**Assessment of health commodity inventory management practice and challenges :** A Study on Jimma university specialized hospital

*A thesis Submitted to the School Graduate Studies of Jimma University Partial Fulfillment of the Award of the Degree of Masters of logistics and transport management(LTMgt)*

By:

**HAWI SHENTEMA CHEMEDA**



**JIMMA UNIVERSITY**

**COLLEGE OF BUSINESS & ECONOMICS**

**LTMgt PROGRAM**

**JANUARY 02, 2018**

**JIMMA, ETHIOPIA**

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**DECLARATION**

I hereby declare that this thesis entitled “Assessment of health commodity inventory management practice and challenges a study on Jimma university specialized hospital has been Carried out by me under the guidance and supervision of Dr.Shimeles Zewdie and Ato Firew Mulatu.

The thesis is original and has not been submitted for the award of degree of diploma any university or instructions.

Researcher’s Name Date Signature

**CERTIFICATE**

*This is to certify that the thesis entities “Assessment of Health commodity inventory management practice and challenges a study on Jimma specialized hospital ” , Submitted to Jimma University for the award of the Degree of Master of Logistics and Transport management (LTMgt) and is a record of Valuable research work carried out by Mr. Hawi Shentema, under our guidance and supervision*

*Therefore we hereby declare that no part of this thesis has been submitted to any other university or institutions for the award of any degree of diploma.*

*Main Adviser’s Name Date signature*

*Co-Advisor’s Name Date Signature*

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**LIST OF ABBREVIATIONS ACRONYMS**

EDI Electronic Data Interchange

EOQ Economic order quantity

ERP Enterprise resource planning

FEFO First expire first out

**IFMIS** Integrated Financial Management Information System

JIT Just-In Time

JUSH Jimma university specialized hospital

VEN Vital, Essential & Non essential

VMI Vendor managed inventory

WHO World Health Organization

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***ABSTRACT***

*The objective of the study is to assess the health commodities inventory management*

*practice of the Jimma university specialized hospital by using primary data asemi-structured questionnaire, observation check list & interview. The questionnaire will be distribute purposively , Besides hospital stores will be visited and Data will be analyzed using descriptive statics .The study will examine JUSH health commodities to be long-term agreements between the hospital and its suppliers, if maintain proper store management of the store managers have adequate knowledge how to store and practiced health commodities and will eamine their attitude towards the importance of appropriate storage of commodities, how obsolete, expired, or damaged inventories identified and segregated, will also try to answer how they use stock tracking and adequate detailed written inventory instructions and procedures exist, will also seek to answer if uses Enterprise Resource Planning system,Just In Time stock control system and an integrated information are these applicable? Finally the study will assess the main challenges of the hospital in managing inventory in JUSH.*

*Key words: Health commodities inventory management, stores, medicines, medical supplies medical equipments, laboratory commodities*

**CHAPTER ONE**

**INTRODUCTION**

* 1. **Background of the Study**

Inventory is the commodities, supplies, equipment, and other materials those are available in stock in an institution (Ministry Of Medical Services, 2016). According to Miller (2010), inventory management involves all activities put in place to ensure that Customers have the needed product or service. It coordinates the purchasing, manufacturing and distribution functions to meet the marketing needs and organizational needs of availing the product to the customers. Inventory management is primarily involved with specifying the size and placement of stocked goods. Inventory management is required at different locations within a facility or within multiple locations of a supply network to protect the regular and planned course of production against the random disturbance of running out of materials. Commodity management is the process of getting logistics, controlling, transporting, and storing up and distributing commodities through keeping the commodities financial records. Management of basic health commodities concepts is growing as it is very important in various countries (USAIDDeliver/Project, 2016).

Inventory management plays an important role in every company as any ineffective inventory system will result in loss of customers and sales. An effective inventory management is able to generate more sales for the company which directly affects the performance of the company. Therefore it requires a systematic inventory management which is managed by a group of employees who are experts in this area. (Jamal *et al.*, 2016) Every organization must have some inputs and raw materials of some kind in order to serve its customers. Organizations exist for the purpose of serving its customers. In fact no business organization can exist without input which refers to anything that is put in, taken in or operated upon, and is transformed into something different and desirable by customers. (Kwansah Ebenezer Ofori-Ayeh, 2016)

Inventory control is vitally important to almost every type of business, whether product or service oriented. Inventory control touches almost every facets if operations. A proper balance must be truck to maintain proper inventory with the minimum financial impact on the customer. Inventory control is the activities that maintain stock keeping items at desired levels. Control of inventory take 45% to 90% of all cost associated with inventory control system , is needed to ensure that the business has the right goods on hand to avoid stock-outs, to prevent shrinkage (spoilage/theft), and to provide proper accounting. Many businesses have too much of their limited resource, capital, tied up in their major asset, inventory. Inventory may be old, worn out, shopworn, obsolete, or the wrong sizes or colors, or there may be an imbalance among different product lines that reduces the customer appeal of the total operation (www.ct-clic.com).

Inventory management is needed as being a portion of supply chain network to guard the healthcare delivery towards any type of disturbance.(Michael and Bba, 2012) Efficient laboratory and medical commodities management ensures that hospital have an up to date inventory count at all times, giving good customer service, giving accurate information to customer and improve image of the hospitals( WHO,2016).Robust inventory management system allows managers to receive real time information on inventory. This will assist management to accurately made informed decisions, anywhere, anytime and save time and cost used for labor and thus working on inventory management properly(USAIDDelivery/Project,2016).

In the world today, every organization wants not only to mitigate the system wide cost, but also to maintain minimum inventories along the supply chain while maximizing the service level requirements of the customer (Sandeep, 2007). This however cannot be achieved without modern technologies. The advancement of technology and innovation has shortened the product life cycle and thus improved inventory management systems of firms. This has led to reduced costs, increased efficiency and thus boosted performance of firms. In some organizations it has led to demand variability and thus strengthened the need to maintain proper inventory for improved supply chain performance.(Njoroge, 2015)

(Dryden and Brownell, 2012) posit excess inventory in the supply chain blocks the cash flow and this might negatively affect organizational performance. (Bicheno, 2011) indicates that a closer examination of supply chain relationships, particularly those involving product flows, reveals that the heart of these relationships is inventory movement and storage. (Eckert ,2012) argues that much of the activity involved in managing relationships is based on the purchase transfer, or management of inventory.

Some of the inventory management practices to be discussed in this study includes; economic order quantity, vendor management inventory, Just In Time, ABC Analysis and E-procurement.

* 1. **Statement of the Problem**

Effective inventory management in health care supply chains is one of the key factors for success. The challenge in managing inventory is to balance the supply of inventory with demand. An organization would ideally want to have enough inventories to satisfy the demands of its customers and not to loss customers due to inventory stock-outs. On the other hand, the organization does not want to have too much inventory staying on hand because of the cost of carrying inventory.(Oballah,etal 2015)

The problem of inventory management may be attributable to the failure, on the part of the top management officials, to give a deserved attention to the function of stores as well as their inability to employ the services of as well qualified stores officer to take charge of stores supervision and management. Added to this problem is the issue of the dearth of storage facilities and the habit of stores procedure violation by the top, the middle, and the junior cadre personnel’s in the organization (Neef, 2001). In order for organizations to be competitive and stay updated, there is need to have a paradigm shift in the way procurement is carried out so as to solve numerous procurement problems evident in the business world especially in developing economies which include increased corruption, high costs of doing businesses, a lot of non-value adding paper work procedures, long time elapse to respond to tenders and non-competitiveness (Chartered Institute of Purchasing and Supplies, 2011). The supply of medicines needs to be managed efficiently in order to prevent all types of wastage including overstocking, pilferage and expiry. This wastage reduces the quantity of medicines available to patients and therefore the quality of health care they receive. Both under stocking or overstocking and expiry of medicines highlight problems within the supply chain activities which include selection, quantification, procurement, storage, distribution and use (Kagashe & Massawe,2012).

Mungu (2013) states that in hospitals, inventory management is set up to ensure an optimal stock level of medicine in general and essential medicine to enable satisfactory service that touches on human life unlike procurement in other sectors. Emergencies pose health threats that are of sudden onset in nature, are beyond the capacity of an individual/community to manage and are life threatening or will lead to irreversible damage to the health of individuals/community if not addressed. Thus inventory management is the heart of pharmaceutical system and poor management will lead to wastage of financial resources, shortages of essential medicines, average of others resulting in expiration and deadline in quality health care (USAID, 2012). Despite the threats, in most public hospitals patients are always turned away due to lack of essential drugs and infrastructural facilities. Unfortunately in developing countries, most organizations in the health sector, supply chain is not accorded central role in overall strategy.(Njoroge, 2015)

Problems are likely to raise when inventory is not tracked properly, inefficiency and additional costs mount. Supplies get lost, shrinkage can go unchecked, stock-outs occur, critical equipment locations are uncertain, billing is inefficient since supplies are used without being associated to patient’s record, and on-hand inventory can balloon unnecessarily. All of this leads to inefficiency and additional costs. A “sick” inventory arise due to individual decision making on frequency of reordering and quantity to be ordered, ad hoc structuring, inaccurate stock recording, lack of transparency, increase in complexity, and absence of systematic monitoring. These problems mainly arise due to lack of awareness or knowledge about of scientific stock keeping and warehouse practices. In developing countries like India, where budget is tight, overstocking of certain pharmaceutical items may block a substantial portion of the drug budget, resulting in insuf­ficient funds for procuring drugs that are more important. For this reason, it is important to implement or upgrade an inventory control system in a public pharmaceutical supplyto maintain a steady sup­ply of drugs to the public. This ensures good health to all while mini­mizing the costs associated with inventory holding, lowering order processing, procurement or delivery costs, controlling stock levels and minimizing stock out conditions (Surabhi Dwivedi, 2012).

Public hospitals have a procurement department that is responsible for the provision of goods services to the hospitals with the aim of providing quality health care services in order to achieve customer satisfaction. They maintain inventory management system which is aimed at ensuring that facilities and equipment are supplied and delivered at the right time. The hospitals should consider implementing inventory management practices for reduced costs and improved supply chain performance. This has a positive impact on reduction of mortality rate to the patients especially in responding to emergency cases.(Njoroge, 2015)

Studies have been done in relation to inventory management practices and challenges . Akintonye (2014) found that inventory management led to improved performance of German Service firms. Mehra (2014) and Lapide (2010) also concluded that use of technology in inventory management improved efficiency of manufacturing firms and service firms.

Gakuru (2012) found that the major factor hindering the application of inventory model is frustrations by the ordering system. Lack of computers to keep track of inventory levels and lack of awareness on how best to implement the models were also cited as constraining factors. Kitheka (2012) indicated that inventory management automation affected the performance of the supermarkets. The findings revealed that there was a positive linear relationship between inventory management automation and the performance of the supermarkets.

This study will focus on health commodity inventory management practices and challenges of JUSH.

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* 1. **Research Questions**

This study will attempt to provide answers to the following research questions:

* What are the inventory control techniques used by Jimma specialized hospital for health commodities?
* How does Jimma specialized hospital manage the flow of stock and information of health commodities?
* What are the mechanisms of inventory record & counting practiced by Jimma specialized hospital for health commodities?
* What are the specific challenges confronting on the management of inventory in the hospital?
  1. **Objective of the Study**

**1.4.1 General Objective of the study**

The general objective of this study will be to assess health commodities inventory management practices at Jimma specialized hospital.

**1.4.2 The specific objectives of the study are**:

This study will seek to fulfill the following specific objectives:

* To identify the inventory control techniques used by Jimma specialized hospital for health commodities.
* To assess the practice of flow of stock and information management of health commodities at Jimma specialized hospital.
* To assess inventory record & counting practiced of health commodities at Jimma specialized hospital.
* To investigate the challenges confronting the management of inventory in the Hospital
  1. **Significance of the Study**

This study will conduct at Jimma specialized hospital. The study may be important hospitals particularly Jimma specialized hospital Thus to 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 their supply chain profitability.

It is expected that the originality of this study will be judged through its contribution in the extending to the body of literature in the area of health commodity inventory management practices and challenges. In the practical aspect, this study may shed light on the public health sectors to find a solution regards to inventory management. The information from this study will give an overall benefit to all parties in the public health sectors to understand the impact and suitable method to reduce or which is better to prevent inventory challenges . On the part of the students and graduates, they will get a broad opportunity to expand for future research in the area of inventory management. From the hospital perspective, this study will benefit them in term of assessing their curriculum as to whether it meets the hospital expectation and requirements. This research is to study inventory challenges occur in the hospital.

The study will try to address appropriate suggestions on the right goods in the right condition and right quantity are at the right place, at the right time and for the right cost would be managed in JUSH healthcare delivery so as to be able to satisfy their requirement. Also, this study will provide useful contributions to the literature on the commodity inventory management practices.

This study will try to be as reference for JUSH, for NGOs , MOH, for government , for practitioners /store keepers, / managers.The project will also try to serve as a reference material for any person that would like to conduct research on health commodity management.

* 1. **Scope/delimitation of the study**

The study will carry out in Jimma specialized hospital which is located in Jimma town. Jimma specialized hospital is one of the two public hospital in Jimma town. Also, this hospital becomes the highest referral hospital for Jimma zone Health Centers.

The study will focus on the practices on health commodities inventory management in improving the inventory management system of the hospital, The management of medicines and non-medical supplies will be also covered by this study. particularly stores department unit /store keepers/, pharmacy professionals, laboratory specialists, head of OPD and department head of the ward in the hospital staffs with specific focus on those officers responsible for acquiring and managing the hospital stocks in Jimma specialized hospital.

## 1.7 Organization of the Study

This study is structured in five chapters. Chapter one is the introduction and provides the background of the research, problem statement, research objectives, research questions, hypotheses, scope and significance of the study, limitation of the research as well as the organization of the study. Chapter two reviews literature, empirical reveiw. The chapter ends with a conceptual framework of the study.

Chapter three covers the methods and procedures employed for the study. The research methodology outlines the research design, target population, sample size and sampling techniques, data collection instruments, reliability and validity of the instruments, methods of data analysis, and ethical consideration. Chapter four outlines data presentation, analysis and interpretation and Chapter five concludes and suggests possible recommendations.

**CHAPTER TWO**

**LITERATURE REVIEW**

**Introduction**

In this chapter, the views and discussions of other researchers on assessment of health commodity inventory management practice and challenges are presented. The literature review is divided into three sections. Section one consists of theoretical part which discusses the meaning of inventory, the meaning of management ,inventory management concept,classifications of inventories, inventory control techniques Others are the need for benefits of inventory control, benefits of inventory control, and challenges of inventory management. The second section is the empirical part which provides the foreign countries and Tanzania case studies on effectiveness of inventory control system. Section three presents the conceptual framework.

**2.1 Theoretical Literature Review**

**2.1.1 Meaning of Inventory**

According to an article written by Michael Pollick and edited by Lindsey D. (Wise GEEK, 22 May, 2011), Inventory is the total amount of commodities or materials contain in a storehouse or warehouse at a given time. The word “Inventory” can refer to both the total amount of commodities and the act of counting them.

**2.1.2 Meaning of Management**

Management means to guide or control something or an activity well or to narrow it down to inventory, to succeed in the efficient operating of inventory. This makes management the act or skills of controlling and making decisions about a process. It embraces organizing, planning, controlling and directing the resources of a company in order to fulfill objectives of a policy. (Ofori-Ayeh, 2016)

The relevance of these theories to the study is that Inventory is to be seen as the largest investment in assets and represents one of the primary sources of revenue generation and subsequent earnings for an organization, therefore it has to be efficiently and effectively managed to reduce cost and increase profitability in the organization.(Michael and Bba, 2012)

**2.1.3 Inventory management concepts**

There are numerous studies have been undertaken towards inventory management, (Vipul Chalotra ,2013). defined inventory management as controlling the business stock or controlling the flow of goods and services as per their demand. Inventory management as methods that company use to organize, store and replace inventory, to keep an adequate supply of goods at the same time minimizing cost. (Aarti & Dhawal,2013)

(Wisner and Leong ,2011) define inventory management is the process of efficiently overseeing the constant flow of units into and out of an existing inventory. This process usually involves controlling the transfer in of units in order to prevent the inventory from becoming too high, or dwindling to levels that could put the operation of the company into jeopardy.( Agus and Noor ,2010) proper inventory management also seeks to control the costs associated with the inventory, both from the perspective of the total value of goods included and the tax burden generated by the cumulative value of the inventory.

(Dryden et al,2012) dispute that inventory management involves keeping proper records of finished goods that are ready for shipment. This often means rearrangement the production of newly finished goods to the inventory totals as well as subtracting the most recent shipments of finished goods to buyers. The significance of inventory management practices is that they make it possible to rapidly convey information to sales personnel as to what is available and ready for shipment at any given time.

Inventory management is a very important function that determines the health of the supply chain as well as the impacts the financial health of the balance sheet. Every organization constantly strives to maintain optimum inventory to be able to meet its requirements and avoid over or under inventory that can impact the financial figures (http://www.managementstudyguide,2017). (Mungu ,2013) states that in hospitals,inventory management is set up to ensure an optimal stock level of medicine in general and vital medicine to enable satisfactory service that touches on human life unlike procurement in other sectors. The main objective of inventory management is to keep the inventory level of each element of the supply chain stable enough so as to satisfy the requirement of the customers by ordering products from its immediate supplier of the supply chain.(C. A. Garcia., *et* a*l,2012)*

**2.1.4 Classifications Of inventory**

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

**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.

**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.

**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.

**Speculative Stock:** is inventory held for reasons other than satisfying current demand. runs or in the case of agriculture products, inventory accumulated as a result of a growing season that limits availability throughout the year.

**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.

**2.1.5 Benefits of inventory**

Stock and Lambert (2001) state that 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 inventory serves basic benefits in the firm . Thus, are

**2.1.5.1 Protection from uncertainty**

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.

**2.1.5.2 Balancing supply and demand**

Seasonal supply and/ or demand may make it necessary to hold inventory. 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. Stevenson et.al ( 2009).

**2.1.5.3 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 It is simply the quantity of stock held to cover variations in demand or delivery delays.(Ofori-ayeh, 2016). 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 ( Esther ,2015)

**2.1.5.4 Economic order scale**

Inventory is required if a firm is to realized economies of scale in purchasing, transportation and manufacturing. (Esther ,2015) 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. 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 (Esther ,2015)

**2.1.6 Requirements for Effective Inventory Management for health care**

Cutting costs in hospital inventory management is always a point of highlighting for financial decision-makers at health care institutions. Below are three tips managers canuse tomaintain a lean supply chain and make inventory management strength of the institution. (JumpTech Blog, 2013).

Collaborate with physicians: New medical devices come out every year, doctors and nursesprefer certain instruments that allow them to be as productive as possible. Supply chain managers should push to create a team of physicians who can speak for everyone else at the facility and provide insight into what they need to properly care for patients and other items that are sitting in storage for months on end, according to an article for Healthcare Global (JumpTech Blog, 2013).

Invest in the right tools: Supply chain managers who are able to effectively keep track of their files, stay updated on contract pricing and validate prices against purchase orders usually have access to the right technologies. Cloud-based inventory management solutions allow hospitals to quickly see a return on investment because they don't need to purchase expensive hardware and the technology doesn't require a lot of training to use (JumpTech Blog, 2013). Reduce insignificant costs: Items that aren't vital can usually be eliminated to create a more streamlined supply chain. The Healthcare Global article stated that another way to cut costs is to replace devices and equipment from expensive name brands with items from more generic companies that have lower prices. These cost reductions could give supply (JumpTech Blog,2013).

**2.1.7 Inventory control system**

Inventory management and control process are very useful in determining the optimum level of inventories and finding answers to the problem of economic order quality, the re-order point and safety stock(Eunice,2011).

Eckert (2012) argues that the standard operating procedures (SOPs) for inventory control consists of a step-by-step process that is easy follow and understand by the employees. These steps are inventory receiving, storage and product rotation and warehouse and inventory security. These steps also serve to hold employees accountable for adhering to inventory control policy expectations. Creating and following an SOP is essential to managing inventory and controlling inventory costs. Even small organizations should not underestimate the power of an inventory-control SOP (Njoroge, 2015).

Inventory control is the process of managing inventory in order to meet customer demand at the lowest possible cost and with a minimum investment. Several objectives in inventory control such as minimize inventory investment; determine the appropriate of customer service level; balance supply and demand; minimize ordering cost and holding cost; also preservation of inventory control system ( Rachmania ,2012) .

**2.1.8Benefits for Inventory control in hospital**

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.(OSEI MENSAH, 2015)

inventory control 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 (2009), 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.

other major benefits of inventory control in healthcare is controlling the losses of medical supplies and equipment. Obviously, healthcare equipment such as surgical instruments, ultrasound machines and computers are expensive to replace. There is an instance in which some individuals may take advantage to take the equipment for personal interest (start up bizhub, 2011).

In this sense, it is necessary to create a precise planning of inventory control. Healthcare facilities and organizations can hire an expert to plan the inventory control. In this way, it is assured that everything will be given attention. However, there should be direct supervision of the healthcare organization’s head in conducting the inventory in order to determine the actual situation f the healthcare facility. Although it would require much of your time yet it would be for the advantage of the organization. This would not only spare the organization from the cost of supplies and equipment but inventory control can also help in carrying out effective healthcare services. Make sure that the inventory control system is effectively employed (startup bizhub, 2011).

**2.1.9 Inventory control 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:

**2.1.9.1 EOQ**

Economic Order Quantity (EOQ) which developed by F.W Harris in 1915 has been the most commonly used in practice. He mentioned that EOQ derives the optimal lot size for purchasing by minimizing the total operating cost. EOQ formula helps inventory manager to determine how many optimum products to buy. However, the classical EOQ model assumes such as:

constant demand, constant lead time, fixed order cost per order, instantaneous replenishment, no stocks out allowed, no demand uncertainty and quantity discount aren’t available. In order the above assumptions do not reflect in all situations, EOQ model must be modified in a real inventory system analysis ( Rachmania ,2012) .

Replenishment process also one of common practices in inventory control. Replenishment divided two types, which is continuous review and periodic review. Continuous review placed the order when the inventory declines to the re-order-point (ROP). While periodic review placed the order at regular periodic intervals. ROP also used in inventory control to seek suitable level for replenishment. Another model in controlling inventory is safety stock. Safety stock must be considered wherethere is an uncertainty in demand; also safety stock is needed during the replenishment lead time when there is a mismatch between actual demand and expected demand (Rachmania ,2012) .

**2.1.9.2. ABC/VEN analysis**

The ABC Inventory Control System is applied by those firms that have to maintain several types of inventories. Ideally, it is not desirable to keep the same degree of control over all the inventory types, since each vary in terms of its value of annual consumption (http://businessjargons.com,2017).

ABC/VEN-analysis used for the investigation represents the simple and effective method of analysis of medicine expenditures, identifying priority groups of medicines, the use of which, when improved, may provide the greatest clinical and economic impact.

ABC analysis provides an accurate and objective picture of budget expenditures on medicines.

VEN-analysis helps to prioritize between various medicines in their selection for procurement and use within a drug supply system. "When assigning VEN categories of medicines we used expert method",the assignment of categories was carried out by clinical pharmacologists after reviewing all available evidence on effectiveness, safety and cost-effectiveness compared to other drugs in this group". Sometimes there are insufficient funds to buy all the desired medicines. VEN analysis is a wellknown method to help set up priorities for purchasing medicines and keeping stock. Drugs are divided, according to their health impact, into vital, essential and non-essential categories.

VEN analysis allows medicines of differing efficacy and usefulness to be compared, unlike ABC and therapeutic category analyses, where only drugs of similar efficacy or action can be compared.

Vital drugs (V): potentially life-saving or crucial to providing basic health services

Essential drugs (E): effective against less severe but significant forms of disease, but not absolutely vital to providing basic health care

Non-essential drugs (N): used for minor or self-limited illnesses; these may or may not be formulary items and efficacious, but they are the least important items stocked Managing Drug Supply et.al (1997).

The items of high value are categorized as “A” and generally consists of 15%-25% of

inventory items; that accounts for 60%-75% of annual usage value. The firm keeps strict

control over these inventory items. The Category “ B”, is comprised of those items that are of relatively less value or has moderate importance and consists of 20%-30% of inventory items, that accounts for 20%-30% of annual usage value. A reasonable control is kept on the “B” category inventory items. The least important items of the inventory are categorized as “C”. It consists of 40%-60% of inventory items; that accounts for 10%-15% of annual usage value.

Due to a low value of these items, a simple or an ordinary control is kept on them.

Thus, the ABC Inventory Control System focuses on significant items of the inventory and hence is also called as “Control by Importance and Exception.” Since the categorization of the inventory items is done on the basis of their relative value, this approach is often known as “Proportional Value Analysis.” (http://businessjargons.com, 2017).

**2.1.9.3. JIT**

Just-in-time (JIT) is one of the most talked about topics in materials planning primarily due to its tremendous success in the context of Japanese companies. JIT or zero-inventory system is an idealized concept of inventory management wherein we are able to supply whatever material is required, wherever required, and whenever required just in time with 100 % supply assurances without keeping any inventory on hand. Obviously, from the resource management point of view, nothing can be better than this, as there are no inventories, no shortages, and no replenishment orders placed. However, this concept necessitates that the suppliers (vendors) are local and are 100 % dependable; orders splitting with small orders without additional transportation costs is feasible, i.e., frequent deliveries are economically viable, and the requirements are firmly known. This also calls for a single vendor base and having long-term

relationship with the vendor who has to be a quality vendor. This also requires that the vendor has sufficient capacity to supply anytime without passing on the costs of overcapacity to the buyer( Springer India, 2014).

**2.1.9.4. VMI**

A vendor managed inventory system (VMIS) helps in minimizing the company’s holding of stock and forces the distributor to maintain goods which in turn secures the level of service of the retailer. Zer and Wei (2006) argue that vendor inventory management can be described as supplier managed inventory or as continuous replenishment. According to Beamon et al (2006) the system is an initiative of partnering that encourages cooperation and the sharing of information between partners in a business. Davila et al., (2009) explain that bar coding is a type identification employed by the technology of capturing information. Bar codes are used in tracking items such as stock in retail, records, people and machines. Some control systems used for inventories apply this technology in order to make stock tracking automatic this improves on efficiency and thus supply chain performance (Njoroge, 2015).

**2.1.9.5 MRP**

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:

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

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

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

MRP tries to strike the best balance possible between optimizing the service level and minimizing costs and capital lock up ( Eunice,2011).

**2.1.10 Physical Inventory Management**

A physical inventory is a “wall-to-wall” count of your warehouse so map it in advance. Create a map indicating the location of every shelf, pallet rack and all other places where material is stored. One of the best ways to increase accuracy is to assign counters by area in the warehouse rather than product lines. (It is more difficult to account for misplaced material when counting by product line). Make sure all inventory is clearly identified and located in its assigned location. If you have multiple locations for the same items, consolidate them into as few locations as possible. By combining smaller quantities into larger aggregated units, you reduce their counting time. Preparation also includes a through clean-up. Clean up (lots of sweeping, aggregating and organizing) before you count (Smartturn,2014).

**2.1.11 Technology and counting materials**

How you choose to count may require investing in some technology such as bar code readers. If you choose the old school method of paper, you’ll still need to buy necessary supplies (suchas pencils, pens, markers, stickers, clip boards, calculators, scales, and the food and drinks to fuel the counters). Buy all of these items in advance.

Depending upon what material handling equipment you already have in your warehouse, you may also have to rent or borrow equipment such as pallet jacks,forklifts, and ladders. Automation during inventory can appreciably increase accuracy of your data entry, shorten counting time, decrease costs if you use outside auditors, and reduce your shut down period (Smartturn,2014).

**1. Bar code readers**

These are probably your best choice to automate your annual inventory. You can download data captured by readers directly into your computer system, eliminating opportunities for data entry clerical errors. If bar code is your technology of choice, make sure to affix bar code labels to all cartons. These labels should include an ID number, item description, unit of measurement, and quantity. The counter scans the item, and enters the unit of measure and quantity. Open cartons are manually counted, with the tally entered into a handheld computer(Smartturn,2014).

**2.Counting Card**

If you are using paper, you are either using count (index) cards or counting sheets. The typical count card method prior to the actual day is to place one in each bin that needs to be counted. Counters progress through their assigned counting areas and note quantities on each card. Providing each counter with a supply of blank cards enables them to note incorrectly stocked material which then can be quickly relocated to its proper location following the count(Smartturn,2014).

**3.Count Sheets**

This as old as old school gets. Up to 25-30 inventory items are listed on each page. Organize the items by location area and number the pages in the order they be counted. Use count sheets with caution if you have no other alternative because data entry errors tend to increase(Smartturn,2014).

**2.1.12 Types of Inventory counting**

There is eitherperiodic physical inventory count, which is usually an annual event, or a cycle count program. There are two ways

**1 Counting Once/Annual physical count**

On the surface, physical counts provide a measure of reassurance to your financial auditors. However, one-time annual physical counts are expensive, and can shut down production or shipping functions for one or more days. There are some important downsides to physical counts,which include the temptation to cut corners. In many ways, a one-time annual count

such as this often introduces new errors that may not be found for several months.

This is particularly aggravated if you are counting on a day-off like a Saturday and no one wants to be there. There is also the time consuming task of planning the physical inventory. You’ve got to take many things into consideration –how many counting teams are required,how many man-hours it will take to get the job done, how much overtime you are willing to impose on your team on their day off, how many recounts are required, how much equipment is needed, whether you have enough gear or material, how much food you will need to buy – and if that isn’t enough to keep you busy, have you planned out strategies for “no-shows” and do you have enough instructions for everyone to understand what to do?( [www.software4manufacturers.com,2009](http://www.software4manufacturers.com,2009)).

**2 Counting Many Time/ cyclic physical count**

In contrast, cycle counting, when properly implemented and managed, delivers more accurate inventory data. According to the American Production & Inventory Control Society Online Dictionary, cycle counting is: “An inventory accuracy audit technique where inventory is counted on a cyclic schedule rather than once a year.

A cycle inventory count is usually taken on a regular, defined basis (often more frequently for high-value or fast moving items and less frequently for low-value or slow moving items). Most effective cycle counting systems require the counting of a certain number of items every work day with each item counted at a prescribed frequency. The key purpose of cycle counting is to identify items in error, thus triggering research, identification, and elimination of the cause of the errors.” The elimination of errors is one of the benefits of auditing inventory accuracy and choosing to reconcile errors on a cyclical schedule rather than annual. Organizations that implement cycle counting increase the probability of highly accurate real-time merchandise inventory (Smatrturn,2014)

**2.1.13 Challenges of Implementing Inventory Management Practices**

Implementation of inventory management practices is coupled by a myriad of challenges especially by organizations in developing countries; Schonberger (2008) found that inadequate resources for implementing inventory management practices is major a problem to most firms. Companies fail to invest in inventory in technology and infrastructure lack effective inventory management systems. The firm should put proper infrastructure to maintain maximum and minimum levels of inventory. This enables the firm to save holding costs, stock out costs and lead time costs.

Song and Zipkin (2011) explains that lack of commitment by the top management of the organization is a major contributor to poor inventory management systems. In most cases the management fails to provide the required support to their subjects for effective implementation of inventory management practices for example the top management might fail to involve its supply chain partners in inventory management decisions. This brings about poor coordination, increased communication costs which negatively impact on the supply chain performance of the organization. Shapiro (2009) argues that if the management fails to provide facilities and resources required to effective manage inventory in the organization.

**2.2 Empirical Literature Review**

In this section the researcher reviews the works done by other researchers which are in one way or another related to the topic under discussion. It aims at relating the theoretical literature reviews with the findings of the researchers.

**2.2.1 Studies from Foreign Countries**

A study conducted in German by Akintonye (2014) on The effect of inventory management on performance of German Service firms, The findings revealed that inventory management led to improved performance however The study limited itself to service firms. A study conducted in China by Jianling et al( 2010) on the Analysis of inventory Management in the China enterprises reveals that, in order for organizations to maintain exuberant competitive advantages and higher profitability, they need to pay more attention on stocks control system. He adds that organizations need to adopt effective stocks control methods in their internal control system and implement scientific stocks control ways.

The study by Nyabwaga et al 2013, titled the inventory management practices and

Business performance for small scale Enterprises (SSEs) in Kenya revealed the

following:-

In the first research objective sought to determine the inventory management practices of SSEs, respondents were owners / managers of SSEs whom were asked to indicate their frequency of inventory budgeting, review of inventory levels and review of shelf-space allocation. The results showed that SSEs often prepared inventory budgets and reviewed inventory levels as mean 3.60 and 3.89 respectively. The SSEs however reviewed inventory levels more than they prepared inventory budget. These findings suggest that the inventory practices: inventory budgeting and

review of inventory levels have been well understood by the SSEs’ owners/managers and therefore they are likely to be in a position to effectively track down item quantities and balance availability with customer demand.

Demeter and Matyusz (2011) assessed the impact of lean practices on inventory turnover and suggested that firms that have widely applied lean practices have higher inventory turnover than those that do not rely on manufacturing. However, there may be significant differences in inventory turnover even among lean manufactures depending on their contingencies. They investigate various contingency factors, such as production systems, order types and product types influence the inventory turnover of lean manufacturers by use of cluster and correlation analysis to separate manufacturers based on the leanness. Lapide (2010) on his research titled Effectiveness of inventory management in service firms . The study confirmed that firms invested in inventory technology achieved reduced costs and improved efficiency though The study did not address inventory management practices. Onyango (2011) studies on Supply Chain Management Practices and Performance in Cement Industry in Kenya the finding of the researchers was supply chain management led to minimal inventory levels, improved partnerships and communication and demand forecasting but again The study did not focus on inventory management practices. The study by Kitheka (2012) on Inventory management automation and the performance of supermarkets in western Kenya the study finds There was a positive linear relationship between inventory management automation and the performance of supermarkets. Though The study was limited to supermarkets only.

Mungu(2013) on his research titled Supply Chain Management Practices and Stock Levels of Essential drugs in Public Facilities in Bungoma East Sub County The study concluded that inventory management practices ensures optimal stock levels ,The study was limited to stock levels of essential drugs in public hospitals. In Malawi the Principal Secretary of Health Ministry et.al (2013) state that drugs stock outs was amounting to 95%. It was noted that causes were theft, tedious and bureaucratic process of procuring drugs and parallel system to purchase medication for treatment programmes. The identified causes of stock outs in this case are within the stocks control system and they are revealing the weakness of the system.

## 2.3. Conceptual Framework

## The use of conceptual framework helps to apply concepts that relate to one another to explain the research problem. The conceptual framework adopted for this study shows that health commodity inventory management practices and challenges.

inventory control techniques

flow of stock and information management

**INVENTORY MANAGEMENT PRACTICES AND CHALLENGES**

mechanisms of inventory record & counting

challenges confronting on the management of inventory

internal control systems employed to overcome the challenges

INDEPENDENT VARIABLES DEPENDENT VARIABLE

Constructed by: Hawi shentema

# CHAPTER THREE

# METHODOLOGY OF THE STUDY

This chapter comprises the research design, population, sample size and sampling procedures, data collection instruments and data analysis techniques. In addition, the researcher presented the reliability and validity of the instruments used, as well as ethical consideration.

## 3.1. Research Design

Research design is the basic framework which provides guidelines for whole research. The research design is the conceptual structure within which research is conducted; it constitutes the blueprint for collection, measurement and analysis of data. According to Kothari (2004) research design refers to arrangement of conditions for collection and analysis of data in a manner that aims to combine relevance to research purpose with economy in the perspective. As such, the design includes an outline of what the researcher was doing from writing hypothesis and its operational implications to the final analysis of data. This study will employ case study design. Because a single case (Jimma specialized hospital) will extensively studied in a specific context in a specific period.

## 3.2 Sources and Type of Data

In order to generate relevant data for this study, both primary and secondary data sources  
will consider. The primary data are those which are collected afresh and for the first time and thus happen to be the original in character. This means that the information resulting from it is more consistent with the research questions and purpose. In this study, the primary data will be collect through orderly designed questionnaire and semi-structured interview, observation. Secondary data will be obtained from external sources such as the internet, Journals other documentations. The purpose of sourcing for secondary data will help in the formation of problems, literature review and construction of questionnaire.

**3.3 Study Population**

A study population is the entire group of people to which a researcher intends the results of a study to apply (Aron & Coups, 2008).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 will consists of all laboratory technicians; all store workers, all pharmacy workers and heads of store, laboratory and pharmacy. Management in Jimma specialized Hospital.

**3.4 Sampling Techniques and Sample Size Determination**

The sampling techniques to use in this study will be purposive sampling techniques. Purposive sampling technique will be used to select staff and departmental personnel who acquire and manage stock at the hospital. Both quantitative and qualitative data collection techniques will be used. The sample size for the study will be 124 employees. The selection of the sample will base on purposive sampling techniques. Purposive sampling is selected by some arbitrary method because it is known to be representative of the total population, or it is known that it will produce well matched groups. The idea is to pick out the sample in relation to some criterion, which is considered important for the particular study. A total of 124 questionnaires will administer in order to ascertain the perceptions of both staff and ill management with respect to inventory management by Jimma specialized hospital. In this study, a sample size of 124 will 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

**Table 3.1 Sample size**

|  |  |  |
| --- | --- | --- |
|  | **Functional/Department** | **No. of Targeted Respondent**. |
| 1 | Laboratory technicians | 57 |
| 2 | Pharmacists | 57 |
| 3 | Store keepers | 7 |
| 4 | Heads of laboratory pharmacy & stores | 3 |
|  | Total | 124 |

***Source: Calculated from Jimma university specialized hospital***

## 3.5. Data Collection Instruments and Procedures

Zikmund (2003) defines data collection tools as the instruments used to collect information in research or the methods employed to collect research data. The choice of the method to use is influenced by the nature of the problem and by the availability of time and money (Cooper & Schindler, 2006). In this study closed ended questionnaires, semi-structured interview and observation will employ to gather information from respondents.

### 3.5.1. Questionnaire

For gathering primary data, closed ended questionnaire will develop and distributed to the respondents. The questions that will be used in the questionnaire are multiple-choice questions and five-point likert scale type questions. The reason for using questionnaire is responses are gathered in a standardized way, it is more objective, certainly more than interviews. This method will use because it is reliable, simple; need minimum cost and the required data will collect with a minimum number of errors. Generally it is relatively quick to collect information using a questionnaire.

### 3.5.2. Interview

Semi-structured interview will carry out by the researcher as data gathering instrument to secure important and in-depth information from some selected laboratory, pharmacy and store department heads .This kind of interview collects detailed information in a style that is somewhat conversational. The researcher used this method because it is useful to investigate issues in an in depth way and identify challenges of inventory control practices. The researcher believes that interviewing those selected departments head will strengthen the ideas and information gathered from the overall respondents of this study

**3.5.3 Documentary sources**

Documentary sources contain data that will collect and compiled for other purposes. The secondary sources consist of readily available information and report whose data may be used by researchers for their studies. This method will use to collect secondary data by studying the available documents within the organization, i.e. reviewing records for more information.

**3.6**  **Validity and Reliability**

**Validity of the study**

To ensure validity of a study, a pilot study will be conducted .The term “pilot study” was defined by Welman et al. (2011:148) as a preparatory dress rehearsal for the actual study. The purpose of a pilot study is to identify possible flaws in the measurement procedures such as ambiguous instructions and inadequate time limit of the intended study. Secondly, a pilot study identifies unclear or vaguely formulated statements.

**Reliability**

## In this study, a reliability test will be performed in order to see whether the study was given similar results if the same study is repeated. Reliability refers to the degree to which the instrument was given the same results if a survey is repeated on the same sample Parasuraman, Grewal & Krishnan et.al( 2007: 133). To ensure reliability of this study, a Cronbach’s Alpha will be perform as a measure to see if the study repeats the same results if the

## 3.7 Data Processing and Analysis

Both primary and secondary sources of data will be analyzed using qualitative and quantitative methods. Data analysis will be made through a combination of both descriptive and inferential statistics. Questionnaires will first collect, edited, coded and entered into computer software called Statistical Product and Service Solutions – SPSS version 20 Package for Social Sciences

### 3.7.1 Descriptive Analysis

Then descriptive statistics such as percentage, frequency distributions mean and standard deviation, charts and graphs will use to analyze data obtained through close-ended questionnaire.

### 3.7.2 Inferential Analysis

According to Sekaran (2000:401), inferential statistics allow to infer from the data through analysis the relationship between two or more variables and how several independent variables might explain the variance in a dependent variable. Pearson Correlation Coefficien**t** statistical methods will use in this study.’

**3.8 Ethical Consideration**

Ethics refer to norms governing human conduct which have a significant impact on human welfare. Ethics in research has to do with the responsibility of researchers to be honest and respectful to all individuals who are affected by the research studies or reports of the results of the studies (Gravetter & Forzano, 2006). To ensure that ethical principles are upheld, a research permit/introductory letter will obtained from the Research and Postgraduate Office of the College of Business and Economics of Jimma University before embarking on the data collection. The respondents will inform of their rights to participate or not in this study. Information provided by respondents will not transferred to a third party or will not used for any other purpose other than academic. Thus, they will assure of utmost confidentiality and anonymity of their responses. In this regard, the names of the respondents will not disclose.

**Chapter four**

**Cost and time budget**

**4.1. Tentative Time Schedule**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| No | Activity | Duration of the work | | |
| Dce-jan . | FEB-MAR | April-may |
| 1 | Proposal Writing and submission | √ |  |  |
| 2 | Data Collection | √ |  |  |
| 3 | Literatures survey |  | √ |  |
| 4 | Data analysis |  | √ |  |
| 5 | Report writing |  |  | √ |
| 6 | Presentation |  |  | √ |

**4.2. Budget**

|  |  |  |  |
| --- | --- | --- | --- |
| **No** | **Item** | **Quantity** | **Cost** |
| 1 | **Supplies**   * Computer paper * Writing pad * Pen 5 pieces | 4x150 .00  3x40 .00  5x6.00  Sub total | 600 .00  120 .00  30 .00  **750 .00** |
| 2 | **Personal**   1. Per diem for 20 days 2. Per diem for field assistance for 20 days | 20x100.00  20x100.00  Sub total | 2,000 .00  2,000 .00  **4,000 .00** |
| 3 | **Transportation**   1. Travel to some in accessible site by taxi and local transportation (Jimma) | Sub total | 700 .00  **700 .00** |
| 4 | **Miscellaneous**   1. Laminating and scanning 2. Photo copy 3. Computer service 4. Printing | 6x26bir  250x1.00  Sub total | 156 .00  250 .00  600 .00  215 .00  **1,221.00** |
| 5 | Contingency |  | **1000 .00** |
| **Grand Total** | | | **7,671.00 ETB** |

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**Dear all Subject:**

This questionnaire is prepared to collect data from the respondents in order to **assess health commodity inventory management practice and challenges at Jimma university specialized hospital.** I am a student of Jimma university College of Business and Economics Department of Logistics and Transport Management. First of all I would like to forward my heartfelt gratitude and respect to you for administering this questionnaire honestly and responsibly. The questionnaire is designed to collect the necessary information to undertake a research on the topic **“assessment health commodity inventory management practice and challenges at Jimma university specialized hospital.** for the partial fulfillment of the requirement of the degree of Masters of Logistics and Transport Management. The information that you provide will remain confidential and will be used for the purpose of this research only.

Thank you in advance for your cooperation

**Questionnaire**

Please give answers in the spaces provided and tick in the box that matches your response to the questions where applicable.

**Part I**-**Respondents profile**

1. Gender?

Male Female

2. Age?

Less than 20 years

21 -30 years

31-40 years

41-50 years

51years& above

3. Marital Status:

Never married Married Divorced Separated Widowed

4. What is your level of education?

Certificate Diploma 1st Degree Master’s degree

Other, please specify……………………………………..

5. Profession:

Pharmacy profession Laboratory profession Nurse /Health officer

Other

6. Position of staff are you?

Management Senior staff Junior staff

7. Which department of the hospital do you work?

Stores Pharmacy Laboratory Ward Management

8. How long have you worked for the hospital?

Less than 1 years 1 – 3 years 4 – 6 years

7 – 9 years 10 years and above

|  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| PART II : INVENTORY MANAGEMENT PRACTICE | | | | | | | | | | |
|  | Strong Disagree | Disagree | Neutral | Agree | | | Strong  Agree | | | |
|  | 1 | 2 | 3 | 4 | | | 5 | | | |
|  | Please the extent to which you agree with the following as  practised at Jimma university specialized hospital | | | | | | | | | |
|  | **Inventory control technique** | | | | 1 | 2 | | 3 | 4 | 5 |
| 1 | The hospital maintain Maximum, Minimum, and Re-order  levels for health commodities | | | |  |  | |  |  |  |
| 2 | The hospital established procedures for placing emergency  Orders | | | |  |  | |  |  |  |
| 3 | The hospital uses of periodical replenishment of stocks | | | |  |  | |  |  |  |
| 4 | The hospital practices vender managed inventory systems | | | |  |  | |  |  |  |
| 5 | Long – term agreements between the hospital and its suppliers | | | |  |  | |  |  |  |
|  | **Vendor Managed Inventory System** | | | |  |  | |  |  |  |
| 1 | The hospital practices vendor managed inventory system | | | |  |  | |  |  |  |
| 2 | The hospital collaborates with its suppliers in system upgrade | | | |  |  | |  |  |  |
| 3 | The hospital uses automatic stock tracking | | | |  |  | |  |  |  |
|  | **Enterprise Resource Planning** | | | |  |  | |  |  |  |
| 1 | |  |  | | --- | --- | | The hospital uses Enterprise Resource Planning system | | |  |  | |  |  | | | | |  |  | |  |  |  |
| 2 | The hospital has an integrated information sharing system | | | |  |  | |  |  |  |
| 3 | The hospital maintains a database for all its suppliers | | | |  |  | |  |  |  |
|  | **Just In Time** | | | |  |  | |  |  |  |
| 1 | The hospital uses JIT stock control system | | | |  |  | |  |  |  |
| 2 | The hospital uses the JIT system to eliminate waste | | | |  |  | |  |  |  |
|  | **ABC Analysis** | | | |  |  | |  |  |  |
| 1 | The hospital uses ABC analysis to classify items according to their stock value | | | |  |  | |  |  |  |
| 2 | The hospital uses ABC Analysis to reduce stock holding cost | | | |  |  | |  |  |  |
|  | **E-Procurement** | | | |  |  | |  |  |  |
| 1 | |  |  | | --- | --- | | The hospital comply with e-procurement systems (IFMIS module) | | |  |  | | | | |  |  | |  |  |  |
| 2 | There is improved connectivity with a wide range of suppliers | | | |  |  | |  |  |  |
|  | **II Flow Stock &information** | | | |  |  | |  |  |  |
| 1 | Separation of damaged or expired products and removal from stock | | | |  |  | |  |  |  |
| 2 | Maintain separate records for all health commodities | | | |  |  | |  |  |  |
| 3 | There are list of essential health commodities | | | |  |  | |  |  |  |
| 4 | Storage area is secured with a lock and key, but is accessible during normal working hours; access is limited to authorized personnel | | | |  |  | |  |  |  |
| 5 | Separate location for quarantine commodities | | | |  |  | |  |  |  |
| 6 | **IFMIS** Integrated Financial Management Information System Formats and Job Aides are available at the JUSH | | | |  |  | |  |  |  |
| 7 | Head of department have determines the quantity of  commodities to be ordered | | | |  |  | |  |  |  |
| 8 | Head of department of pharmacy have responsible for  procurement | | | |  |  | |  |  |  |
| 9 | The hospital have standard guide line for health commodities storage and management | | | |  |  | |  |  |  |
| 10 | Products are stored and organized in a manner accessible for first-to-expire, first-out counting and general management | | | |  |  | |  |  |  |
|  | **Physical Inventory management** | | | |  |  | |  |  |  |
| 1 | Management monitor and approve the write-offs of obsolete and inactive inventories | | | |  |  | |  |  |  |
| 2 | The hospital uses automatic stock tracking | | | |  |  | |  |  |  |
| 3 | Adequate detailed written inventory instructions and procedures exist | | | |  |  | |  |  |  |
| 4 | Obsolete, expired, or damaged inventories properly identified and segregated | | | |  |  | |  |  |  |
| 5 | The hospital uses Electronic Data Interchange Technology  (EDI) | | | |  |  | |  |  |  |
| 6 | Inventory procedures give appropriate consideration to the  location and arrangement of inventories | | | |  |  | |  |  |  |
| 7 | Adequate procedures in place to identify inventory counted,  ensure that all items have been counted, and prevent double counting | | | |  |  | |  |  |  |
| 8 | Inventory records reconciled (and differences explained) to  Advantage reports on a regular basis (Current inventory is  adjusted at year-end by fiscal year-end physical counts.) | | | |  |  | |  |  |  |
| 9 | Management have review the reconciliation of physical inventory counts to the inventory records | | | |  |  | |  |  |  |
| 10 | Keep one location in the same health commodity item | | | |  |  | |  |  |  |
|  | **CHALLENGES OF INVENTORY MANAGEMEMENT PRACTICES** | | | |  |  | |  |  |  |
| 1 | Lack of commitment by top management | | | |  |  | |  |  |  |
| 2 | Failure to invest in modern technologies | | | |  |  | |  |  |  |
| 3 | Incompetent staff | | | |  |  | |  |  |  |
| 4 | Poor record keeping | | | |  |  | |  |  |  |
| 5 | Poor infrastructure | | | |  |  | |  |  |  |
| 6 | Lack of proper training | | | |  |  | |  |  |  |
| 7 | Losses of health commodities occurs through theft | | | |  |  | |  |  |  |
| 8 | Bureaucratic process in procurement | | | |  |  | |  |  |  |
| 9 | Unreliable suppliers | | | |  |  | |  |  |  |
| 10 | Delays in delivery of drugs leading to insufficient inventories | | | |  |  | |  |  |  |
| 11 | Insufficient funds for procurement | | | |  |  | |  |  |  |
| 12 | Experience for overstocks of health commodities | | | |  |  | |  |  |  |
| 13 | Experience for expire of health commodities | | | |  |  | |  |  |  |
| 14 | Experience for stock out of health commodities | | | |  |  | |  |  |  |

List any other areas for improvement in supply chain management

………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………

**Interview questions**

Q1. Does this facility applied any methods for periodic replenishment of stock?

Q2. Are there long – term agreements between the hospital and its suppliers? If yes who is the supplier

Q3. Who is responsible for procurement & is that proper person? Why?

Q4. Are there stocks out of health commodities at JUSH? If yes what are the reasons of stock out &which type of commodities are stock out?

Q5. Are there count physical inventory at regular basis

Q6. What is doing to over face the challenges of inventory management in JUSH

THANK YOU