medical Stores (CMS). The Tertiary Hospitals, Regional Medical Stores (RMS) and even private sector suppliers then get their supplies from the Central Medical Stores (WHO, 2012).

Regional Medical Stores, Hospitals and other facilities in the various regions also procure from the two sources where the regional level procurements are done, but these are done by first visiting the Central Medical Stores and Regional Medical Stores respectively, and obtain a non-availability certificate when the commodities are out of stock which allows them to go ahead and do their purchase outside the CMSs and RMSs. Therefore, in the Ghana Health Service (GHS), after the commodities have been procured, they are transported and stored in a number of intermediate facilities at different levels before reaching the health facilities which enables clients obtain the services they were seeking (Goodsell, 2008).

The Government of Kenya in recent years has been implementing numerous health sector reforms with health systems strengthening at the core of the reform agenda through the support of Kenya Medical Supplies Agency (KEMSA). This work includes supporting the national government to formulate key policies and guidelines while assisting counties to better plan, manage and finance quality health services to meet local needs (Duclos, 2008). KEMSA offered improved stock management through computer software, and infrastructure for temperature and humidity controls, and hiring of skilled personnel on the area of supply Chain.

However, it has been criticized as being as taking the role of a Stockist, rather than operating according to the 'just-in-time' (JIT) principle (Duclos, 2008). USAID has indicated that adequate storage and inventory control is a challenge, many drugs expire before they can be used, or they are they reach the service delivery point, which might be a health facility, laboratory, or community health worker (USAID, 2006).

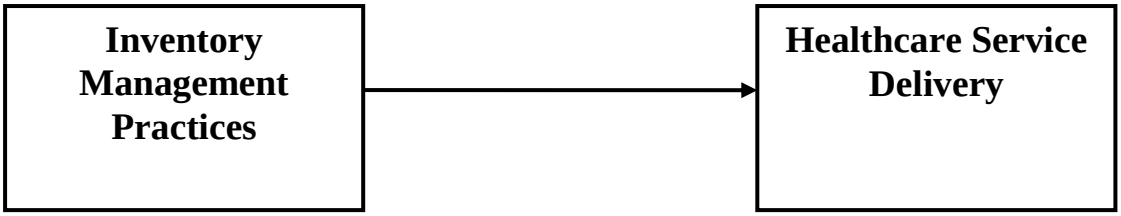
Kenyatta National Hospital (KNH) is the largest referral hospital in East and Central Africa. Founded in 1901 with a bed capacity of 40 as the Native Civil hospital, it was renamed the King George VI in 1952. Kenyatta National Hospital has a capacity of 1800 beds and has over 6000 staff members. According to 2013 – 2014 budgets, Kenyatta National Hospital was allocated a budget of 1.2 billion Kenya Shillings of which more than 700 million was towards the purchase of medical Equipment, Pharmaceutical and Surgical materials (GOK, 2013).

2.11 Conceptual Framework

According to Kombo and Tromp (2009), a concept is an abstract or general idea inferred or derived from specific instances. A conceptual framework is a set of broad ideas and principles taken from relevant fields of enquiry and used to structure a subsequent presentation. Mugenda and Mugenda (2003) defined a conceptual framework as a hypothesized model identifying the model under study and the relationship between the dependent and independent variables. Kothari (2004) defined an independent variable also known as the explanatory variable as the presumed cause of the changes of the dependent variable, while a dependent variable refers to the variable which the researcher wishes to explain. The goal of the conceptual framework is to categorize and describe concepts relevant to the study and map relationships among them. Such a framework helps the researcher to define the concept, map the research terrain or conceptual scope, systematize relations among concepts and identify gaps in literature (Creswell, 2003).

The conceptual framework of the study was based on key concepts of the study and literature review. The conceptual framework was then used to analyze the results of the research. It was based on the inventory management practices that which has an effect on healthcare service delivery. This is shown in the figure below;

Figure 2.1: Conceptual Framework of the Study



Source: Researcher's Own Construct, 2015

From the conceptual framework, healthcare service delivery is the dependent variable which is been predicted by inventory management practices. The extent of this relationship is been tested in the research scope and study area.

Much works have not been done to determine the effect of inventory management and healthcare delivery. According to Oballah et al. (2015), inventory investment and inventory records accuracy have a positive influence on organizational. Also, Anichebe and Agu (2013) in their study also concluded that there is significant relationship between good inventory management and organizational effectiveness. Inventory management has a significant effect on organizational productivity. There is highly positive correlation between good inventory management and organizational profitability. The study concluded that Inventory Management is very vital to the success and growth of organizations.

Finally, Ogbo et al. (2014) also sought to determine the relationship between effective system of inventory management system and organizational performance in the Seven-up Bottling Company in Enugu, Nigeria. They concluded that organizations benefits from inventory

control management by way of easy storage and retrieval of material, improved sales effectiveness and reduced operational cost. The study also found that there is a relationship between operational feasibility, utility of inventory control management in the customer related issues of the organization and cost effectiveness technique are implemented to enhance the return on investment in the organization. Effective inventory control management is recognized as one of the areas management of any organization should acquire capability.

Therefore, this study sought to use the conceptual Framework in Figure 2.1 to determine the effect that inventory management has on healthcare service delivery focusing on St. Martin's Catholic Hospital. It is from this conceptual framework that the research design of the study in the next chapter was made as well as the design of the data collection instrument and data collection and analysis.

CHAPTER THREE

METHODOLOGY AND ORGANIZATIONAL PROFILE

3.0 Introduction

In this chapter, the research methodology used in the study is described. The research design, population and sample are described. The instrument used to collect the data, including methods implemented to maintain validity and reliability of the instrument, are also described. Finally, the profile of the case organization (St. Martin's Catholic Church is also presented at the latter part of this chapter.

3.1 Research Design

Research design is the plan and structure of investigation so conceived as to obtain answers to research questions. A quantitative approach was followed. Burns and Grove (1993) define quantitative research as a formal, objective, systematic process to describe and test relationships and examine cause and effect interactions among variables.

A descriptive survey design was used. A survey is used to collect original data for describing a population too large to observe directly (Mouton, 1996). A survey obtains information from a sample of people by means of self-report, that is, the people respond to a series of questions posed by the investigator (Polit and Hungler, 1993). In this study the information was collected through self-administered questionnaires distributed personally to the subjects by the researcher.

A descriptive survey was selected because it provides an accurate portrayal or account of the characteristics, for example behaviour, opinions, abilities, beliefs, and knowledge of a particular individual, situation or group. This design was chosen to meet the objectives of the study, namely to determine the knowledge and views of the top management officials of St.

Martin's Catholic Hospital, Agroyesum, Amansie West and their staff with regard to change and its effects on St. Martin's Catholic Hospital.

3.2 Population of the study

According to Burns and Grove (1993), a population is defined as all elements (individuals, objects and events) that meet the sample criteria for inclusion in a study. The study population of this consisted of all Staff and Management in the St. Martin's Catholic Hospital.

The target population of the study consisted of staff from the Finance and Administration Unit, Records Unit, Stores Unit and Pharmacy. In all, the St. Martin's Catholic Hospital has about two hundred and thirty five (235) staff.

3.3 Sampling techniques and Sample Size

Sampling is a key component of any investigation and involves several considerations. The aim of most investigations is to obtain information about a population. A census or sample of the population is taken for analysis.

The sampling techniques used for this study were purposive and convenience sampling techniques. Purposive sampling technique was used to select staff and departmental personnel who acquire and manage stock at the hospital. Convenience sampling was used to select a representative number of the different units of the hospital. The sample size for the study was 60 employees. The selection of the sample was based on chance selection and the readiness and availability of the respondents. A total of 60 questionnaires were administered in order to ascertain the perceptions of both staff and management with respect to inventory management by St. Martin's Catholic Hospital. In this study, a sample size of 60 was considered adequate for the study. According to Pallant (2007), a sample size of 30 and

above do not violate or cause major problems in statistical measures even if the responses are not normally distributed.

3.4 Data Collection Method

The study relied on both primary and secondary data. Primary data was collected with the use of questionnaires and secondary data was also obtained from external sources such as the internet, Journals of change and other documentations. The purpose of sourcing for secondary data was to help in the formation of problems, literature review and construction of questionnaire.

3.4.1 Primary Sources

Primary data refers to data collected by the researcher for a particular need as is encapsulated in the research objectives. The study was conducted using the case study method of research. Self-administered questionnaires and informal interviews were the techniques used in gathering data.

3.4.2 Secondary Sources

The researcher gathered data from the St. Martin's Catholic Hospital files and unpublished articles. Data was also gathered from the websites, journals, books, newspapers, magazines of different institutions along with different related studies about change within the industry to supplement the research.

3.4.3 Data Collection Instrument

A questionnaire was chosen as the main data collection instrument. A questionnaire is a printed self-report form designed to elicit information that can be obtained through the written responses of the respondents. The information obtained through a questionnaire is similar to that obtained by an interview, but the questions tend to have less depth (Burns and

Grove, 1993). Data was collected with the aid of questionnaires to evaluate the management and staff knowledge and views the subject matter and how it affect service delivery in the hospital. The questionnaire was designed to meet the objectives of the study. It was adopted from previous works (Oballah et al., 2015 and Anichebe and Agu, 2013) but the researcher designed it to suit the objectives of the study in order to solicit answers that would meet the objectives.

Questionnaires were personally distributed by the researcher to top management officials and their staff to complete. The data was collected over a period of one month. Before the questionnaires were administered, the researcher sought permission from the hospital and interviewed a few staff of which the researcher derived the research topic and objectives. The researcher interviewed some staff to know the activities of the hospital. From that, the questionnaires was designed for the respondents. The researcher first did a pre-test of the questionnaire to ensure that the objectives were being met. The purpose of the pre-test activity is to ensure that the questionnaires are meaningful, easily understood and appropriate for the main fieldwork. The activity enabled the researcher to become more familiar with items of the questionnaires and prepare them accurately for the main work. After corrections were made, the questionnaires were distributed to staff and management.

3.5 Data Analysis

Sullivan (2001) opined that data analysis can be the most challenging and interesting aspect of research. It refers to deriving meaning from the data that had been collected in a study. Data analysis assumes many forms. Quantitative data analysis involves the use of statistical methods to assemble, classify, analyze and summarize the data to derive meaning. As indicated earlier, the author conducted field research to collect data from St. Martin's Catholic Hospital using questionnaires. After the data collection, data reduction was

conducted to select, arrange, refine, focus and summarize the data for onward analysis. The data collected was transformed into a form appropriate for manipulation and analysis. The data gathered from the questionnaire was edited to ensure completeness, consistency and accuracy. Data collected were analyzed through the use of Statistical Package for Social Sciences (SPSS) software and Microsoft Excel. In analyzing the data, frequency and descriptive tables were used as analytical tools. Quantitative explanations were made of quantitative data to give meaning to them as well as explain their implications. From these, appropriate conclusions and recommendations were made from the findings of the research.

3.6 Pre-test of Questionnaires

The study pre-tested the questionnaires with key literature such as Oballah et al. (2015) and Anichebe and Agu (2013) as well as some experts. The rationale behind this exercise was to ascertain the level of understanding of the items in the questionnaire and to achieve face validity of the data collection instrument. Also, it was to find out whether the feedback from the pre-test provides the type of information needed or whether the respondents were misinterpreting any of the questions. After this exercise, some of the items in the questionnaire were deleted and others were improved upon.

3.7 Ethical Considerations of the Study

There was the need to ensure that the study did not contravene the ethical issues. Hence, the following measures were taken:

The research questions were framed such that inconvenience and embarrassment were not caused to the participants in the research. St. Martin's Catholic Hospital staffs and management were assured of their utmost confidentiality with regards to information provided. Data obtained were treated with confidentiality. Those who participated in the study were not coerced but did so voluntarily. The consent of the respondents were obtained

before they participated in the research. As a much as possible, the researcher exercised a great deal of circumspection and objectivity throughout the research period.

3.8 Reliability of the Data Collection Instrument

Polit and Hungler (1993) refer to reliability as the degree of consistency with which an instrument measures the attribute it is designed to measure. The questionnaire which was answered staff of St. Martin's Catholic Hospital revealed consistency in responses. Reliability can also be ensured by minimizing sources of measurement error like data collector bias. Data collection bias was minimized by the researcher's being the only one to administer the questionnaires, and standardizing conditions such as exhibiting similar personal attributes to all respondents, e.g., friendliness and support.

The physical and psychological environment where data was collected was made comfortable by ensuring privacy, confidentiality and general physical comfort. Respondents were requested not to write their names on the questionnaires to ensure confidentiality.

3.9 Validity of the Data Collection Instrument

The validity of an instrument is the degree to which an instrument measures what it is intended to measure (Polit and Hungler, 1993). Content validity refers to the extent to which an instrument represents the factors under study. To achieve content validity, questionnaires included a variety of questions on the knowledge of the top management officials and their staff about inventory management and its effect on service delivery of St. Martin's Catholic Hospital.

Questions were based on information gathered during the literature review to ensure that they were representative of what respondents should know. Content validity was further ensured by consistency in administering the questionnaires. All questionnaires were distributed to

respondents by the researcher personally. The questions were formulated in simple language for clarity and ease of understanding. Clear instructions were given to the subjects and the researcher completed the questionnaires for those subjects who could not read.

All the respondents completed the questionnaires in the presence of the researcher. This was done to prevent respondents from giving questionnaires to other people to complete on their behalf. For validation, the questionnaires were submitted to other researchers and academicians for their contributions. As a result more questions were added to ensure higher representativeness. Rephrasing of some questions was done to clarify the questions and more appropriate alternative response choices were added to the closed-ended questions to provide for meaningful data analysis (Burns and Grove, 1993).

3.10 Profile of St. Martin's Catholic Hospital

St. Martin's Hospital is a Catholic Hospital under the Obuasi Diocese. It is located at Agroyesum, in the Amansie West District of Ashanti. It was founded in October, 1957. It has a bed compliment of 105 and serves people from Amansie West with a population of 149,437 people within 160 communities and beyond.

St Martin's hospital was founded in 1957. It was elevated to the status of a district hospital in 1990. The hospital is the property of the Catholic Diocese of Obuasi, under the general supervision of his Lordship Most. Rev. Justice Yaw Anokye, the Bishop. It is the only hospital facility in the Amansie West District of the Ashanti and serves a population of 144,924 people within 160 communities.

The hospital's humble beginning is traceable to the untiring efforts of Rev. Fr. L. Bekema (SMA)**,** Dutch who first settled at Agroyesum in 1953 as a missionary. He was later joined by Rev. Fr. Dr. Fevers (both missionary and medical practitioners) and the two of them were able to convince the traditional authorities of the need to establish a health facility in the

Manso area to cater for the health needs of the rural dwellers. Having been given the mandate, the hospital was founded in October, 1957, first as Maternity Home in the small Mission House of St Anthony's Parish-Agroyesum. The hospital has since then, gone through a lot of transformation and is now seen as it is today.

Vision

"To continue Christ's healing ministry in bringing healing to the greatest possible number of people in the provision of total quality patient care through healers of good ethical and moral standards; who are conscious as well as professionally competent, motivated and united in their common respect for fundamental human values'.

Mission

The hospital seeks to provide holistic health care by advancing Christ Healing Ministry to all manner of people with respect, integrity, compassion, excellence and at all times acknowledging the integrity of the patient.

Goal

To promote the health status of people within the catchment area of the hospital and beyond to reflect God's love for all mankind through the provision and delivery of quality, safe, efficient, effective and acceptable health care services.

Range Of Services Offered By the Hospital

The Hospital continued to be a general Hospital and provides a wide range of diagnostic, curative and preventive services befitting its status as the District Referral facility. These include; 24 hour Out and Inpatient Care, Laboratory Services, X-Ray, Ultra Sound, Surgical Services,(both emergency and elective), Ophthalmic Service (Eye Clinic) Child Welfare and

Primary Health care facility, Physiotherapy, Reproductive Health Care and Safe Motherhood, as well as Specialized Clinic for Diabetic, HIV/AIDS, TB, and other patients with chronic diseases or conditions.

Core Values

- People Centeredness
- Professionalism
- Team Work
- Discipline
- Innovation and excellence
- Integrity
- Client oriented

Table 3.1: Staff Strength for the Year, 2014

DETAILS	**NUMBER OF STAFF**
Medical officer(specialist)	2
Medical officers general	4
Physician assistance	2
Medical assistance	2
Nursing administrator	1
Optometrist	1

Ophthalmic nurse	2
Public health nurse	1
Ear, nose and throat nurse	1
Psychiatry nurse	2
Critical care nurse	1
General nurses(staff nurses)	40
Midwives	13
Community health nurses	6
Enrolled nurses	34
Ward assistants	28
Technical officer(nutrition)	1
Disease control officer	2
Health extension officers	6
Biomedical scientists	6
Laboratory technicians	6
Pharmacist	2
Pharmacy technicians	8
Pharmacy assistants	2
X-ray staff	3
Store staff	2
Enrolled nurses	34
Ward assistants	28
Records staff	9

Counseling unit	1
Administrative staff	3
Physiotherapy	2
Account staff	8
Claims office	3
Security staff	4
Transport(drivers)	3
Estate unit	19
Mortuary	3
TOTAL STAFF STRENGTH	**234**

Source: St. Martin's Catholic Hospital End of Year Report, 2014

CHAPTER FOUR

DATA PRESENTATION AND ANALYSIS

4.0 Introduction

The findings of the study are presented in this chapter. Necessary discussions of the findings are also made to establish understanding and show relationships among variables in relation to literature and the research objectives. The data gathered was analyzed descriptively and quantitatively to provide insight into the effect of inventory management practices on service delivery.

Responses were gathered from staffs of St. Martin's Hospital. Forty-six (46) responses in all were gathered out of the sixty (60) questionnaires administered. This represented 70.5% response rate.

4.1 Demographics of Respondents

The study sought to determine the different demographic characteristics of respondents in order to determine their knowledge and understanding of questions posed to them in the questionnaire. As can be seen in Table 4.1, 32 (69.6%) (n=46) of the participants from whom responses were gathered from were males whiles 14 (30.4%) were females. With their age ranges, it could be seen that 65.2% were between 20 and 30 years, followed by about 26.1% who were between the age of 30 and 40 years. A few respondents (4.3%) were between the ages of 41 and 50 or more than 50 years respectively. Given their educational background, close to half (43.5%; n=46) of them are degree holders, while about 26.1% have HND certificate or equivalent. Also, about 21.7% had nursing certificates and just about 8.7% had JHS/SHS certificates. The respondents were from various units of the hospital including OPD, Stores, Records, Pharmacy, Laboratory and Others with percentage of responses of 4.3%, 13.0%, 17.4%, 13.0%, 13.0% and 39.1% respectively. Most of the respondent were found to be Senior staff representing 54.5% of responses, followed by 36.4% who were

junior staff with just 4 (9.1%) at Top management position in the hospital. About 43.5% of the respondents have worked in the hospital between 4 and 6 years, whereas about 30.4% and 13% have worked in the hospital for 1 -3 years and 7 – 9 years respectively. These are as displayed in Table 4.1.

Table 4.1: Personal information of St. Martin's Hospital Staff Respondents

DEMOGRAPHY	CHARACTERISTICS	Frequency	Frequency %
GENDER	Male	32	69.6%
	Female	14	30.4%
	N	**46**	**100.0%**
AGE	20 - 30 years	30	65.2%
	31 - 40 years	12	26.1%
	41 - 50 years	2	4.3%
	51 years and above	2	4.3%
	N	**46**	**100.0%**
UNIT AT THE HOSPITAL	OPD	2	4.3%
	Stores	6	13.0%
	Records	8	17.4%
	Pharmacy	6	13.0%
	Laboratory	6	13.0%
	Others	18	39.1%
	N	**46**	**100.0%**
LENGTH OF YEARS WORKED	Less than 1 year	2	4.3%
	1 - 3 years	14	30.4%
	4 – 6 years	20	43.5%
	7 - 9 years	6	13.0%
	10 years and above	4	8.7%
	N	**46**	**100.0%**
EDUCATIONAL QUALIFICATION	JHS/SHS	4	8.7%
	HND/Equivalent	12	26.1%
	1st Degree	20	43.5%
	Nursing Cert.	10	21.7%
	N	**46**	**100.0%**
STATUS IN HOSPITAL	Management	4	9.1%
	Senior Staff	24	54.5%
	Junior Staff	16	36.4%
	N	**46**	**100.0%**

Source: Field study (2015)

Based on these, it is believed that most of the respondents provided responses that represent the true state of inventory management practices adopted by St. Martin's Hospital over the past 5 years. Therefore the findings from this study are valid and reliable to make recommendations to hold in future.

4.2 Inventory Management Practices of St. Martin's Catholic Hospital

The first objective of the study was to examine the inventory management practices in St. Martin's Catholic Hospital. Total inventories held by St. Martin's Catholic Hospital constitute mostly medical consumables. These include drugs, medical equipment, laboratory equipment as well as other office consumable such as printing stationery, fuel and lubricants, safety gadgets, first aid materials, batteries, generator, and printer cartridge and toner, etc.

The respondents were asked if there exist an inventory management policy. They all indicated in the affirmative that there is an inventory management policy. With regards to how stock is replenished, there were varied responses with most of the respondents indicating that stock is replenished manually at internal customer request. Stocktaking is not done at a stipulated time intervals but rather as and when needed. They are not used any inventory model but rather they use the two-bin system and the requisition forms to manage inventory.

Other inventory management practices were posed to respondents using the questionnaire to determine their extent of agreement and these are displayed in the descriptive statistics in Table 4.2a to Table 4.2c.

Table 4.2a: Lean Inventory Systems of St. Martin's Hospital

Lean Inventory Systems Items		N	Minimum	Maximum	Mean	Std. Dev
LIS1	Operation of Just-In-time (JIT) purchasing system – where no safety stocks are kept	46	1	6	2.83	1.651
LIS2	Agreements with supplier for short cycle deliveries (items which doesn't take long to deliver)	46	2	7	5.35	1.538
LIS3	Accurate prediction of supplier delivery dates	44	2	7	5.09	1.611
LIS4	Operation of materials Requirements planning system (MRP) – where bills of materials are 100% accurate	46	2	7	4.83	1.450
LIS5	Little or no expediting	46	1	7	3.78	1.519
Valid N (listwise)		44				

Source: Field study (2015)

It could be seen from Table 4.2a that St. Martin's hospital ensures Lean Inventory System (LIS) as an inventory management practice as the mean responses of most of the 5 items used to measure LIS were more than 4.0 which is the midpoint signifying "Indifferent". It could be seen that the highest response indicating agreement was received from the second item: "*Agreements with supplier for short cycle deliveries (items which doesn't take long to deliver)"* with mean, 5.35 and SD=1.538. This was followed by the third item which was "*Accurate prediction of supplier delivery dates*" with Mean=5.09, SD=1.611.

However, least responses indicating disagreement were received from two items namely "*Operation of Just-In-time (JIT) purchasing system – where no safety stocks are kept" and "Little or no expediting*" with mean and standard deviation values of 2.83 (1.651) and 3.78 (1.519) respectively.

This implies that for ensuring lean inventory system as inventory management practice, St. Martin's hospital ensures agreements with supplier for short cycle deliveries (items which doesn't take long to deliver), ensures accurate prediction of supplier delivery dates and

operate materials Requirements planning system (MRP) – where bills of materials are 100% accurate and it supports previous studies by Oballah et al. (2015), Anichebe and Agu (2013) and Ogbo et al. (2014).

Table 4.2b: Strategic Supplier Partnerships of St. Martin's Hospital

Strategic Supplier Partnerships Items		N	Minimum	Maximum	Mean	Std. Dev
SSP1	Involving suppliers early in product design process	46	1	7	4.65	1.828
SSP2	Use of suppliers to manage inventory on behalf of the hospital (Vendor managed Inventory)	46	1	7	4.22	1.837
SSP3	Use of fewer suppliers as opposed to many suppliers.	46	1	7	4.17	1.568
SSP4	Frequent meetings between hospital's inventory staff and the suppliers	46	1	7	4.87	1.916
SSP5	Complete information sharing between the hospital and its suppliers	46	2	7	5.48	1.457
SSP6	Proper communication between the hospital and suppliers	46	2	7	5.57	1.455
SSP7	Long – term agreements between the hospital and its suppliers	44	2	7	5.18	1.317
Valid N (listwise)		44				

Source: Field study (2015)

It could be seen from Table 4.2b that St. Martin's hospital ensures Strategic Supplier Partnerships (SSP) as an inventory management practice as the mean responses of all the 7 items used to measure SSP were more than 4.0 which is the midpoint signifying "Indifferent". It could be seen that the highest response indicating agreement was received from the sixth item: "*Proper communication between the hospital and suppliers"* with mean, 5.57 and SD=1.455. This was followed by the fifth item which was "*Complete information sharing between the hospital and its suppliers*" with Mean=5.48, SD=1.457. This was then followed by "Long – term agreements between the hospital and its suppliers", with Mean=5.18 and SD=1.317.

Other items that measured SSP and had mean responses between 4.0 and 5.0 also signifying agreements include "*Involving suppliers early in product design process", "Use of suppliers to manage inventory on behalf of the hospital (Vendor managed Inventory)", "Use of fewer suppliers as opposed to many suppliers"* and *"Frequent meetings between hospital's inventory staff and the suppliers*".

This implies that St. Martin's hospital vehemently ensures Strategic Supplier Partnerships as an Inventory management practice as responses indicated such and it supports previous studies by Oballah et al. (2015), Anichebe and Agu (2013) and Ogbo et al. (2014).

Table 4.2c: Information Technology of St. Martin's Hospital

Information Technology Items		N	Minimum	Maximum	Mean	Std. Dev
IT1	The hospital has computerized all inventory management systems	46	5	7	6.26	.681
IT2	The hospital's computers are linked with those of suppliers in a real time environment	46	1	6	4.04	1.801
IT3	The hospital uses Electronic Data Interchange Technology (EDI)	44	2	7	5.27	1.404
Valid N (listwise)		44				

Source: Field study (2015)

It could be seen from Table 4.2b indicates that St. Martin's hospital ensures Information Technology (IT) as an inventory management practice as the mean responses of all the 7 items used to measure IT were more than 4.0 which is the midpoint signifying "Indifferent". It could be seen that the highest response indicating agreement was received from the first item: "*The hospital has computerized all inventory management systems"* with mean = 6.26 and SD= .681. This was followed by the third item which was "*The hospital uses Electronic Data Interchange Technology (EDI)*" with Mean=5.27, SD=1.404. This was then followed by

"*The hospital's computers are linked with those of suppliers in a real time environment*", with Mean = 4.04 and SD=1.801.

This implies that St. Martin's hospital strictly uses Information technology as an Inventory management practice as responses indicated such and it supports previous studies by Oballah et al. (2015), Anichebe and Agu (2013) and Ogbo et al. (2014).

4.3 Healthcare Service Delivery Level of St. Martin's Hospital

The second objective of the study was to evaluate the service delivery level of the St. Martin's Catholic Hospital. In order to achieve this, questions were posed to random patients at the Out-patient Department (OPD) of the hospital to help assess the healthcare delivery of the hospital using some parameters. It was necessary to determine the satisfaction level of patients to healthcare delivery services in St. Martin's Catholic Hospital. Using a 5-point Likert Scale, patients were asked to rate the level of satisfaction to parameters with a minimum of 1 being very dissatisfied and the maximum of 5 being very satisfied whiles the midpoint of 4 being neither dissatisfied nor satisfied. Table 4.3 shows the responses of the hospital patients in assessing the healthcare delivery of St. Martin's Catholic Hospital.

Table 4.3: Service Delivery of St. Martin's Hospital

Service Delivery Items		N	Minimum	Maximum	Mean	Std. Dev
SD1	Reliability of Healthcare Service (24 hour service and full complement of Medical Staff)	30	4	7	5.26	.665
SD2	Completeness of Healthcare Service	30	3	6	5.34	1.136
SD3	Empathy of Healthcare Staff	30	2	7	5.27	1.532
SD4	Affordability of Healthcare Service (Payment)	30	4	6	5.23	1.365
SD5	Aesthetics (Physical Appearance of Healthcare Service)	30	2	7	5.46	0.293

Source: Field study (2015)

It could be seen that the patient respondents agree with the items used to measure service delivery of St. Martins Hospital. It could be seen from Table 4.3 that the responses were more towards satisfaction to almost all the items that the researcher used to measure patients perception of service delivery. However, the measures that patients deemed mostly satisfied about includes "*Reliability of Healthcare Service (24 hour service and full complement of Medical Staff)", "Completeness of Healthcare Service", "Empathy of Healthcare Staff", "Affordability of Healthcare Service (Payment)"* and *"Aesthetics (Physical Appearance of Healthcare Service)".*

Service quality influences the customer's satisfaction and perceived value (Hu, Cheng and Hong, 2011). Thus, quality service continues to be a critical factor in the health service delivery (Hollis, 2006). Since healthcare professional availability is linked to improved healthcare quality (Zahari, Yussof and Ismail, 2008; Temizer and Turkyilmaz, 2012), it is significant that the study investigates how locum addresses healthcare professional shortage and subsequently leads to healthcare quality.

Thus, the outcome of this study should recommend ways to improve healthcare delivery in the country, not only through training more healthcare professionals, or just improving economic conditions but also by efficient management of existing healthcare professionals' practices. Secondly, healthcare professionals mostly complain of unattractive salaries, and often this leads to industrial unrest. Healthcare professional remuneration in the country may improve if the outcome of this study is taken seriously by health administrators in Ghana, where proper and formal policies on would be recommended to regulate and make the practice attractive and acceptable.

Furthermore the outcome of this study should help health regulators to institute policies that can make their inventory practices an acceptable practice, and to be beneficial to both private healthcare facilities and those of the public.

4.4 Effect of Inventory Management Practices has on the Service Delivery Level of the hospital.

The third objective of the study was to determine the effect of inventory management practices has on the service delivery level of the hospital. In order to achieve this, questions on the effect that inventory management practices have on the healthcare delivery of St. Martin's Hospital was posed to hospital staff respondents to determine their level of agreement. A 7 point scale was employed, measuring "1=strongly disagree" through to "4=neither agree nor disagree" to "7=strongly agree was used to measure the effect. The responses to this are as displayed in Table 4.4 below.

Table 4.4: Effect of inventory management practices has on the service delivery level

Effects		N	Minimum	Maximum	Mean	Std. Dev.
EFFECT1	Inventory Management practices contribute greatly to the healthcare service delivery of SMCH	46	5	7	6.26	.681
EFFECT2	Inventory Management practices helps in inventory planning and scheduling in SMCH	46	4	7	5.87	.859
EFFECT3	Long Procurement procedures affect inventory management and healthcare service delivery of SMCH.	46	2	7	5.17	1.288
EFFECT4	Insufficient funds towards Inventories contribute greatly to the poor healthcare service delivery of SMCH	46	1	7	5.13	1.721
EFFECT5	Inadequately trained staff in the inventory management section at SMCH contribute greatly to the poor healthcare service delivery of SMCH	46	1	7	4.57	1.682
EFFECT6	Improved customer service can be realized with proper inventory management at SMCH	46	2	7	5.65	1.353

Source: Field study (2015)

It could be seen that the staff respondents agree with the items used to measure the effect of inventory management practices on healthcare service delivery of St. Martins Hospital. It

could be seen from Table 4.4 that the responses were more than 4.0 signifying agreement to all the items that the researcher used to measure patients' perception of effect of inventory management practices on service delivery. The effect that received the highest response was the first item: "*Inventory Management practices contribute greatly to the healthcare service delivery of SMCH*" with mean = 6.26 and SD=0.681.

Other effects that had relatively higher mean values include "*Inventory Management practices helps in inventory planning and scheduling in SMCH"* and *"Improved customer service can be realized with proper inventory management at SMCH*" with mean and standard deviation values of 5.87 (.859) and 5.65 (1.353) respectively.

However, the effect that had the least mean was the fifth item: "*Inadequately trained staff in the inventory management section at SMCH contribute greatly to the poor healthcare service delivery of SMCH" with* mean = 4.57 and SD =1.682.

This implies that inventory management practices of St. Martin's Catholic Hospital has an effect on their healthcare service delivery level including inventory planning and scheduling improved customer service and it supports previous studies by Oballah et al. (2015), Anichebe and Agu (2013) and Ogbo et al. (2014).

4.5 Challenges of inventory management practices on St. Martin's Catholic Hospital.

The last objective of the study was to determine the of inventory management practices on St. Martin's Catholic Hospital. In order to achieve this, questions on challenges that mitigate against inventory management practices at St. Martin's Hospital were posed to hospital staff respondents to determine their level of agreement. A 7 point scale was employed, measuring

"1=strongly disagree" through to "4=neither agree nor disagree" to "7=strongly agree was used to determine the challenges. The responses to this are as displayed in Table 4.5 below.

Table 4.5: Challenges of inventory management practices at St. Martin's Hospital

Challenges		N	Minimum	Maximum	Mean	Std. Dev.
CHALL1	Delays in delivery of drugs leading to insufficient inventories	46	1	7	4.91	1.575
CHALL2	Use of outdated storage facilities	46	1	7	3.57	1.785
CHALL3	Use of manual inventory management system/Lack of technology	44	1	7	3.27	1.703
CHALL4	Lack of training	46	1	7	3.52	1.906
CHALL5	Holding too much/too little inventory	46	1	7	3.78	1.576
CHALL6	Bureaucratic process in procurement	44	1	7	4.45	1.994
CHALL7	Loss of drugs through inventory shrinkages	46	1	7	4.04	1.943
CHALL8	Conflict of interest	44	1	7	4.32	1.596
CHALL9	Weak management system	46	1	7	4.13	1.721
CHALL10	Insufficient funds for procurement	40	1	7	4.10	1.972
CHALL11	Purchase of drugs with a near expiration date	46	1	7	3.35	2.100
CHALL12	Overstocking/under stocking	40	2	7	4.25	1.750

Source: Field study (2015)

It could be seen that the patient respondents agree with most of the items used to determine the challenges of inventory management practices at St. Martins Hospital. It could be seen from Table 4.5 that most of the responses were more than 4.0 signifying agreement to those items that the researcher used to determine the challenges of inventory management practices at the hospital. The challenges that received the highest response was the first item: "*Delays in delivery of drugs leading to insufficient inventories*" with mean = 4.91 and SD=1.575. Other challenges that staff respondents agreed that they affect inventory management practices at St. Martin's Hospital include "*Bureaucratic process in procurement", "Loss of drugs through inventory shrinkages*", *"Conflict of interest", "Weak management system" "Insufficient funds for procurement*" with mean and standard deviation values of 4.45 (1.994), 4.04 (1.943), 4.32 (1.596), 4.13 (1.721) and 4.10 (1.972) respectively.

On other hand, the staff respondents disagreed to some of the challenges posed to them including "*Use of outdated storage facilities", "Use of manual inventory management system/Lack of technology ", "Lack of training", "Holding too much/too little inventory" and "Purchase of drugs with a near expiration date*" with mean and standard deviation values of 3.57 (1.785), 3.27 (1.703), 3.52 (1.906), 3.78 (1.576) and 3.35 (2.100) respectively.

This implies that St. Martin's Catholic hospital is faced by some challenges that mitigate against their inventory management practices including delays in delivery of drugs leading to insufficient inventories, bureaucratic process in procurement, loss of drugs through inventory shrinkages, conflict of interest, weak management system and insufficient funds for procurement and it supports previous studies by Oballah et al. (2015), Anichebe and Agu (2013) and Ogbo et al. (2014).

CHAPTER FIVE

SUMMARY OF FINDINGS, CONCLUSIONS AND RECOMMENDATIONS

5.0 Introduction

This chapter gives a summary of the findings of the study, the conclusions and the recommendations for stakeholders to ensure effective and efficient management of inventory in healthcare institutions. These have been discussed in the next sub-sections.

5.1 Summary of Findings

In order to ensure achievement of the study objectives, the summary of the study findings is presented in relation to the objectives of the study. The discussion of the results in the previous chapter shows the following main findings.

5.1.1 Inventory Management Practices at St. Martins Catholic Hospital

The first objective of the study was to determine the inventory management practices at St. Martin's Catholic Hospital. The study revealed that total inventories held by St. Martin's Catholic Hospital constitute mostly medical consumables. The respondents all indicated in the affirmative that there is an inventory management policy. Stock is replenished manually at internal customer request and stocktaking is not done at a stipulated time intervals but rather as and when needed. The respondents also indicated that they are not used to any inventory model but rather they use the two-bin system and the requisition forms to manage inventory.

For ensuring lean inventory system as inventory management practice, St. Martin's hospital ensures agreements with supplier for short cycle deliveries (items which doesn't take long to deliver), ensures accurate prediction of supplier delivery dates and operate materials Requirements planning system (MRP) – where bills of materials are 100% accurate. St.

Martin's hospital vehemently ensures Strategic Supplier Partnerships as an Inventory management practice as responses indicated such. The findings finally revealed that St. Martin's hospital strictly uses Information technology as an Inventory management practice as responses indicated such.

5.1.2 Healthcare Service Delivery Level of St. Martin's Hospital

The second objective of the study was to evaluate the service delivery level of the St. Martin's Catholic Hospital. The study revealed that inventory management has immense benefit on the service delivery of St. Martin's Catholic Hospital officials and the entity as a whole. It could be seen that the patient respondents agrees with the items used to measure service delivery of St. Martins Hospital. It was revealed that the responses were more towards satisfaction to almost all the items that the researcher used to measure patients perception of service delivery. However, the measures that patients deemed mostly satisfied about includes "*Reliability of Healthcare Service (24 hour service and full complement of Medical Staff)", "Completeness of Healthcare Service", "Empathy of Healthcare Staff", "Affordability of Healthcare Service (Payment)"* and *"Aesthetics (Physical Appearance of Healthcare Service)".*

5.1.3 Effect of Inventory Management Practices has on the Service Delivery Level of the hospital.

The third objective of the study was to determine the effect of inventory management practices has on the service delivery level of the hospital. It was revealed by the staff respondents agrees with the items used to measure the effect of inventory management practices on healthcare service delivery of St. Martins Hospital. This implies that inventory management practices of St. Martin's Catholic Hospital has an effect on their healthcare

service delivery level including inventory planning and scheduling improved customer service.

5.1.4 Challenges of Inventory Management at St. Martin's Catholic Hospital

The last objective of the study was to identify the challenges encountered in the implementation of the inventory control policies and practices at St. Martin's Catholic Hospital. Notwithstanding the best practices in inventory management at St. Martin's Catholic Hospital, there were some challenges which hinder the effective and efficient of the various types of inventory that they hold. The study revealed that some of these challenges include delays in delivery of drugs leading to insufficient inventories, bureaucratic process in procurement, loss of drugs through inventory shrinkages, conflict of interest, weak management system and insufficient funds for procurement, etc. which were indicated as either occasional problems, major problems or threats to the implementation of effective inventory control practices.

5.2 Conclusions

Effective inventory management is upheld to be a potential driver for enhancing profit margins. Minimizing total inventory of cost through identifying an optimum level of inventory that an organization holds is the way forward. A well-functioning inventories management will bring both economic benefit in terms of profitability and bring good image to the company. It will enable the company to undertake projects on time and bring out quality finished products of the company. When a company implements effective inventories management systems, the firm's efficiency is enhanced. This has an impact on the level of performance in terms of turnover, growth, management and ultimately profitability as purported by previous studies by Oballah et al. (2015), Anichebe and Agu (2013) and Ogbo et al. (2014).

Inventory management ensures that the firm does planning ahead of time to avoid shortages and make sure that right quality of materials are at the right place at the right time. Inventory management is very important since it enables firms to avoid locking their money in inventories and help build good and permanent relationship with suppliers.

To ensure that the inventory management plans and policies are being followed, it is important to set up effective and efficient monitoring systems. This would include recruiting well qualified personnel to manage the inventory system and set up functioning information systems which will be used to manage the system. Inventory management should not be the preserve of the management and stores or logistics department only but every staff must be made to understand the importance of inventory management.

This study sought to investigate the inventory management practices on healthcare service delivery. It can be concluded from the study that St. Martin's Catholic Hospital has been practicing inventory management. However, its effectiveness and how those practices were adhered to by management and staff were somehow with some challenges. Therefore, pragmatic measures should be put in place to curb such challenges to ensure effective and efficient inventory control in healthcare institutions.

5.3 Recommendations

In light with challenges of inventory management revealed in the study, the researcher recommends the following guidelines to necessary to enhance efficiency in the current practices adopted by the company in management its inventory:

There is a need for management to emphasize the importance of inventory management. Inventory management should not be the preserve of only the staffs of the warehouse, stores or logistics department. Each person in the hospital must appreciate the importance of

inventory control and adhered to related processes, including documenting inventory movements and storing items where they belong not just where there is open space. Dedicating one individual to full-time inventory management provides continual attention to that function, while rotating various oversight responsibilities among other individuals broadens their understanding of inventory control processes. Such practices also promote accountability and ownership. If this is done, other major problems such as handling materials, shortage of materials etc. of St. Martin's Catholic Hospital as revealed by the study will be minimized if not removed.

There should be the use of an integrated information system by St. Martin's Catholic hospital to connect and distribute projects related information particularly between staffs in the organization, or that links the company with its suppliers. To this ends, the adoption of enabling technologies such as a Logistics Information System (LIS), often in the form of Electronic Data Interchange (EDI) or Value Added Network (VAN) or the internet are desirable so that different parties in the supply chain can gain access to the needed information for decision making, thereby meeting the market requirements responsively.

Improvement of demand forecasting should be the basis for the company to plan their internal operations and to cooperate among departments to meet market demand. These should define which products will be required, what amount of these products would be called for, and when they will be needed. All forecasting must deal with four major variables that combine to determine what the market condition will be like. Those variables are demand, supply, product characteristics and competitive environment.

There should be improvement of relationships with suppliers. The most important purchasing activity is to select and keep close relationships with several reliable and high quality suppliers in order to reduce product cost, maintain good product quality and customer

services. St. Martin's Catholic hospital should improve their relation with their suppliers by paying them on time, ensuring early placement of orders, free flow of information, and also being honest with them. This is because, it was discovered from the study that some of the suppliers were reluctant to supply materials when orders are made in situations where the company is indebted to them.

From the findings the company does not use any recognized inventory management model. The organizational corporate inventory policy must incorporate in its inventory policies efficient and effective inventory models. In an organization like St. Martin's Catholic hospital where demand is not known with certainty because of improper forecasting, a combination of two or more efficient and effective models are needed to be able to approximate the future with degree of accuracy. The determination of what to order, how much to order and when to order depend on a flexible model. The existence of effective communication infrastructure prepares a fertile ground for Vendor Managed Inventory (VMI) which will instill in the organization operational efficiency. Regressing and simulation models could determine optimum lot-size.

5.4 Recommendations for Further Studies

The findings of the research agree with existing literature that there is little practice of inventory management in public institutions in Ghana. The private sector especially healthcare institutions should make sure that there is an effective inventory management system in their firms as this will bring much benefit to them.

Finally, future research in this field should be carried out in respect of effective relationship building with suppliers and its impact on inventory management, as well as the use of integrated information systems in the inventory management of various inventories in the public sector.

REFERENCES

Anichebe, N. A. and Agu, O. A. (2013). Effect of Inventory Management on Organisational Effectiveness. Information and Knowledge Management, Vol.3, No.8, pp.92 – 100.

Ballou R.H. (2000), "*Evaluating inventory management performance using turnover curve*", International Journal of Physical Distribution and Logistics Management.

Ballou, R.H. (2009) *Business Logistics Management*: Planning, Organizing, and Controlling the Supply Chain, 4th Edition, Prentice- Hall International, London.

Burns, L.R., (2009). *The Healthcare Value Chain,* San Francisco: Jossey-Bass.

Burns, N. and Grove, K. (2003). Understanding nursing research (3rd ed.). Philadelphia: W.B.\ Saunders Company.

Burns, N. and Grove, S. (1993), "*The practice of nursing research: conduct, critique and utilization",* (2nd ed). W. B. Saunders: Philadelphia, Pennsylvania, USA.

Cachon, G. and Fisher, M. L. (2000), *"Supply chain inventory management and the value of shared information*"., Management Science, 46 (8), 1032 - 1048.

Chopra, S. and Meindl, P. (2003), Supply Chain Management: Strategy, Planning and Operation, 4th Edition, Pearson Prentice Hall, Upper Saddle River, New Jersey.

Chopra, S., and Meindl, P., (2007), "*Supply Chain management strategy, planning and operation*", 3rd Ed, Pearson Education Inc. Jersey

Christopher, M., (2005), "*Logistics and Supply Chain Management: Creating Value-Adding*".

Coyle, J. J., Bardi, E. J., and Langley, C. J. Jn., (2003), *"The management of business Logistics: A supply chain perspective*", Quebec, Canada, Transcontinental Louisevill,

Creswell J. W. (2003). Research Design: Qualitative, quantitative and mixed methods approaches. 2nd Edition, Sage Publications Inc., Thousand Oaks, CA.

Dave Piasecki (2001), "*Optimizing Economic Order Quantity (EOQ)*", Solution Magazine, January 2001 issue

Dilworth, J. B. (1993), "*Production and Operation Management*", Fifth Edition, pp 216-252

Duermeyer, B. L. and Schwartz, L. B. (1981), "*A model for the analysis of the system service level in warehouse-retailer distribution system: The identical retailer case*", Multi-level production/Inventory Control systems: Theory and Practice, North Holland, Amsterdam.

Fawcett, S. E., Waller, M. A., and Fawcett, A. M., (2010), "*Elaborating a dynamic systems theory to understand collaborative inventory successes and failures*", The International journal of Logistics management, Vol.21 No.3, pp.510-537

Fry, M. J., Kapuscinski, R. and Olsen, T.L. (2001), "*Coordinating Production and Delivery Under a (z, Z) - Type Vendor - Managed Inventory Contract*", Manufacturing and Service Operations Management 3(2): 151 – 173

Government of Kenya (GOK) (2013). Annual Report.

Gudum, C. K. (2002), "*Managing variability in a supply chain: An inventory control perspective*", PhD Thesis, Samfundslitteratur, København

Hollis, C. (2006) Service quality evaluations in internal healthcare service chains. Queensland University of Technology, Australasian Digital Thesis Program.

Hu, H.-Y. , Cheng, C.-C. , Chiu, S.-I. , & Hong, F.-Y. (2011). A study of customer satisfaction, customer loyalty and quality attributes in Taiwan's medical service industry. African Journal of Business Management, 5 (1), 187 – 195 .

Huang, Z. and A. Gangopadhyay (2004), "*A Simulation Study of Supply Chain Management to Measure the Impact of Information Sharing*", Information Resources Management Journal Vol 17 No 3 pp 20-32.

Jakšič, M. and Rusjan, B. (2009), "*The Value of Sharing Advance Capacity Information Under "Zero-Full" Supply Capacity Availability*", Econ. Bus. Rev, 2009, vol. 11, no. 4, str. 319-335

Kombo, D. K. and Tromp, D. L. A (2009). Proposal and Thesis Writing: An Introduction. Paulines Publications Africa, Don Bosco Printing Press, Nairobi Kenya.

Kothari C (2004). Research Methodology: Methods and Techniques, 2nd edition. New age International Publishers, New Delhi, India.

Lambert, D. M., Cooper, M. C., and Pagh, J. D., (1998), "*Supply Chain Management: Implementation Issues and Research Opportunities"* The International Journal of Logistics Management. Vol. 9(2), p.1

Lee, H. L. and Billington, C. (1992), *"Managing Supply Chain Inventory: Pitfalls and Opportunities",* Sloan Management Review, vol. 33, no. 3, 65-73.

Lee, H. L., Padmanabhan, V. and Whang, S. (1997a) "*The bullwhip effect in supply chains*", Sloan Management Review, 38, 93-102.

Lee, H. L., Padmanabhan, V. and Whang, S. (1997b) "*Information distortion in supply chains: The bullwhip effect"*, Management Science, 43(4), 546-558.

Lee, H. L., So, K.C. and Tang, C.S. (2000) "*The value of information sharing in a two level supply chain"*, Management Science, 46(5), 626-643.

Lucey, T., (2009), "*Costing*",7th ed. London. Cengage Learning.

Lysons, K. and Gillingham, M. (2003), "*Purchasing and Supply Chain Management*", 6th Edition, Prentice Hall.

Mentzer, J. T., Myers, M. B., and Stank, T. P., (2007), "*Handbook of Global Supply Chain",* Network. Harlow. Pearson Education Ltd.

Metters, R. (1997), "*Quantifying the bullwhip effect in supply chains*", Journal of Operations Management, Columbia

Monczka, R. M., Petersen, K. J., Handfield, R. B., and Ragatz, G. L. (1998), "*Success factors in strategic supplier alliances: The buying company perspective*", Decision Science 29 (3), 5553 – 5577

Mugenda O, Mugenda A (2003). Research methods quantitative and qualitative Approaches. Nairobi Acts press.

Oballah, D., Waiganjo, E. and Wachiuri, E. W. (2015). Effect of Inventory Management Practices on Organizational Performance in Public Health Institutions in Kenya: A Case Study of Kenyatta National Hospital. International Journal of Education and Research, Vol. 3 (3), 704 – 714.

Ogbo, A. I., Onekanma, I. V. and Ukpere, W I. (2014). The Impact of Effective Inventory Control Management on Organisational Performance: A Study of 7up Bottling Company Nile Mile Enugu, Nigeria. Mediterranean Journal of Social Sciences, Vol 5(10), pp. 109 -118.

Padmanabhan, P., Lee, H. L. and Whang, S. (1997), "*Information distortion in supply chain: the Bullwhip Effect"*, Management Science, 1997 forthcoming

Pallant, J. (2007). *SPSS Survival Manual, A Step by Step Guide to Data Analysis using SPSS for Windows (3rd edn)*. McGraw-Hill House, Berkshire England, p.204

Polit, D. F. and Hungler, B. P. (1993), "*Nursing research: Principles and methods*", 3rd edition. Philadelphia: Lippincott.

Roundy, R. O. (1985), "*98% effective integer ratio lot-sizing for one-warehouse multi-retailer systems: Theory and Practice*", Management Science, 31, 1416 – 1429.

Schroeder, R. G. (2000), "*Operations Management: Contemporary Concepts and Cases*", 1st ed., Boston: Irwin/McGraw-Hill.

Simchi-Levi, D., Kaminsky, P. and Simchi-Levi, E. (2009), "*Designing and Managing the Supply Chain: Concepts, Strategies and Case Studies*",3rd edition, New York: McGraw-Hill.

Stacey, J., Natara-Jarathinam,M., and Charles, F. (2007), "*The storage constrained, inbound inventory routing problem"*, Internal journal of physical Distribution and Logistics management, Vol. 37 No. 6, pp.484-500.

Stevenson, W. J., (2009), "*Operations management*", USA, McGraw-Hill Companies Inc. USA

Stock, J. R., and Lambert, D. M., (2001), "*Strategic Logistics management*", 4th ed. Singapore, McGraw-Hill

Stroh, L. K., J. M. Brett, J. M. Baumann and A. H. Reilly (1996), *"Agency Theory and Variable Pay Compensation Strategies*", Academy of Management Journal, (39:3), 1996, pp. 751-767.

Sullivan, P. and Mousley, J. (2001), "*Thinking teaching: seeing mathematics teachers as active decision makers*", in Lin, Fou-Lai and Cooney, Thomas J. (eds), Making sense of mathematics teacher education, pp. 147-164, Kluwer Academic Publishers, Dordrecht, The Netherlands

Temizer, L., & Turkyilmazb, A. (2012). Implementation of student satisfaction index model in higher education institutions. Social and Behavioral Sciences, 46, 3802-3806.

Uddin, M., Okazaki, E., Fukushima, H., Turza, S., Yumiko, Y., Fukuda, Y. (2006), "*Nondestructive determination of water and protein in surimi by near-infared spectroscopy*", Food Chem 96: 491-495.

Vollman, T. E., Berry, W. L. and Whybark, D. C. (1997),"*Manufacturing Planning and Control Systems*", Homewood: Irwin

Walker, H., Di Sisto, L., McBain, D. (2008), *"Drivers and barriers to environmental supply chain management practices: lessons from the public and private sectors*", Journal of Purchasing and Supply Management 14 (1), 69–85

Yu, Z., H. Yan, et al. (2001), "*Benefits of Information Sharing with Supply Chain Partnerships",* Industrial Management and Data Systems Vol 101 No 3 pp 114-119.

Zahari, W., Yusoff, W., & Ismail, M. (2008). FM-SERVQUAL: a new approach of service quality measurement framework in local authorities. Journal of Corporate Real Estate, 10(2), 130-144

Zhang, G. Q. (2008), "*Combining acquisition planning with inventory management under uncertain demand*", INFOR, 46(2), 129-135

Appendix I

KWAME NKRUMAH UNIVERSITY OF SCIENCE AND TECHNOLOGY
SCHOL OF BUSINESS
INVENTORY MANAGEMENT SURVEY
QUESTIONNAIRE (*Administered to SMCH Staff***)**

This questionnaire is part of a project work required by the Kwame Nkrumah University of Science and Technology as a partial requirement for the award of a Master of Business Administration degree. The questionnaire is designed to solicit your independent views on "***the effect of inventory management practices on service delivery at the Kumasi South Hospital, Agroyesum, Amansie-West".*** All information provided shall be treated as confidential and used strictly for Academic purpose. Please answer the following questions freely without indicating your name.

PART 1: Background Data

1. Your Gender?
   Male ☐ Female ☐
2. What is your age?
   Less than 20 ☐ 20-30 years ☐ 31-40 years ☐ 41-50 years ☐
   51 and above ☐
3. Which unit of the hospital do you work?
   OPD ☐ Stores ☐ Records ☐ Pharmacy ☐ Laboratory ☐
   ☐ Other, please specify ……
4. How long have you worked for the hospital?
   Less than 1 year ☐ 1 – 3 years ☐ 4 – 6 years ☐ 7 – 9 years ☐
   10 years and above ☐
5. What is your level of education?
   JHS/SHS ☐ HND/Equivalents ☐ 1st Degree ☐ Master's degree ☐
   Nursing Cert. ☐ Other, please specify……..
6. What category of staff are you?
   Management ☐ Senior staff ☐ Junior staff ☐

PART 2: INVENTORY MANAGEMENT PRACTICES

Strongly Disagree	**Disagree**	**Somewhat Disagree**	**Indifferent**	**Somewhat Agree**	**Agree**	**Strongly Agree**
1	**2**	**3**	**4**	**5**	**6**	**7**

Please the extent to which you agree with the following as practised at Kumasi South Hospital……..							
Lean Inventory System	**1**	**2**	**3**	**4**	**5**	**6**	**7**
Operation of Just-In-time (JIT) purchasing system – where no safety stocks are kept	[ ]	[ ]	[ ]	[ ]	[ ]	[ ]	[ ]
Agreements with supplier for short cycle deliveries (items which doesn't take long to deliver)	[ ]	[ ]	[ ]	[ ]	[ ]	[ ]	[ ]
Accurate prediction of supplier delivery dates	[ ]	[ ]	[ ]	[ ]	[ ]	[ ]	[ ]
Operation of materials Requirements planning system (MRP) – where bills of materials are 100% accurate	[ ]	[ ]	[ ]	[ ]	[ ]	[ ]	[ ]
Little or no expediting	[ ]	[ ]	[ ]	[ ]	[ ]	[ ]	[ ]

Operation of Just-In-time (JIT) purchasing system – where no safety stocks are kept	[ ]	[ ]	[ ]	[ ]	[ ]	[ ]	[ ]
Agreements with supplier for short cycle deliveries (items which doesn't take long to deliver)	[ ]	[ ]	[ ]	[ ]	[ ]	[ ]	[ ]
Strategic Supplier Partnerships	**1**	**2**	**3**	**4**	**5**	**6**	**7**
Involving suppliers early in product design process	[ ]	[ ]	[ ]	[ ]	[ ]	[ ]	[ ]
Use of suppliers to manage inventory on behalf of the hospital (Vendor managed Inventory)	[ ]	[ ]	[ ]	[ ]	[ ]	[ ]	[ ]
Use of fewer suppliers as opposed to many suppliers.	[ ]	[ ]	[ ]	[ ]	[ ]	[ ]	[ ]
Frequent meetings between hospital's inventory staff and the suppliers	[ ]	[ ]	[ ]	[ ]	[ ]	[ ]	[ ]
Complete information sharing between the hospital and its suppliers	[ ]	[ ]	[ ]	[ ]	[ ]	[ ]	[ ]
Proper communication between the hospital and suppliers	[ ]	[ ]	[ ]	[ ]	[ ]	[ ]	[ ]
Long – term agreements between the hospital and its suppliers	[ ]	[ ]	[ ]	[ ]	[ ]	[ ]	[ ]
Information Technology	**1**	**2**	**3**	**4**	**5**	**6**	**7**
The hospital has computerized all inventory management systems	[ ]	[ ]	[ ]	[ ]	[ ]	[ ]	[ ]
The hospital's computers are linked with those of suppliers in a real time environment	[ ]	[ ]	[ ]	[ ]	[ ]	[ ]	[ ]
The hospital uses Electronic Data Interchange Technology (EDI)	[ ]	[ ]	[ ]	[ ]	[ ]	[ ]	[ ]

PART 3: EFFECT OF INVENTORY MANAGEMENT ON HEALTHCARE SERVICE DELIVERY

Strongly Disagree	**Disagree**	**Somewhat Disagree**	**Indifferent**	**Somewhat Agree**	**Agree**	**Strongly Agree**
1	**2**	**3**	**4**	**5**	**6**	**7**

Please the extent to which you agree with the following the effect of inventory management on healthcare service delivery at St. Martin's Catholic Hospital(SMCH)……..							
	1	**2**	**3**	**4**	**5**	**6**	**7**
Inventory Management practices contribute greatly to the healthcare service delivery of SMCH	[ ]	[ ]	[ ]	[ ]	[ ]	[ ]	[ ]
Inventory Management practices helps in inventory planning and scheduling in SMCH	[ ]	[ ]	[ ]	[ ]	[ ]	[ ]	[ ]
Long Procurement procedures affect inventory management and healthcare service delivery of SMCH.	[ ]	[ ]	[ ]	[ ]	[ ]	[ ]	[ ]
Insufficient funds towards Inventories contribute greatly to the poor healthcare service delivery of SMCH	[ ]	[ ]	[ ]	[ ]	[ ]	[ ]	[ ]
Inadequately trained staff in the inventory management section at SMCH contribute greatly to the poor healthcare service delivery of SMCH	[ ]	[ ]	[ ]	[ ]	[ ]	[ ]	[ ]
Improved customer service can be realized with proper inventory management at SMCH	[ ]	[ ]	[ ]	[ ]	[ ]	[ ]	[ ]
Inventory Management practices contribute greatly to the healthcare service delivery of SMCH	[ ]	[ ]	[ ]	[ ]	[ ]	[ ]	[ ]

Inventory Management practices helps in inventory planning and scheduling in SMCH	[ ]	[ ]	[ ]	[ ]	[ ]	[ ]	[ ]
Long Procurement procedures affect inventory management and healthcare service delivery of SMCH.	[ ]	[ ]	[ ]	[ ]	[ ]	[ ]	[ ]

PART 4: CHALLENGES OF INVENTORY MANAGEMENT AT SMCH

Strongly Disagree	Disagree	Somewhat Disagree	Indifferent	Some what Agree	Agree	Strongly Agree
1	2	3	4	5	6	7

Please to what extent do you agree with the following as the challenges of inventory management on healthcare service delivery at St. Martin's Catholic Hospital(SMCH)……..	**1**	**2**	**3**	**4**	**5**	**6**	**7**
Delays in delivery of drugs leading to insufficient inventories	[ ]	[ ]	[ ]	[ ]	[ ]	[ ]	[ ]
Use of outdated storage facilities	[ ]	[ ]	[ ]	[ ]	[ ]	[ ]	[ ]
Use of manual inventory management system/Lack of technology	[ ]	[ ]	[ ]	[ ]	[ ]	[ ]	[ ]
Lack of training	[ ]	[ ]	[ ]	[ ]	[ ]	[ ]	[ ]
Holding too much/too little inventory	[ ]	[ ]	[ ]	[ ]	[ ]	[ ]	[ ]
Bureaucratic process in procurement	[ ]	[ ]	[ ]	[ ]	[ ]	[ ]	[ ]
Loss of drugs through inventory shrinkages	[ ]	[ ]	[ ]	[ ]	[ ]	[ ]	[ ]
Conflict of interest	[ ]	[ ]	[ ]	[ ]	[ ]	[ ]	[ ]
Weak management system	[ ]	[ ]	[ ]	[ ]	[ ]	[ ]	[ ]
Insufficient funds for procurement	[ ]	[ ]	[ ]	[ ]	[ ]	[ ]	[ ]
Purchase of drugs with a near expiration date	[ ]	[ ]	[ ]	[ ]	[ ]	[ ]	[ ]
Overstocking/under stocking	[ ]	[ ]	[ ]	[ ]	[ ]	[ ]	[ ]

Could you provide any suggestions for effective inventory management at Kumasi South Hospital?

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Thank you for your help in answering these questions