EFFECTS OF INVENTORY MANAGEMENT PRACTICES ON SERVICE DELIVERY (CASE IN SOME SELECTED HOSPITALS IN SOUTH WESTERN ETHIOPIA).

A Thesis Submitted to the School of Graduate Studies of Jimma University in Partial Fulfillment of the Requirements for the Award of the Degree of Masters of Business Administration (MBA)

BY:

ABATEALATO ADEKO

JIMMA UNIVERSITY

COLLEGE OF BUSINESS AND ECONOMICS

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ABATEALATO ADEKO

Under the Guidance of

WENDIWESEN SEYUM (Ast. Prof.)

And

MR. ABERA JALETA

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DECLARATION

I hereby declare that this thesis entitled "*Effects of inventory management practices on service delivery: A Study on some Selected Hospitals in South western Ethiopia",* has been carried out by me under the guidance and supervision of Wendewesen Seyum (Ast.Prof.) and Mr.Abera Jaleta. The thesis is original and has not been submitted for the award of any degree or diploma to any university or institutions.

Researcher's Name	Date	Signature
_____	_____	_____

CERTIFICATE

This is to certify that the thesis entitles "*Effects of inventory management practices on service delivery***:** *A Study on some Selected Hospitals in South western Ethiopia",* submitted to Jimma University for the award of the Degree of Master of Business Administration (MBA) and is a record of for research work carried out by Mr. *Abate Alato Adeko,* 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 or diploma.

Main Adviser's Name	*Date*	*Signature*
_____	_____	_____
Co-Adviser Name	*Date*	*Signature*
_____	_____	_____

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ABSTRACT

The purpose of this research study was to examine the effects of inventory management practices on Hospital service delivery: the case of some selected Hospital in South west Ethiopia. The research objectives were to examine the challenges in storage management practices; to study the inventory quality maintenance management practices and to study access to qualified personnel at the hospital. The research study was conducted through descriptive research design and mixed research approaches used. The research study adopted multi-stage sampling techniques through which respondents from three hospitals were selected. Sample of 256 employees were selected and respondents from each unit within each Hospitals were selected using proportional stratified sampling technique. Data was collected using self-administered questionnaires and interviews. Data analysis involved statistical computations for averages, percentages, and standard deviation analysis. The data was analyzed based on descriptive and inferential statistics in which SPSS version 20 was used and multiple linear regression model applied. The research study established that effective storage management practice, inventory record management, access to qualified personnel and quality maintenance at storage were statistically significant with P-value <0.05 and access to qualified personnel has more effect on hospital service delivery relative to other inventory management practices studied. The study found that hospitals are not effective in practicing the major inventory management practices such as having access to qualified personnel, using technology supported information management, storage management which has significant effects on service delivery. Finally, from the study it can be concluded that the main challenges of the hospital in managing inventory were: sufficient storage area to store all the needed items, lack of technology support in inventory management, lack of management support and lack of proper training about inventory management were the main challenges that almost all facility faced. Based on these findings, the study recommends that having sufficient storage, having management support and follow up, use of technologies and training for better management of inventories as these reduced inventory management problems reduce wastage and improve quality health care delivery.

Key words: Record management, quality maintenance, store management, qualified personnel, Service-delivery

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ACRONYMS AND ABBREVIATIONS

ANOVA - Analysis of Variance

APICS -American Production and Inventory Control Society

EFMHACA- Ethiopian Food, Medicine and Health-care Administration and Control Authority

EOQ- Economic Order Quantity

FEFO -First expire first out BC Always Better Control

FMOH- Federal Ministry of Health

GSH-Gebrestadikshawo hospital

ITR -inventory turnover ratio

JIT - Just-in-time

MTUTH-Mizan Tepi university teaching hospital

NGO- nongovernmental organizations

SPSS -Statistical Package for Social Sciences

TGH-Tepi general hospital

USAID-United States Agency for International Development

VMI -Vendor Managed Inventory

WHO- World Health Organization

CHAPTER ONE
1. INTRODUCTION

1.1. Background of the Study

Inventory management involves all the policies, procedures, and techniques used to maintain the optimum amount of each item in stock. It involves ordering, receiving, storing, issuing, and reordering items. Stock and inventory management are the heart of the medicines supply system. Stock control involves monitoring the supplies by various reporting methods. By systematically monitoring and controlling stock, appropriate orders can be prepared that optimize limited resources and minimize stock-outs and expiry,(MOMHSM, 2012).

Inventory represents the biggest single investment in assets for many organizations. In most organizations, clients became conservative in high level of commodity availability, that the result has mostly been higher inventory levels,(Narkotey,2012).

Material and supplies are a part of inventories that a company carries for the aim of sale or as inputs to production process; therefore, good inventory management system enables the organization to stay track on their inventory level as low as possible at minimum cost. Choosing the proper method and appropriate system enable the corporate to be more efficient,(Fariza A.,2015).

Managing stock effectively is very important for any organization. Management of basic health commodities concept is growing because it is extremely important in various countries. Managing pharmaceutical products and materials up to their point of use in health facilities is a crucial task so as to supply quality health-care. Running a hospital is not any exception because without enough stock, health services to patients will come to a halt. Without adequate pharmacy inventory management practices, hospitals run the chance of not having the ability to supply patients with the foremost appropriate medication when it's most needed, (Wodajo, 2018).

Susan Wauna *(2015) says that, inventory management involves a process of efficiency overseeing the constant flow of units into and out of an existing inventory. This process usually involves controlling the transfer in of units so as to stop the inventory from becoming too high, or dwindling to levels that would put operation of the corporate into jeopardy. Competent inventory management also seeks to manage the prices related to the inventory, both from the

attitude of the overall value of the products included and also the tax burden generated by the cumulative value of the inventory.

Inventory is denoted because the sum of products or materials held during a store or the other place at a selected time. So, inventory managers are concerned with cost, criticality and contribution of their holdings, ordering and maintaining inventory has several costs. These include capital costs, administrative cost, storage charges, shrinkage, taxes and insurance. Most of those vary directly with the common quantity of inventory held. Obvious strategies for cost avoidance would be reduce or eliminate inventories. That probably cannot be tired very many cases. Most Firms within the u. s. of America, west and Eastern Europe determine the extent of inventory necessary to produce a suitable level of customer service and manage that size of inventory as efficiently as possible, (Kinyua, 2014).

Inventory stored during a hospital is classified into critical and non-critical products. A hospital has to have duplicate arrangements for critical products and equipment used for operating patients. When a critical product goes missing, lot of your time is wasted on product tracking. This event can disrupt normal functioning of the system and result in reduced utilization of resources like clinicians and reduced efficiency of the system. Since this is often not a suitable practice for any typical hospital, methods are wont to avoid such a scenario. For a non-critical product hospital may follow just in time principle. A hospital may directly order such products from an external supplier on demand. The savings from supplies may be directed towards improving quality of patient care, (Siddharth Garg, 2018).

Inventory Management is that the core of pharmaceutical supply management. Inadequate controls of inventories may result in both under and overstocking of things. An efficient inventory management system plays a vital role in reducing the associated costs across different stages of the provision chain system. One goal of inventory management is to realize an affordable balance between holding costs, on the one hand and buying and lack costs, on the opposite. Proper stock management and drug control are vital for the successful management of the health care facility as an entire. Stock management involves various levels and aspects, including the ordering of stock, receiving and storage of stock within the health care facilities, issuing of the stock, and therefore the reordering thereof, consistent with the particular levels used for inventory management. If stock is managed inadequately it may lead to wastage of

essential drugs and financial resources, further as a decrease within the quality of care rendered to the patient, (Management science for health, 2012).

USAID | Delivery Project (2016) Efficient laboratory and medical commodities management ensures that hospital have an up to now inventory count in any respect times, giving good customer service, giving accurate information to customer and improve image of the hospitals. Robust inventory management system allows managers to receive real time information on inventory. This can assist management to accurately made informed decisions, anywhere, anytime and save time and value used for labor and thus acting on inventory management properly.

The availability of medicine and medical supplies is critical to the success of any health-care program. Drugs and medical supplies are a part of the ultimate link between patients and health services. They play a key role in prevention, treatment and care program, and so as to sustain these services, numerous medical commodities are required; a reliable and consistent supply of those commodities to health facilities the least bit levels of the health system will determine the success of those nationwide programs, (Semahegn, 2017).

Access to health care, which incorporates access to essential drugs, is an element of the fulfillment of the elemental right to health. the availability of complete health-care service by health facilities necessitates the provision of safe, effective and affordable medicines and related supplies of the desired quality, inadequate quantity the least bit time,(Legese, 2017). Today, as nations strive to form medicines available and affordable to any or all citizens, countries have adopted a national drug strategy. These strategies specify the goals set by government for the pharmaceutical sector, their relative importance and therefore the main action needed for attaining them.

The main goal of health-care is to deliver quality care to their patients. To perform this task effectively, the hospital has to confirm the supply of products needed to administer carei'er have products where they have them after they are needed. The concept of seven R's also called seven rights of fulfillment,(Isabel &Nabais, 2009) are useful to make sure product availability and quality service during a supply chain system. The rights can encourage be very effective in making inventory decisions with required information. The rights act as a checklist to make sure the inventory management system is functioning as desired. Inventory management

practices in health-care segment is harder if compared with the remainder of the industries thanks to patient needs accurate service, particularly the sufficient medical supply, (Fariza A.et al, 2015).

According to Ethiopian good storage practice Pharmaceutical products is defined as "any product intended for human use, presented in its finished dosage form, which is subject to manage by pharmaceutical legislation in either the exporting or the importing state and includes products that a prescription is required, products which will be sold to patients without a prescription, biological and vaccines", (Wodajo A.et al, 2018). Previously different studies has been made on inventory planning, inventory controlling, inventory management techniques, inventory funding, but their finding and conclusions aren't uniform. additionally, to the above variables, also the researcher wants to feature other variables including (qualified personnel, quality maintenance of storage), and additionally lack of research paper prepared on the study area has therefore led to the researcher to attention the research studies on an assessment of effects of Inventory management practice on service delivery in selected hospitals in south western Ethiopia.

1.3. Statement of the Problem

As cited by Semahegn (2017) define inventory management is that 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 so as to stop the inventory from becoming too high, or dwindling to levels that would put the operation of the corporate into jeopardy. Proper inventory management also seeks to regulate the prices related to the inventory, both from the angle of the full value of products included and also the tax burden generated by the cumulative value of the inventory.

Inventory management entails all the unified management of these internal activities related to the acquisition, storage, issue, use and internal distribution of inventory employed in the assembly and provision of services. It's the activity of determining the speed, quantities and also the procedures of materials to be stocked in a corporation and regulation of receipts and problems with those stocks. Many firms have had a persistent problem in establishing the correct inventory levels to attain a balance between responsiveness and efficiency of the organizations, (Bosibori Isoe, 2017).

In Ethiopia many health facilities faces various challenges like an inadequate supply of quality and affordable essential pharmaceuticals, poor storage conditions and weak stock management resulted in high levels of waste and stock outs, (Kontuš, 2014)).A "sick" inventory arise because of individual deciding 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 because of lack of awareness or knowledge about of scientific stock keeping and warehouse practices. In developing countries like Ethiopia, where budget is tight overstocking of certain pharmaceutical items may block a considerable portion of the medication budget, leading to insufficient funds for procuring other more important perhaps lifesaving medicine.

The efficient operation of any organization demands could be a planned flow of materials to service its activities. This may achieve success when the organization holds stock of materials it uses. Hospital was a service rendering institution and one that keeps stock to facilitate operations. To satisfy the expectations of the people (patient), one can think about the way to control inventory within the hospitals to make sure availability of medical supplies at the

proper time and at their right quantity in other to avoid expiry of medication and misuse of the supplies. The resources are limited and hence the requirement to seek out the possible and effective ways of reducing cost of purchase and therefore the cost of holding inventory in health sector, (Management Science for health,2010).

According to Management Science for health, (2010) Health care organizations must provide 24-hour services and accordingly, the necessity to stay stocks of certain medicines and other medical supplies to be able to discharge their duties effectively. This thesis was aimed to concentrate on assessment the practices of health commodities inventory management at selected hospital in south western Ethiopia. Huge amount of inventory, stock out, huge surplus inventory and also the lack of effective inventory management practices which has stock out management, inventory record accuracy, effective inventory management model and use of a system approach to inventory management, especially as a way for addressing continuous service or operations. Supported these, it was the aim of this studies to assess the effectiveness of inventory Management practices on the service delivery of hospitals.

Studies conducted in Nairobi, Kenya by Susan Wauna *(2015), in its finding showed that the majority Organizations weren't yet adopted internal control management tools and systems in purchasing and provide hence they're facing the challenge of stock out cost.

Article made in Nepal indicated that proper record keeping of inventory, financial resources (funding), and skill possessed by store staff and bureaucratic procurement procedure positively effects on the effectiveness of inventory management. Proper inventory record, store information kept during a proper manner incorporates a positive effect on service delivery,(Bhandari, 2017).

According to Wodajo (2018), research conducted in Ethiopia, St. Mary's University stated the issues confronting while managing pharmaceuticals items observed in health facilities facing both private and government hospitals was mainly ineffective use technology for record keeping.

The other studies conducted in Ethiopian airline by (Baye,2017), whose finding on his research shows that inventory management practice has significant effect on operational performance organizations in Ethiopia

The above and other studies have focused on concluding research on effective internal control procedures, Scientific stock keeping, importance of internal control management on organization performance, Advanced technological inventory controlling, Inventory management practice but its conclusions were not uniform and their finding were not supported by inferential results and model was not used, leaving out the results of inventory record management system, inventory storage management which has effect on service delivery (specifically on service delivering organization) and also the quality maintenance problems with inventory managements; supported above studies, it is evident that though studies are done on inventory management, limited studies are done on the effect of inventory management practices on service delivery of hospital in Ethiopia but did not addressed the necessity to assess the effect of inventory management practices on service delivery.

In light of the above-mentioned fact and additionally lack of empirical studies were conducted on the study area has therefore led to the researcher to attention the research on an assessment of effects of Inventory management practice on service delivery at Mizan Tepi University Teaching Hospital, Gebretsadikshawo Hospital and Tepi General Hospital, Southwest Ethiopia.

1.4. Objectives of the Study

1.4.1. General Objective

The main objective of this research study was to assess the effects of inventory management practices on service delivery at some selected hospital in south western Ethiopia.

1.4.2. Specific Objective

The specific objectives of the study were:

1. To study Challenges in storage management practices encountering in the study area.
2. To assess the access qualified personnel in its inventory management at the Hospital.
3. To assess inventory quality maintenance issues at the study area.

1.5. Research Questions

1. What are challenges in storage management practices are in the study area?
2. Does the Hospital have qualified personnel in its inventory management?
3. What about the inventory quality maintenance issues at the Hospital?

1.6. Significance of the Study

This study was designed to address or assess the effect of inventory management practice at selective Hospital, in south western Ethiopia. It will find out the effect that the inventory management practice has on service delivery.

The goal of Health-care inventory management is to provide the highest possible level of services at the increased customer satisfaction and reduced interruption of service.

This study informs various inventory managers in understanding how inventory management if properly done can immeasurably reduce organizational costs and improves the overall organizational service performance and help to achieve strategic objectives.

The study is also essential to provide additional findings on the issue and can also be used as groundwork to do other related research issues for motivated researchers.

The researcher would hope that the findings of this study would enlighten the inventory management practitioners in health facilities on the effect of inventory management and its importance in improving the service delivery and also would help the inventory mangers in decision making concerning the suitable level of inventory to be kept in the hospital so as to ensure the patients are accorded appropriate service level while ensuring overall efficiency in the hospital is maintained.

1.7. Scope of the Study

This study focused on the effect of inventory management practice at selected Hospitals in south western Ethiopia. The management of medicines and other pharmaceutical products would be covered by this study. The data would be gathered from Pharmacy professionals, staff and Store keepers with specific focus on those responsible for inventory managements and pharmaceutical stock control function in the hospital.

However, the scope of the study would be delimited by geographically, conceptually and methodologically. Geographically; the study was limited to some selected Hospitals in south western Ethiopia, conceptually; the study would use limited variables to assess the inventory management practice applied and methodologically; the study was more of limited on descriptive statistics techniques and supported by inferential statistics to analyze the data.

1.9. Organization of the Study

Generally, the study was organized into five chapters. Chapter one would start with general introduction about inventory and inventory 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 organization of the study. Chapter two would review related studies and literature on inventory management practice and service level in service organizations. Chapter three provides the methodology used in the study and the organization 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 of the study.

CHAPTER TWO
2. RELATED LITRATURE REVIEW

2.1 Inventory management concepts

Inventory: These are the stores of materials they keep until needed,(Semahegn, 2017) Inventory or stock (in common terms) is considered to be the central theme in managing materials. The inventory turnover ratio (ITR) is a barometer of performance of materials management function.

Inventory is the stock of any item or resource used in an organization. An inventory system is the set of policies and controls that monitor levels of inventory and determine what levels should be maintained, when stock should be replenished, and how large orders should be,(Adam Jr. & Ebert, 2005)

In the generally understood term, inventory means a physical stock of goods kept in store to meet the anticipated populations' demand. However, from materials management perspective, an apt definition of inventory is "a usable but idle resource having some economic value "Springer India,(2014)'Inventory' and 'stock' are often used to relate to the same thing yet when inventory management is mentioned, there is however a slight difference with stock. Stock is usually an amount of goods that is being kept at a specific place (in a warehouse for example), sometimes referred to as inventory. Conversely, inventory management is primarily about specifying the size and placement of stocked goods.

Inventory management is necessary at different locations within an organization or within multiple locations of a supply chain, to protect (the production) from running out of materials or goods,(Guido Van Heck, 2009).

Inventory management is very crucial to any organization that is improving on its performance and attaining high levels of customer satisfaction through and providing service. The material held by an organization makes up for most of the organization assets. Most organization invests so much money in materials and it is important for the organization to put in place a good material management system in order to manage the stock properly,(Wangar L., 2015).

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 of any organizations and proper level of service in service providing organizations; 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 service or proper functioning of the organizations ,(http://www.managementstudyguide.com, 2017).

2.2. Types of inventory

Narkotey (2012) 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. That is inventories purchased as a result of speculations of price hikes. Seasonal Stock is a form of speculative stock that involves the accumulative of inventory before a season begins in order to maintain a stable labor 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. 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,(Narkotey,2012).

2.3. Inventory management practices in Hospital

Inventory management practices are extremely important for business operations because their success and cost reduction of the firm's expenditure necessitate improved supply chain performance and knowledge to the employees,(Maureen, 2016).

2.3.1. Timing; the Most Crucial Aspect.

In health-care delivery time factor is the most crucial aspect. Life can be lost by just a delay by a few seconds. Therefore, Inventory manager's huge responsibility is ensuring most diverse health-care commodities available on time. The expected patients number is unpredictable

suppliers are unreliable and costs are rising. Hence making the challenge even greater,(Maureen , 2016).

2.3.2. Patient safety; the first priority

In health care delivery the patient well-being is the principal need, and critical part is played by directors of stock in ensuring their goal. Stock chief greatest obligation is to guarantee that great quality items are obtained for clinical utilize. In spite of vital basis in surveying items being cost, clinical viability and well-being concerns are organized. Administrators of stock ought to likewise guarantee that the supplied things are well inside the expiry time frame,(Maureen, 2016).

2.3.3. Maintaining the Quality of Products in Storage

Barraclough(2013) stated different indicators of quality problems, preventing damage in general, protecting against fire, preventing pests, and preventing theft. The specific checklists for each topic are in train your staff and manage these potential problems. Before distributing or storing the supervisor or local coordinator or an inspector must visit the organizations facility and report any problems to the organizations if there. The following describes areas where managers, as manager of a health program or health services, can prevent damage or loss: includes avoid crushing products stored in bulk, Heavy or fragile items (such as those packaged in glass) should be placed in small stacks. Bind sharp edges or corners in the store with tape, Sweep and mop or scrub the floors of the storeroom regularly, wipe down the shelves and products to remove dust and dirt. Dispose of garbage and other waste often and in a manner that avoids attracting pests and maintain the store at a constant manner,(Vriesendorp, 2010).

2.3.5. Inventory planning and control

Inventory planning and control are functions relating to inventory management. Business owners pay close attention to inventory as it usually represents the second largest expense in their businesses. Inventory planning includes creating forecasts to determine how much inventory should be on hand to meet consumer demand. Inventory control is the process by which managers count and maintain inventory items in the business. Inventory control is a planned approach of determining what to order, when to order and how much to order and how much to

stock so that costs associated with buying and storing are optimal without interrupting production and sales,(Baye, 2017).

Inventory control basically deals with two problems: (i) When should an order be placed? (Order level), and (ii) How much should be ordered? (Order quantity). These questions are answered by the use of inventory models. The scientific inventory control system strikes the balance between the loss due to non-availability of an item and cost of carrying the stock of an item. Scientific inventory control aims at maintaining optimum level of stock of goods required by the company at minimum cost to the company,(Muhayimana V., 2015).

2.3.6. Set Up, Maintenance, and Organizing of Pharmacy Store

Barraclough&Andy B.(2013) all health facilities, from health posts to comprehensive health clinics and large hospitals, use medicines and related supplies. It takes a team effort to manage these supplies, involving all types and levels of staff: doctors, nurses, health workers, and storekeepers. This is especially true in small facilities with only one or two health workers. Each staff member has an important role and should know how to manage all supplies at the health facility correctly.

Medicines and related supplies are expensive and valuable. They need care so they will not deteriorate. If they deteriorate, they may lose their potency, have the wrong effects on patients, or, in the case of test kits, may produce incorrect results. Secured room for store: A store is a simple way to keep supplies safe. Having all stock in one place also makes it easier for organizations to know what they have. Health facility should have a room that can be locked, is in good condition, and is well organized. That room will be organizations pharmacy store. The store should be large enough to fit all the supplies. Inside the store, there should be an additional secured area where narcotics and expensive items such as ARV medicines are kept. Keeping store in good condition: Extreme temperatures, light, or humidity may cause medicines to deteriorate. Heat affects all medicines, especially liquids, ointments, and suppositories. Some medicines that are light sensitive, such as inject-able, spoil very quickly when exposed to light. Humidity can spoil tablets and capsules because they easily absorb water from the air, making them sticky and causing them to deteriorate, (Michael N., 2012).

Storing similar items together: “Similar” refers to the route of administration (external, internal, or inject-able) and form of preparation (dry or liquid medicines). Organizing each group of items

in alphabetical order often improves store organization and simplifies stock management of the organizations. Group products by expiry date: The expiry date is very useful in storing and managing the stocks of pharmaceuticals. The first expiry, first out (FEFO) method of inventory management involves issuing products with the earliest expiry date first, regardless of the order in which they are received. This method helps prevent expiration of valuable pharmaceuticals; all pharmaceuticals have labels that include an expiry date established by the manufacturer. This is a very important piece of information for the dispenser and patient, because if the medicine is used after this date, its quality and efficacy are not guaranteed and the patient cannot be sure it will have the desired treatment effect,(Barraclough &Andy, 2013).

2.3. Inventory Storage Management practice

In any health facility medicines constitute an essential and indispensable resource element. Since almost all finished pharmaceuticals have a defined shelf-life, a specific period of time during which they should be used many of them require compliance with precise storage condition,(Kassie, 2014).

The shelf-life is indicated by the date of manufacture and expiry on the items label. It indicates the time that the item can be used safely or the length of time that product can be stored without affecting its usability, safety, purity, or potency if it has been stored under the manufacturer's recommended storage conditions (Ministry of health government of Uganda, 2012).

Drugs and other health commodities require appropriate storage conditions as these influence their shelf-life, safety, and efficacy. Because storage condition of drugs and dosage forms can significantly influence their physio-chemical properties, due care should be taken to preserve drugs so that they remain physically, chemically, and micro-biologically stable .Storage ensures the physical integrity and safety of products and their packaging, throughout the various storage facilities, until they are dispensed to clients,(USAID | DELIVER PROJECT, 2011).

Poor storage condition may result in obsolescence, deterioration, spoilage, pilferage, breakage stock due to excessive over stocking and even the development of poisonous degradation products that can be hazardous to the patient. Medical supplies should always be kept in a secured, designated storage space because medical supplies are expensive and very marketable. These items need proper care or they may deteriorate, resulting in loss of potency or development of poisonous degradation products that might harm patients. To store medicines

and supplies properly, health facilities need a store that is in good physical condition, can be secured, and has shelving, (Ministry of health government of Uganda, 2012).

According to Ethiopian Food, Medicine and Health-care Administration and Control Authority guideline for good storage practice to facilities which stores pharmaceutical products and material in order to avoid safety, efficacy and quality problems caused by improper storage practice states that Materials and pharmaceutical products must be stored under conditions which minimize deterioration, contamination or damage. They must be stored under conditions compatible with their recommended storage requirements of temperature and /or humidity. Storage areas should be of sufficient capacity to allow the orderly storage of the various categories of pharmaceutical products and materials. Materials and pharmaceutical products should be stored in conditions which assure that their quality is maintained, and stock should be appropriately rotated in manner "first expired/first out" (FEFO) principle , (EFMHACA, 2015).

2.4. Access to qualified and skilled staffs in inventory management

Isabel &Nabais (2009) Effective pharmaceutical management depends on the people who carry out the work, as well as those who lead and manage it. Staff members who handle medicines and health products in district medical stores and public and NGO health facilities need training so that they have a minimum set of skills, competencies, and knowledge in the areas of setting up a storeroom and good storage practices, inventory management and use of stock control forms, receiving and issuing stock, good dispensing practice, handling expired and damaged stock.

There are no standard training courses that are perfectly suited for all countries and settings, since different countries manage the delivery and distribution of medicines and health products in various ways. Then organization can design a training program to improve the performance of a particular task or set of tasks, taking into account the demands of standard procedures, the educational level of the personnel, and the time and resources available for training. For health facility and district-level training, options would normally range from on-the-job training to short courses. Long-term placements in academic institutions might be considered for some staff, such as pharmacists, depending on local circumstances and the particular needs of the individuals concerned. In general, however, such placements would not be warranted for health facility and district staff, (Ali, 2011).

Inventory management and control is no longer considered a clerical function performed independently by untrained individuals within a governmental agency,(Legese, 2017). Qualified staff that is competent and skilled will help the organization to achieve its goals and objectives by being efficient and effective when carrying out their various functions. For an organization to succeed, qualification is therefore a pr-requisite and must be matched with job requirement, hence the need to hire and develop ambitious personnel.

According to Ali, (2011), Medicines management is a highly technical and professional activity that can only be achieved by suitably qualified, adequately trained, sufficiently skilled man power both at managerial and ground level. Appropriate measures need to be taken in the forms of decisions, actions particularly for proper selection, quantification, forecasting, procurement, distribution, and use of medicines to make the supply chain more robust and efficient. In reality implementation of a robust inventory system for a pharmaceutical supply is a difficult task ,(Kokilam & Harish, 2015).

There is a problem in implementing inventory management practice, Health facilities fail to invest technology and infrastructure. 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,(Nijoroge, 2015).

If staff involved in inventory control is not qualified and competent, then there will be ineffectiveness in inventory management. Bailey, P., & Farmer, (2007) says that for inventory control function to achieve a superior performance, it's necessary to recruit, train and develop personnel with the capacity and motivation to do better job. It also indicates that training of staff is vital if full use is to be made of their abilities and talents.

2.5. Documentation /Stores Record

According to, Susan, T., & Michael,(2000) accuracy of inventory records is necessary to provide satisfactory customer service, determine replenishment of individual items; ensure that material availability meets repair or project demand, analyze inventory levels and dispose of excess inventory. Bailey, P., & Farmer, (2007) state that stock recording is expected to maintain particulars of receipt, issues and balances remaining in stock for each individual item held in the storehouse daily.

According to Jessop and Morrison (1994), a stock record system is the means of capturing and storing information and a facility for the analysis and use of this information so that the operation of the stores function and the control of stock can be performed in an efficient manner. The author further says that the system of stock recording and the mechanism for the use of recorded information must be very carefully selected. Records and techniques should be appropriate to the items in question and the cost implication taken into account. An organization should carefully choose the best system suitable to it to avoid a situation whereby a lot of money would be spent on maintaining a very expensive system for items of low value. A stock record system can be manual or computerized.

According to Susan, T., & Michael, (2003) Stock records provide the management with the information which is used to ensure accountability through stocktaking and stock audit exercise. Jessop, D., & Morrison, (2004) states that records can be posted manually but, where the volume and complexity of the documents handled is of major proportion mechanical methods are often to be more effective. Manual posting is comparatively slow, there is high risk of filling the wrong detail, and it can be easily misplaced or lost due to multiple handling as compared to Computer posting system.

2.5. Help of technology in inventory management

According to WHO, inventory management is done through a paper-based or computer based system, as determined by the resources available. Even though paper-based inventory system is good option in resource limited areas, computer-based inventory system is preferred to have up to date information about the status of health-care technology and easily access each health-care technology. But in case of our country some health institutions use paper based inventory which is not up to date and difficult to access the information of each health-care technology while most health institution do not have inventory system,(Hundessa, Mohammed, &. Bheema,2017).

A computerized inventory management system makes everything from inputting information to taking inventory easier. Doing a hand count of inventory can take days, but with a technology supported or computerized inventory management system, the same process can be done in a matter of hours. With a manual system, the data is only as accurate and up to date as the last hand count. With a computerized inventory management system, the management team can pull

a report and instantly see how many units are on the floor, how many have used and which items are required,(Hundessa D., 2017).

According to World Health Organization document on inventory, computer-based inventory is preferred to paper based inventory. This is because computer-based inventory ease inventory management, especially for large inventories and it can also be integrated in computerized maintenance management system which combines inventory, repair and maintenance history, and work-order control into one system. Once the inventory has been established, it can be a very helpful tool within the inventory department and health-care facility as a whole, (Hundessa, Mohammed, & Bheema, 2017).

2.6. Quality maintenance issue at the Hospital

Hospitals and health care buildings are regarded as the most complex indoor facilities with numerous end users of indoor spaces and functions. Hospitals are considered as one of the most difficult indoor facilities among public sector buildings to maintain, partly because of their complex engineering services. Since poor maintenance practices could lead to more frequent breakdowns, which may cause inconvenience to catastrophe, therefore, maintenance has to be more reliable, more efficient, and more cost effective,(Amankwah O., 2017).

It is impossible to produce buildings, which are maintenance free. However, maintenance work can be minimized by good design and proper workmanship, in addition to, a proper management of the process that involves assessing performance, and maintenance management of buildings. In the past few decades, researchers had realized the importance of maintainability of buildings in achieving cost savings and better functioning of facilities,(Enshassi A., 2015).

The maintenance management of health-care facilities is a multifaceted field of facilities management due mainly to the complexity of the building designs and service systems and shortage of maintenance budget. One of the most complex fields of facilities management is the maintenance management of Hospital facilities. This is due to the multifaceted nature of the hospitalization buildings, the importance of the electrical and mechanical system and maintenance budget challenges and a hospital is deemed an exceptional facility is that, it has to operate at its best at every moment in time and also, an error in a hospital can be fatal,(Enshassi A., 2015).

Amankwah O.(2017) also stated that hospitals need to strategically transform the traditional methods of maintenance practices to achieve better performance of the facilities. Health-care facilities need to address challenges from the maintenance, repair, and cleaning of buildings to budget management. Maintenance work must be strategically addressed based on how significant the task is and the availability of maintenance funds. Maintenance which was seen as a "necessary evil" some years back is now understood as a strategic importance for most organizations the world over; Thus in a health-care environment, a well planned maintenance strategy will help to improve energy efficiency as well as comfort, health and safety of the occupant and the environment,(Gulliford M., 2017).

2.6. Benefits for Inventory managing in hospital

One of the major benefits of inventory management in health-care is controlling the losses of medical supplies and equipment. Obviously, health-care 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,(Semahegn, 2017).

Another benefit of employing inventory control in health-care facilities is to control the spread of disease. Studies proved that using functional inventory control have prevented the affliction of mad-cow disease in a certain health-care facility in England. In like manner, effective tracking of surgical instruments can prevent using of infected instruments to other patients. Thus, prevention of disease starts from proper execution of inventory control. In addition, both administrators and employees should adapt inventory control system in tracking the stock levels of equipment and other supplies. In this way, effective services are guaranteed once the health-care facilities have all the necessary supplies and equipment needed. Otherwise, without using the inventory control system it would be difficult to determine which supplies and equipment are depleted and need for replenishment. Keep in mind that being once there is inadequate supplies the quality of service will be affected. In like manner, inventory control system is also important in monitoring perishable items like medications,(Jessop, D., & Morrison, 2015)

In this sense, it is necessary to create a precise planning of inventory control. Health-care 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 health-care organization's head in conducting the inventory in order to determine the actual

situation f the health-care 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 health-care services. Make sure that the inventory control system is effectively employed, (Semahegn, 2017).

2.7. Inventory Management Techniques

Inventory management techniques are extremely important for business and non business organizations operations because their success and cost reduction of the firm's expenditure necessitate improved supply chain performance and knowledge to the employees. These techniques are critical and knowledge in them is highly desirable thus, managers and procurement staff need to be able to apply the techniques for the benefit of the organization,(Afolabi, 2017).

The Economic Order Quantity (EOQ) model of inventory management is used to mark the optimum size of delivery and to choose the cheapest deliverer which guarantees minimization of total costs of investments in inventories,(Mursyid, 2013).

Under the VMI technique, significant gains can be made through transparent collaboration with credible vendors of critical inventories, especially in large-sized production management. VMI enables the vendor in a vendor/customer relationship to plan, monitor, and control inventory for their customers, with the vendor taking responsibility for managing the inventory within specific levels previously agreed upon, while the customer concentrates on improving demand accuracy,(Nsikan, E. & Uduak, 2015).

As the name implies, JIT is a model that attempts to replenish inventory for organizations just when the inventory is required. It will be the preferred method for very expensive inventory items, that is, items with relatively higher purchase price, holding costs or ordering cost, but low levels of demand. The model attempts to avoid excess inventory and its associated costs,(Kinyua M., 2014).

This agrees that having inventory in your store has an added advantage for the organization since customers will be satisfied instantly leading to improved performance rating. With inventory in your warehouse, an organization has the advantage of timely delivery and stock out are not experienced,(Wandalkar P., 2013).

2.8. Hospital Service Delivery

A hospital may be a health-care institution that gives treatment to the sick and ailing with specialized staff and equipment. additionally, hospital is an institution that gives a service; it is a fancy service organization because it may be true people-based service industry,(Azizan & Mohamed, 2013).

The enjoyment of excellent health is one in every of the basic rights of every human being without the distinction of race, religion, philosophy, beliefs, economic or social condition. within the realization of the right to health by their citizens, governments make health-care available, accessible, acceptable and of fine quality, (Pakdili &Harwood, 2005). Thus, health-care sector is taken in to account to be the most important service sector for a country as it plays a vital role to develop and maintain a healthy human capital to realize national goals.

Health-care services are those services produced by medical and related health professions for the prevention, treatment and management of illness and also the preservation of mental, social and physical well-being. They assist to take care of good health among individuals and within the community as an entire thereby decreasing the morbidity and mortality especially when these services are utilized. Services are intangible in nature and thus it is difficult to assess and measure as compare to physical products because it is an elusive and abstract concept and same goes for the service quality,(Irfan & Farooq, 2012).

Patient (customer) satisfaction is taken in to account together of foremost important quality dimensions and key success indicators in health care. Satisfaction during a health care encounter is said to the link between patients' expectations and experiences of the treatment received from health facilities and professionals. Patients' satisfaction is improved when health workers meet their expectations and reduce the whole time spent during a clinic by the patients searching for quality health care, (Pakdili &Harwood, 2005).

2.9. Theoretical Literature Review

American Production and Inventory Control Society (APICS) define inventory management because the branch of business management concerned with planning and controlling inventories. The most important aims of hospital inventory management and health-care supply chains research is to scale back health-care cost without sacrificing the standard of service to the patient by improving efficiency and productivity of health-care system,(Rachmania, I., 2013).

Specifically, the method aims at reducing procurement and carrying costs, while maintaining a good stock of products to satisfy customer and prescribed demands. Managing pharmaceutical products therein process is an integral part of the business model for all pharmacy settings, especially community and hospital practices it. On the opposite hand, inventory mismanagement causes unnecessary rise in procurement and carrying costs and an imbalance within the supply and demand equation,(Ali, 2011).

One of the foremost important institutions that provide community health-care is hospital. Hospitals should keep their services at the best level so as to fulfill expectations of patients,(Goren H., 2017). The complete system of the hospital is obsessed on the materials and without materials availability the patient care function of the hospital cannot come to square still. Even common medicines are out of stock and remain so for a considerable period of the varied explanations for non-availability of even simple medicines in the third world countries, an outsized number are associated with materials management. Hence, it's of great importance that materials of right quality are supplied to all or any users in right quantity at the proper time and place.

According to Maureen O.(2016) clearly stated that health humanitarians organizations adopts inventory management practices in management of their operations that are aligned to its corporate strategy in running its value chain function and these inventory management practices have significantly contributed to the performance and service delivery hence creating competitive edge in the very health industry by specializing on operational effectiveness and efficiency.

According to Susan Wauna *&Joseph Obwogi** (2015)article done on the effect of inventory determined the effect of storage methods on performance of organizations. Organizations storage

procedures are effective, that is to mention, they use first-in-first out procedures, materials well documented, and stock levels are well monitored. The storage procedures were found to correlate positively and significantly with performance. The effectiveness of storage methods and procedures had a big effect on performance. Therefore, with proper storage records, the organization is ready to workout the optimum order quantity that it should hold in its inventory given a collection cost of production, demand rate and other variables. Due to that reason variable inventory costs are likely to be minimal.

Ng'ang'(2013) With enough funds the organization can run its activities efficiently and effectively while with inadequate funds an institution may have difficulties in running its activities in production or manufacturing and service delivering organizations. Funds are often constraining factor to effective inventory control when funds allocated cannot cater wholly for the organization's material requirements within the budget period in reciprocally inventory control has its effect on service delivery. Other factors that will affect allocated funds include the variability in user demand patterns and frequent price variations. The stature of monetary management within the organization can affect adversely its effectiveness and within the finance resource application in various activities. The government financial settlement meant that a lot of government institutions were forced to create substantial cuts in their services. Staffing levels have also been affected and lots government institutions have had to form staffing cuts. Although this has meant that redundancies are made, many authorities have chosen to depart positions vacant instead of choose this option. The loss of staff has resulted within the loss of specialist staffs with most institution employing clerks, and this has affected the individual services.

According to Wodajo(2018) the issue confronting while managing pharmaceuticals items observed in health facilities facing both private and government hospitals was mainly ineffective use technology for recording and therefore the other includes: Lack of sufficient storage area to store all products, poor warehouse management and weak inventory control techniques, lack of proper training of inventory management and supply chain, lack of commitment and support by top management, and Inadequate availability of health commodities. Unavailability of sufficient storage facilities in the hospital, use of manual inventory management system/lack of technology, Poor procurement practices and an insufficient fund for procurement results poor inventory management and it leads to poor service delivery in Hospitals.

The study by Kaudunde(2013) revealed that a lots of organizations either private or government use manual system to manage their inventories, and all every one activities associated with material management are done manually. The records used to receive items are bin-cards, stock record cards and stores ledger but which offer more information about the availability items purchased. Based on the effectiveness of inventory control system, many organizations can provide services or products at the right time, and that orders received were complete, damage free, and accurately filled and billed. This indicates that inventory control system has been successful and reliability of inventory management system. Inventory management in included everything from accurate record-keeping to shipping and receiving of products on time. Hence an inventory management was properly maintained, which brings smooth and efficient organizational service.

According to (Bhandari B., 2017), Inventory management is extremely important since it enables to avoid high investment upon office supplies and other cost related to inventory. Accordingly the factors related with proper record keeping of inventory, financial resources (funding), skill possessed by store staff and bureaucratic procurement procedure positively affect on the effectiveness of inventory management. Proper inventory record, store information and competent & qualified store employees are very important for the appropriate functioning of inventory management as well. In order that documentation is crucial to confirm efficient inventory management and for this reason sufficient fund, skillful store clerks, training and development for store staff, few quality suppliers and easy process of budget release were important for the effectiveness of inventory management.

Benjamin N. &Onchoke*(2016)states that internal inventory security practice, inventory audit and computerized inventory control has significant positive influence on procurement performance and it enhances the performance of inventory management. Internal inventory security procedural practices enhance efficiency and effectiveness in procurement activities. In addition, the practices provide logical approach to management of inventory security related practices. Inventory audit also have significant positive influence on procurement performance. Inventory audit ensures timely and adequate identification of inconsistencies and evaluation of inventories.

Inventory audits reduce inventory losses and ensure inventory accuracy. In addition, inventory audits enables an organization evade risks associated with inventory such as; inadequate and inappropriate inventory, unnecessarily high inventory levels, inaccurate and incomplete inventory records, poor inventory security and obsolete inventory. The other one, computerized inventory control has significant positive influence on procurement performance. Computerized inventory control management leads to easy storage and retrieval of material, improved sales effectiveness and reduced operational cost and uninterrupted service. In addition, computerized inventory control and management can be used as economic reforms to enhance customer service for both internal and external customers,(Benjamin N.& Onchoke*, 2016).

According to Pradeep G. Pai (2018)Evaluating the system frequently results in high evaluation cost, while late evaluation will give rise to high inefficiency costs. Hence, identifying the point in time for optimization plays a pivotal role in keeping the costs down. Optimization of operations could include changes in the schedule of personnel, hiring people to accommodate any additional requirements. Optimization of inventory policies is a complex task. To optimize existing policies, variations in system parameters are analyzed, what-if scenarios are examined and a plan for implementing changes in the storage area are developed. At the same time, the policies need not necessarily be changed for the entire system, since the sub-optimality might be limited to a group of products, a single location, or a group of locations.

By Kaurana, S.& Neelam (2013) in the health-care delivery system the hospitals are dynamic institutions and spend their major portion of budget for material/logistics which rank second only to the employees' salaries. The entire system and sub-system of the hospital are dependent on the materials and without materials availability the patient care function of the hospital can come to stand still. Hence it is of great importance that materials of right quality are supplied to all users in right quantity at the right time and place. Inventory is one of the methods, which helps in achieving this goal. The inventory control is one of the important elements in materials management and an effective measure for containing cost of materials. Hence the control of the inventory is essential for efficient and effective supply management, which is vital to the patient care function.

2.10. Empirical studies and research gap

The studies conducted in Kenya publicized that some critical items were out of stock, resulting in hasty buying due to low stock levels. The annual stock taking report claimed that the matter might need been attributed to poor funding and long procedure. The report also revealed the cases of inaccurate recording or poor entering of some data information, which was a decent indication of poor internal control. Auditors from the Kenya National Audit Office on August, 2011 highlighted various observations within the Ministry of State for Provincial Administration and Internal Security. in keeping with the Audit report stock out of some crucial items was identified, there was discrepancy between the knowledge provided by stock control ledger card (S13) and also the actual physical stock balance, this indicates that of poor internal control and poor funding,(Ng'ang', 2013).

Studies conducted in Nairobi, Kenya by Susan Wauna *(2015) in its finding showed that almost all Organizations weren't yet adopted internal control management tools and systems in purchasing and provide hence they're facing the challenge of stock out cost. Simply it means the non-availability of the stock. This may be a significant in problem and should lead to delaying the operation.

A research conducted in Ethiopia identified some problems related with effect of inventory management on service including mainly lack of technological record keeping and other factors related with it are weak internal control techniques, lack of proper training of inventory management and provide chain, lack of commitment and support by top management, and Inadequate availability of health commodities, (Wodajo, 2018).

As sited by Waiganjo, (2013) who indicated that organizations having qualified personnel at the right position have a significant effect on its performance. This can also be achieved through training that enabled people to acquire new knowledge, learn new skills and performed tasks better than before. It further went on to reveal that Job training helped an organization create a workforce that is able to cope with change, meet the increasing demands of fastest consumer's service and prepare its future leadership. The finding also noted that one of the main purpose training methods was to build strong, competent and qualified personnel whose work performance in any service organization,(Waiganjo, 2013).

Article made in Nepal indicated that proper record keeping of inventory, financial resources (funding), skill possessed by store staff and bureaucratic procurement procedure positively affect on the effectiveness of inventory management. Proper inventory record, store information kept during a proper manner contains a positive effect on service delivery, (Bhandari, 2017).

The research paper conducted in Tanzania by Kaudunde (2013) recognized that the issues related with effective inventory management is manual system to regulate their inventories and additionally articles written by Benjamin N.&Onchoke*(2016) revealed computerized internal control has significant positive influence on procurement performance. Computerized internal control management ends up in easy storage and retrieval of fabric, improved service effectiveness and reduced operational cost and uninterrupted service.

A research conducted in Rochester; big apple indicated that the matter related with effective inventory management practice in hospital is on time evaluation of inventory system as its finding indicates. Because the finding indicates evaluating the availability chain policy for the whole system would incur the next cost than the evaluation of a product, or unit, or group of units and evaluating at the correct point, to the proper extent on time would save time, money and energy. So, it's better to work out points in time at which it would be advantageous to judge the inventory policies and operational decisions of a hospital supply chain system and identify the extent to which the evaluation should be made, to facilitate effective and efficient supply chain system with relevancy service level and system costs, (Pradeep G.,2018).

In light of the above-mentioned fact indicated about the variables including inventory management practice, inventory planning, qualified personnel, quality maintenance of storage, inventory management techniques but their finding and conclusions weren't uniform and additionally lack of empirical studies are conducted related with the effect of inventory on service within the study area motivated the researcher to take research work on the study area. Having the above facts, it is vital to investigate to assess these variables (Challenges in storage management, Access of qualified personnel &Storage quality assurance) and their effect on the effectiveness of service delivery in hospitals.

2.11. Developing conceptual framework

According to James Davi,(2014) a conceptual framework refers to conceptualization of the relationship between variables in the study and it is shown diagrammatically. Conceptual framework was developed in a sense that, it is concepts that relate variables to one another used to explain the research problem. To align the conceptual framework with the research objectives, Service delivery is the dependent variable whereas inventory quality maintenance issue, storage management practice, and access of qualified personnel are independent variables.

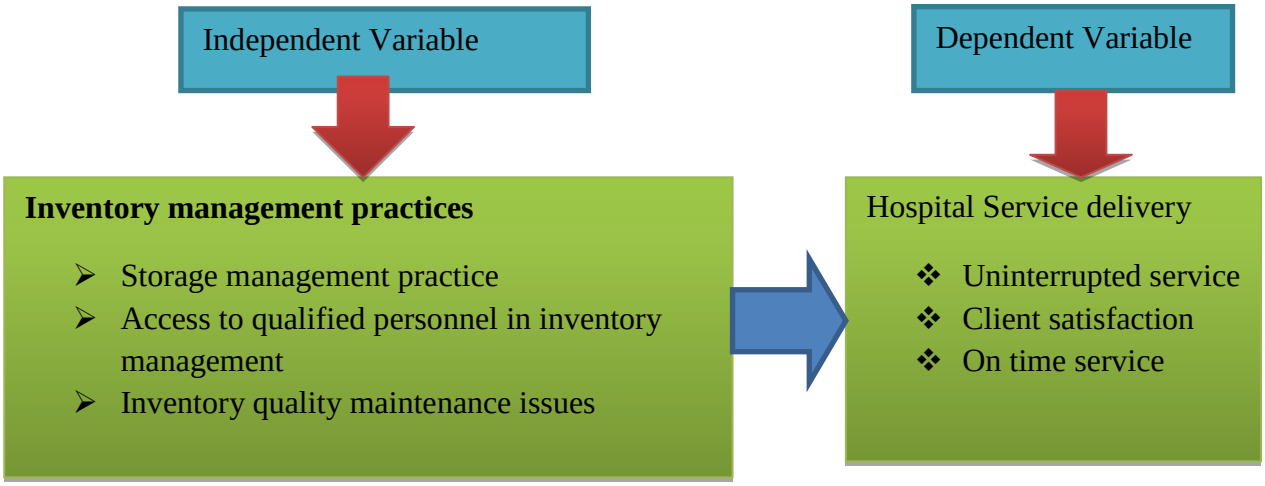


Figure 1 Diagrammatic Presentation of the Relationship between Variables

Source: Own Survey, 2020

From the conceptual framework, health-care service delivery is the dependent variable which is been predicted by inventory management practices.

CHAPTER THREE
3. RESEARCH METHODOLOGY

3.1. Background of the Study Area

The study was conducted in Mizan Tepi University Teaching Hospital, Tepi General Hospital and Gebretsadik-shawo Hospital found in BenchiMaji, Sheka and Kafa zones. Mizan Tepi University Teaching Hospital is located in Bench Maji Zone 560 km far from Addis Ababa, and Gebretsadikshawo is found 441 km from Addis Ababa in Kafa Zone and Tepi General Hospital is located in Sheka Zone 565 km from the capital city of Ethiopia, Addis Ababa. This study was conducted at selected Hospitals in south western Ethiopia and they were selected based on the number of clients taking service, also other hospitals are performing common characteristics and the hospitals are providing comprehensive medical services.

3.2. Research Approach

There are two basic approaches in social sciences research; qualitative and quantitative orientation. However, the literature suggests a growing interest in a very mixed approach (triangulation) following on from the argument that 'one is employed to strengthen the opposite. Often, combining qualitative and quantitative methods, also referred to as the triangulation of methods, can capture a more holistic, complete and contextual view of a phenomenon, (Kothari, 2004).

With relevance research approach, quantitative research method is taken into account to be very efficient for questions answered in number, (Creswell, 2014). Moreover, the end result of quantitative research is simple to live and also the results are often clearly shown through objective data. But, during this study quantitative and qualitative method were used. Quantitative method was utilized in order to investigate statistics-based data collected through questionnaire. Quantitative research approach was relevant to the study because it enhanced the gathering of numeric data from an outsized number of respondents through questionnaire and which was supported by qualitative data obtained through interviews.

3.3. Research Design

According to (Geoffrey M., 2008) "The research design is that the plan or blueprint that the researcher will use in conducting the research". This research uses both explanatory and descriptive research design.

Descriptive research design is preferred during this study since this research design is effectively accustomed to obtain information concerning this status of inventory management practice in Hospital and its effect on the service delivery. the aim of the descriptive research design method is to describe" what exists" nowadays with relevance situational variables, (Cooper, D., & Schindler, 2006). In this study independent variable explains dependent variables, so that explanatory research design was used.

This study based both descriptive and explanatory study design to assess the hospital health commodities inventory management practices & problems related with it. Data was collected using questionnaire and interview. in step with Kothari, (2008) using questionnaires is helpful as they are low in cost even when the universe is large and is widely spread geographically, they are free from the bias and respondents have adequate time to administer their-views.

Finally, so as to work out the connection between those of dependent (service delivery) and independent (inventory management practice) variables inferential statistics also needed. Correlation research aims to establish if there was a major relation between two variables. Hence, after the information were collected, the researcher analyzed the information by using correlation, particularly Pearson's coefficient of correlation, and multivariate analysis technique to indicate the effect of independent variables on the variable quantity.

3.4. Data Type and Source.

The researcher used primary and secondary data for the complete analysis of this study. The first information was gathered through questionnaire from the chosen sample of respondents/ employees of Hospitals in selected study area. The information collected from the respondents through questionnaires and interview was used as primary data. In step with Pennink.B, (2010) primary data is that the information that the researcher finds out by him/herself regarding a particular topic. It implies that the data resulting from it is more in keeping with the research

questions and objectives. Secondary data was sourced from reviewing recent articles and journals and other recently published materials. Sourcing secondary data helps in the formation of problems, literature review and construction of questionnaire for the study.

3.5. Data Gathering Techniques and Instrument

Primary data collected from the pharmacists, staffs and store keepers who are responsible for the pharmacy department in all ordering, receiving and storing of pharmaceutical items in health facilities. The primary source of data for this research was structured questionnaire and interview and Secondary data was collected through reviewing recent articles and journals, recently published books, magazines, internet and other related previous research work on other similar organizations.

Sourcing secondary data helps in the formation of problems, literature review and construction of questionnaire. For the purpose of this study both qualitative and quantitative methodology involving a close-ended questionnaire was used as the measuring instrument. The close-ended questionnaires can be administered to groups of people simultaneously, since they are less costly and less time consuming than other measuring instruments.

In this study descriptive analytical technique was used with the aid of Statistical Package for Social Sciences (SPSS) to analyze the collected data. Descriptive technique was used to analyze and present data by using frequency counts, percentage, mean and standard deviation.

3.6. Study Population and sample size

According to Geoffrey Marczyk, et.al (2008) state that the target population should be a set of all individuals relevant to a particular study and must be defined in terms of elements, geographical boundaries and time. The target populations of this study were the employees of three selected hospitals because of employees have more understanding and awareness about effect of inventory on service and they are from service provider at the time.

Type of sampling techniques used by researcher is multi stage sampling technique Purposive sampling techniques was applied to select the selected areas for this research which are Bonga, Mizan, and Tepi and the cluster based sampling techniques are applied based on their geographical location as (BGSH ,MTUTH and TGH) then finally Proportional Stratified random sampling techniques was used to select sample from each cluster and then sampling

frame can be organized into relatively homogeneous groups (strata) because employees within each Hospital has different backgrounds, knowledge, experience understanding and awareness about inventory management. The strata are including Pharmacists, Laboratory professionals, Nurse& Health officer, Midwifery& other staffs, Purchase &inspection and Store keeper. After the Proportional Stratified sampling method used to determine the number in each cluster random sampling also used to select the final respondents which were given equal chance of being selected into sample.

Then after determining the sample population used for the study by Yemane formula, the samples were selected from each stratum according to their proportional base to the total population and the study population includes Pharmacy professionals, Store keepers, Laboratory professionals, Nurses &health officers, Midwives &Other staffs &Purchasing Department& Inspection employees. In order to determine the desired number of samples from the total population, the researcher used the following Yamane, (1967) sample determination formula as following: Yamane (1967) provides a simplified formula to calculate sample sizes at 95% confidence level.

$$n = \frac{N}{1 + N(e)^2} \qquad n = \frac{713}{1 + 713(0.05)^2} = 256$$

Where:

n - The sample size,

N - The population size, and

e - The level of precision (e = 0.05)

Table 1 Proportional allocation of the respondents

Cluster	Total population from each	Proportional number from each
MTUTH	242	$n = \frac{242}{713} * 256 = 87$
GSH	247	$n = \frac{247}{713} * 256 = 89$
TGH	224	$n = \frac{223}{713} * 256 = 80$

Accordingly, 256 respondents were selected from the total of 713 populations or employee and respondents from each unit or category can be participated and from this sample two Head of pharmacy, five Laboratory professionals, two store keepers and three purchasing & inspection employees, totally eleven (11) employees were interviewed to support the information gathered through questionnaire. The researcher selected respondents from each stratum through their proportional base to the total population as indicated in table blow.

$$ni = \frac{Ni}{N} * n$$

Where.ni=number of the sample units from stratum

Ni=total number of units in the stratum

n= the desired sample size

N=total number of the units in the populations

Table 2Proportional allocation of the desired sample size

Dep'ts within Hospitals	Target respondents	Sample proportion
Pharmacy professionals	54	$ni = \frac{54}{713} \times 256 \approx 19$
Laboratory professional	75	$ni = \frac{75}{713} \times 256 \approx 27$
Nurse& health officer	212	$ni = \frac{212}{713} \times 256 \approx 76$
Midwifery& other staffs	314	$ni = \frac{314}{713} \times 256 \approx 113$
Purchase, Inp, &store keepers	57	$ni = \frac{57}{713} \times 256 \approx 21$
Total		**Sample=256**

Source: own survey, (2020).

3.7. Method of Data Analysis & Presentation

The data collected through questionnaires was processed, summarized, edited, tabulated and coded to confirm completeness, consistency and accuracy. Descriptive analytical technique was used with the help of Statistical Package for Social Sciences (SPSS version 20) to investigate the collected data. Descriptive data was analyzed and presented by using frequency counts, percentage, mean and standard deviation. Quantitative explanations were made for quantitative data to present intending to them also as explain their implications.

The statistical tools were aligned with the objectives of the research. Inferential statistics is especially the Pearson's correlation was used to show the connection and also the strength/degree additionally as direction of associations between variables. The opposite inferential statistics used is multivariate analysis so to point out interdependence of independent variables and variable. Thus, both the strength of the connection between variables and also the influence of independent on variable quantity and statistical significance were assessed.

3.8. Model specification

Within this study multiple linear regression model were used to achieve research objectives because of the dependent variable (effect of service) has no other phases or the variable is not continuous variable. The basic objective of using multiple linear regression analysis is to make the research more effective in analyzing effect of independent variables on the dependent variable.

Multiple linear regression analysis was general statistical techniques accustomed analyze the connection between one variable and a number of other independent variables, (Stevenson, 2009). It's one in all the foremost extensively used multivariate statistical techniques for testing hypotheses and predicting values for dependent variables. The regression equation is as: $Y = \beta 0 + \beta 1X1 + \beta 2X2 + \beta 3X3 + \beta 4X4 + \beta 5X5 + \varepsilon$: Whereby

Y = Hospital service delivery; X1 = Qualified personnel, X2 = Quality maintenance;

X3 = Challenges in store managing practice, X4=Record keeping system, x5=Technology based information usage $\beta 1$, $\beta 2$ and $\beta 3$, $\beta 4$, $\beta 5$ = Regression Coefficients and ε = Error term normally distributed about a mean of 0 and for purposes of computation ε is assumed to be 0.

3.9. Research Validity

Validity refers to the conceptual, scientific and technical soundness of a quest study or investigation, and also the primary purpose of all types of research is to supply valid conclusions. Researchers are usually inquisitive about studying the link of specific variables at the expense of other, perhaps irrelevant, variables. Put simply, validity is said to research methodology because its primary purpose is to extend the accuracy and usefulness of finding by eliminating or controlling as many confounding variables as possible, which allows for greater confidence within the finding of any given study, (Geoffrey Marczyk, 2008).

The validity of knowledge collection was made through collecting data from the relevant respondents with an introductory letter. The validity of the instruments was established by being giving to experts, research assistant with experience and also the supervisor who approved the instrument for data collection.

3.10. Reliability

One of the methods to estimate the reliability of the scores on a test or measurements is Cornbrash's coefficients alpha method. Hence, Cornbrash's coefficients alpha refers to the extent to which there is interrelatedness among the responses to the multiple items comprising in the Lekert scale. Hence, as explored by Field (2009), if Alpha Coefficients were above 0.70, consistency and suitability were considered high. Accordingly, the reliability measures of each of the major variables are presented in the following table to ease the process of the data analysis.

Table 3: Reliability Statistics

Main variables	Cronbach's Alpha	N of Items
Challenges in storage management practice	.789	7
Inventory record practice	.725	5
Access to qualified personnel in inventory management	.707	5
Technology based information usage	.946	5
Inventory Quality maintenance issues in storage	.868	6

Source: Researchers SPSS Output, 2020

Thus, as shown in above table3, the reliability of the scores was evidenced by strong Cronbach's alpha coefficients for all variables, which used as independent and dependent variables of the

study. The Cronbach's alpha ranged from 0.707 to 0.946, indicating that items are highly reliable to measure the variables they are expected to measure.

3.11. Ethical Consideration

In determining the participants of a study, it is ethical to ensure that the research is beneficial for the participants in alleviating a given problem, (Creswell J., 2003). Accordingly, this study is aimed at identifying the challenges in targeting and acquiring the right applicant pool and majority of the participants are employees who are directly attached to Inventory management activity of the company. Therefore, they are the ones to be benefited from the findings and recommendations of the study.

The researcher briefly explained the purpose of the study to the employees and then participants were included in the research after they gave full consent of their willingness to participate in the study. The researcher assured that confidentiality of the recordings of the interview and no record to be kept about the identity of the participants. The correct reporting of the final study is another ethical issue. The researcher has analyzed the data based on the precise response of the participants; therefore, it is minimal to report a finding that is not supported by the analysis.

CHAPTER -FOUR

4. Data Presentations, Interpretations and Analysis

4. Introduction

This chapter has focused on presenting the findings of the study, as well as analyzing such findings so as to enable the user of the study to understand at an in-depth level of the results regarding the research topic, that is, Effect of Inventory Management Practices on Service delivery at hospital. In the first section, the chapter focuses on providing the demographic data regarding the respondents while the second section provides the findings of the specific objectives of the research study. Based on SPSS version 20, the data was analyzed based on descriptive statistics, including graphic presentation methods, such histograms, tables, frequencies, mean, and standard deviation. The research objectives established at chapter one and which are to be met in this chapter.

4.1 The Response Rate of the Study

While a total of 256 respondents were targeted in study, which included Store keepers, Pharmacists, Lab. Professionals, procurement and inspection workers and other Nurse and staffs and from out of 256 questionnaires distributed, only 245 respondents were able to return complete questionnaires, which were taken to be sufficient to carry out an analysis on the data and the remaining 11 questionnaires from respondents were uncollected. This resulted in a response rate of 95.7%. This response rate was considered sufficient to establish conclusions regarding the research study. Based on the research by, Cooper, D., & Schindler,(2006) a response rate of fifty percent is sufficient to carry out an analysis and report the results, however, a rate of sixty percent is considered good while that of seventy percent or more is deemed exceptional. In this regard, the response rate of this study was outstanding.

4.2. Reliability for main variables

According to different authors Cronbach's alpha of less than 0.5 is unacceptable, α less than or equal to 0.6 is poor, α less than 0.7 is questionable, α less than 0.8 and greater than or equal to 0.7 is acceptable, α less than 0.9 and greater than or equal to 0.8 is good and finally α greater than or equal to 0.9 is excellent. Accordingly, the pretest made for eight sample questioner was found that α of 0.898 which is good range.

Table 4: Reliability test for main variables

Case Processing Summary

		N	%
Cases	Valid	245	100.0
	Excluded[a]	0	.0
	Total	245	100.0

Reliability Statistics

Main variables	Cronbach's Alpha	N of Items
Challenges in store management practice	.789	7
Inventory record practice	.725	5
Access to qualified personnel	.707	5
Technology based information usage	.946	5
Quality maintenance issues in storage	.868	6

Source: Researchers SPSS Output, 2020

4.3. Demographic Data

The demographic data is crucial in understanding whether the given sample of the respondents in a specific research study represents sufficiently the target population. The demographic data also enables the researcher to find out the suitability of the respondents in providing answers to the research questions for the purpose of generalizing the results of the study. In this research, the demographic data consisted of Gender, age, level of education, profession and work experience of the respondents.

Table 5 : Background information of respondents

No	Item	Response	Frequency	Percent
1	Gender	Male	133	54.3
		Female	112	45.7
		Total	245	100
2	Age	Below 25	45	18.4
		Between 25-35	164	66.9
		Between 35-45	27	11
		Above 45	9	3.7
		Total	245	100
4	Educational status	Diploma	31	12.7
		BA/BSC	154	62.9
		Above degree	60	24.5
		Total	245	100
5	Profession	Pharmacist	44	4.5
		Lab. professional	41	18
		Store keeper	11	16.5
		Purch& Inspection	27	8
		Nurses& other staff	122	49.8
		Total	245	100
6	Experience	<25	67	27.3
		26-35	110	44.9
		36-45	57	23.3
		Above 46	11	4.5
		Total	245	100

Source: Researcher's Survey, 2020

Based on the above table4, the respondents were asked to indicate their gender in the questionnaire. Accordingly, there were more male (54.3%) than female (45.7%) respondents in the study. Table 4 emphasizes the fact that hospital employees are highly dominated by male employees. However, given that both genders were involved in the study, it is arguable that the results of the research study did not experience gender biasness. From this researcher conclude that nearly both genders were participated and responded to the effect of inventory management on service delivery at the Hospital they were serving and no gender biases experienced.

Based on the above table4, most of the respondents were aged between, 26-35(66.9%) and below 25 years (18.4%). The number of employees for Age 36-45 and age above 46 is 11% and 3.7% respectively this can be an indication that a majority of personnel providing service in the hospital are concentrated in the age group of between 26-35 years. And employees under 25 ages are the next in numbers. It can be an indication that Hospitals are currently embracing a relatively young age group as this age group seems to be well equipped with up-to-date knowledge with respect to the aspect of managing inventories, especially inventory management techniques associated with the latest technology in the market.

However, given the fact that all age categories were represented in this study, the results of the study are considered to be significant for generalization purposes as individuals who were recently educated in the field of inventory management and those with a high level of experience were able to participate in the study. From this the researcher can conclude that Hospital was filled with younger, energetic and productive manpower that can be able to serve for long time and transform the mission and vision of the Hospital into reality through improving the inventory management practice of the Hospital.

The above table4 also indicates that a majority of the respondents have first Degree holders (62.9%) followed by above degree holders and 24.5 % and 12.7% diploma holders. Considering the fact those respondents with Degree represented 64.4% of the total respondents, it is apparent that a majority of the respondents were well educated and able to respond to the questionnaires without difficulties. The fact that researcher can conclude that almost all of the respondents were educated in different levels as a result it is believed that they can easily understand the questionnaire as desired by the researcher.

According to table4 majority of the respondents were Nurses & other staffs, (50%) followed by Pharmacists, (18%), Lab professionals, (16.7%), Purchase and inspection, (11%) and store keepers, (4.3%). From this fact researcher can conclude that other staffs including nurses were more participants than pharmacists, lab. Professionals, store keepers and purchase departments and this is due to their proportion to the total populations. From this researcher can conclude that respondents were fairly participated and information's were collected as per the proportion of each sample to the total populations and researcher has enough information to give analyses on the effect of inventory management practice on service delivery.

As provided by Table4, a majority of the respondents in the population had working for the period of between 3-6 years (44.9%). They were followed by those who have working for a period of less than three years (27.3%). Those with working experience of seven to ten years (23.3%) while respondents who have worked for a period of above eleven years in the hospital is 4.5 %. This leads to the conclusion that at least more than 44.9% of the respondents had a working experience of three to six in the hospital and it shows that they are experienced, followed by 27.8% of more experienced respondents. So, it can be concluded that most of the respondents had adequate knowledge regarding the inventory management practices practiced in the hospital; it is arguable that this level of knowledge enabled them to respond to the research questions in a more sufficient way.

4.3. Descriptive statistics

The term descriptive statistics deals with collecting, summarizing, and simplifying data. It seeks to achieve this in a manner that meaningful conclusions can be readily drawn from the data. In this study, the descriptive statistics specifically required to measure the level of the independent variables (classification, storage method, and codification) and independent variable, hospital service delivery. The responses were captured on a 5-point Likert scale ranging from 1-Strongly disagrees to 5-strongly agree. The mean and standard deviations of these responses were calculated to determine the mean level of the variable and its variability (standard deviation, SD).

4.4. Results and Discussions on inventory management practices at the Hospital

In this part of the study‘s report, analysis conducted on data gathered to assess the inventory management practices at the hospital is presented in relation to the objectives of the study. Descriptive statistics was used to analyze the data in this study is based on the responses of sample respondents on them in to account that numbers 1, 2, 3, 4 and 5 representing strongly disagree, disagree, neutral, agree and strongly agree, respectively. The result of the study in inventory management practices showed that the scores of strongly disagree have been taken to represent a variable which had a mean score of 0 to 1.5, the scores of disagree have been taken to represent a variable with a mean score of 1.5 to 2.5, the score of neutral have been taken to represent a variable which had a mean score of 2.5 to 3.5, the score of agree have been taken to represent a variable which had a mean score of 3.5 to 4.5 and the score of strongly agree have been taken to represent a variable which had a mean score of above 4.5.A standard deviation of >0.9 implies a significant difference on the impact of the variable among respondents. The findings are presented in the below.

4.5. Challenges in pharmaceutical store management practices at the Hospital

This section of the study was designed to examine the challenges of inventory management practice in the hospital and designed to meet the research objectives. The respondents were requested to state the extent to which they agree with parameters testing provided in the questionnaire within a scale of one to five. The results in terms of descriptive statistics in relation to the extent in the listed items are hindrance to inventory management practices in the hospital and it is shown below in Table

Table 6 : Descriptive Statistics on **Challenges in store management practice**

Items	SD		DS		Ne		AG		SA		M	SD
	Fr	%	Fr	%	Fr	%	Fr	%	Fr	%		
Hospital has standard store control system at health facilities.	2	.8	41	17	15	6	147	60	40	16	3.74	0.95
Proper store management practice enables clients to get on time service	4	1	41	17	20	8	131	53	49	20	3.73	1.015
Commodities are stored through (FEFO) method.	13	5	26	10	28	11	139	57	39	16	3.67	1.035
Unavailability of large enough storage area is the challenge at the hospital	17	7	26	10	33	13	130	53	39	16	3.60	1.09
Lack of Management support on store management is the challenge	17	7	33	13	24	10	132	54	39	16	3.58	1.119
There is standard guide line for items storage and management system	16	7	40	16	24	10	119	48	46	19	3.56	1.16
Has proper inventory planning practice comparable with storage capacity	103	42	86	35	22	9	27	11	7	3	1.97	1.101
Valid N (listwise)	245											

Source: Researcher's Survey Result, (2020)

Input: SD- Strongly disagree; DS-Disagree, Ne-Neutral, AG-Agree, AG-Strongly agree, M-mean, SD-Standard deviation.

Based on the study carried on store controlling system, majority 60% they agreed,17% disagreed and 16% of respondents strongly agreed on standard store control system was practiced by Hospital for inventory management system in the hospital with (M=3.74, SD=0.95). Having this it can be concluded that Hospitals are effective in store controlling system. Majority of 53% of respondents agreed,20% strongly agreed and 17% of respondents disagreed on effect of proper store management on that of on-time service delivery with (M=3.73, SD=1.015). It can be drawn from this there was proper storage management that helps on time service delivery.

Regarding to storing method majority 57% of respondent agreed and 16% of respondents strongly agreed that commodity in the hospital were stored through FEFO method indicating that this method was practice of inventory management in the hospital with (M=3.67, SD=1.035). From the above discussion researcher can conclude that FEFO method was used in order to store item at the hospital.

Regarding to storage majority, 53% agreed and 16% of respondents strongly agreed on insufficiency of storage was the challenge in hospital inventory management practice with the (M=3.60, SD =1.09).In this regard researcher can conclude that there was the problem of sufficiency storage areas for items.

Related with management support, Majority of 54% of respondents agreed and 16% of respondents strongly agreed that lack of Management support on inventory management in the hospital was the challenge for inventory management at the hospital with (M =3.58, SD= 1.119).From this it can be concluded that there was no support by top management bodies on inventory management issues.

Regarding to standard guideline 48% of respondents agreed, 19% of respondents strongly agreed and 16% of respondents disagreed that Standard guideline on store management is the hindrance to inventory management practice in hospital with (M=3.56, SD=1.16), on the other hand 42% of respondents strongly disagreed and 35% of respondent disagreed on the practice of proper inventory planning comparable with storage capacity is the in the hospital with (M= 1.975, SD= 1.101). Having this it can be concluded that there was the problem of standard guideline and there was no proper inventory planning which was not comparable with storage area and On the other hand, the standard deviation show the spread of ideas of the respondents and from the table the standard deviation ranges from 0.951 to 1.162 indicating that it is a small value thus respondents were agreeing to the same idea.

The interview result on this variable shows shat similarly with the above result, the main challenges facing hospitals while managing Hospital items were as follows: Lack of sufficient storage area to store all products, poor warehouse management and weak inventory control techniques, lack of proper training of inventory management and supply chain, lack of commitment and support by top management, and Inadequate availability of health commodities. Unavailability of sufficient storage facilities in the hospital, use of manual inventory management system/lack of technology, Poor procurement practices and an insufficient fund for procurement's were the main challenges which might have led to interruption of quality health care delivery.

Having the finding of the discussion researcher can conclude that unavailability of sufficient storage for items, lack of management support and follow up to employees in the inventory

department and having improper inventory planning comparable with the capacity of storage area were the challenges in inventory management, that in inversely has impact on proper service delivery of Hospital.

4.6. Effects of inventory management on service deliveries

This part of the research aimed at answering the general objective of the research. The general objective was to assess the effect of the inventory management practice on service delivery. The respondents were requested to state the degree of the effect of inventory management on the service delivery from various perspectives including, their overall view: Inventory management practice contributes to health care service, it enables inventory planning and scheduling, helps to reduce procurement procedures, insufficient fund has impact on service, training has effect on service, and it improves customer service, brings strategic relation with suppliers and minimizes expiration.

Table 7: Descriptive Statistics **on Effects of inventory management on service deliveries**

Items	SD		DS		Ne		AG		SA		M	SD
	Fr	%	Fr	%	Fr	%	Fr	%	Fr	%		
Inventory Management practices contribute greatly to the health-care service delivery	2	.8	34	14	15	6	154	63	40	16	3.80	0.90
Strategic agreement with suppliers to reduce its lead time & holding cost is practiced	6	2	34	12	15	6	154	63	40	16	3.80	0.903
Improved customer service can be realized with proper inventory management at the hospital	5	2	37	15	34	14	114	47	55	22	3.72	1.038
Inadequately trained staff in the inventory management section at the hospital contribute greatly to the poor health-care service delivery	3	1	44	18	30	12	123	50	45	19	3.66	1.013
JIT purchasing system is practiced to reduce expire date	15	6	21	9	40	16	129	53	40	16	3.64	1.017
Inventory Management practices helps in inventory planning and scheduling at the hospital	14	6	20	8	42	17	133	54	36	15	3.64	1.027
Long Procurement procedures affect inventory management and health-care service delivery	10	4	18	7	39	16	128	52	50	20	3.64	1.027
Insufficient funds towards Inventories contribute greatly to the poor health-care service delivery	13	5	40	16	25	10	123	50	44	18	3.59	1.118
Valid N (listwise)	245											

Source: Researcher's Survey Result, (2020)

Input: SD- Strongly disagree; DS-Disagree, Ne-Neutral, AG-Agree, AG-Strongly agree, M-mean, SD-Standard deviation.

The above Table 5 revealed that Majority 63% of respondent agreed on the contribution of inventory management on service delivery followed by 16% of respondents strongly agreed and 14% of remained neutral on contribution of inventory management on service delivery with (M=3.80, SD=0.903). From the discussion researcher can conclude that proper inventory management enables organizations to have inventory planning and scheduling through which customer service can be improved.

Relating with supplier,63% agreed and 16% of respondents strongly agreed and 12% of respondents disagreed that hospital practicing strategic relation with supplier to have reduced lead-time and holding cost with the mean and standard deviation of (M=3.80, SD=0.903). From the analyses it can be concluded that strategic agreement with suppliers help organizations to reduce lead time and cost inversely it has a great effect on service delivery.

Related with improving customer service, 47% of respondents agreed and 22% strongly agreed and 15% of respondents disagreed that improved client(customer) service can be realized through having proper inventory management practice with (M=3.72, SD=1.038). From this it can be concluded that client service can be realized through having proper inventory management practice at the hospital.

Regarding with training, 50% of respondents agreed and 19% of respondents strongly agreed and 18% of respondents disagreed on inadequate training has effect on poor health service with (M=3.66, SD=1.013). It also can be concluded that having inadequate trained staffs in the organizations inventory management department can improve service delivery of the hospitals.

and Regarding to JIT, 53% agreed, 16% strongly agreed and 16% of respondents remained neutral on practice of JIT purchasing system that enables to reduce expiration of items with (M=3.64, SD=1.017).From this researcher can conclude that just in time purchasing practice was used in order to reduce expiration of items.

Regarding to the second item 54% of respondents agreed,16% strongly agreed that inventory management enables inventory planning and scheduling and 17% of respondents remained

neutral on the effect of inventory management on planning and scheduling with (M=3.64, SD=1.017). So it can be concluded that inventory management enables the activity of inventory planning and scheduling.

On item related with procurement, 52% of respondents agreed that long procurement procedure affects inventory management followed by 20% of respondents strongly agreed and 16% of respondents remained neutral on the impact long procurement procedure on healthcare service delivery with (M=3.64, SD=1.017). Having this it can be concluded that long procurement procedure has negative effect on health-care service delivery.

Regarding to fund,50% of respondents also agreed on the impact of insufficient fund for poor service delivery and 18% of respondents strongly agreed and 16% of respondents remained neutral on it with (M=3.59, SD=1.118). Researcher can conclude that insufficient fund has impact proper service delivery and it leads to poor health-care service. On the other hand, the standard deviation showing the spread of ideas of the respondents and from the above table the standard deviation ranges from 0.903 to 1.118 indicating that it is a small value thus respondents were agreeing to the same idea.

4.7. Inventory Record System

According to, Susan, T., & Michael,(2000) accuracy of inventory records is critical to provide satisfactory customer service, determine replenishment of individual items; ensure that material availability meets repair or project demand, analyze inventory levels and lose of excess inventory. Bailey, P., & Farmer, (2007) state that stock recording is expected to take care of particulars of receipt, issues and balances remaining available for every individual item held within the storehouse daily. Under the title inventory management practice inventory record system was also tested. These test out that if Stock record created no service delivery interruption due to this effect is happened, Accurate and up-to- date stores records is an Inventory management practices and it is practice of different organizations.

Table 8: Descriptive Statistics on Inventory record system

Items	SD		AG		Ne		AG		SA		M	SD
	Fr	%	Fr	%	Fr	%	Fr	%	Fr	%		
Hospital has proper inventory recording system.	13	5	21	9	40	16	130	53	41	17	3.64	1.02
Proper inventory record enables un interruption of service.	33	14	23	9	12	5	106	43	71	29	3.64	1.345
There is a separate record for all health commodities.	103	42	86	35	22	9	27	11	7	3	1.97	1.101
Store record is up- to- dated and checked its accuracy.	76	31	87	35	43	18	30	12	9	4	2.22	1.123
There is computerized record for all health commodities	80	33	87	35	39	16	30	12	9	4	2.22	1.123
Valid N (listwise)	245											

Source: Researcher's Survey Result, (2020)

Input: SD- Strongly disagree; DS-Disagree, Ne-Neutral, AG-Agree, AG-Strongly agree, M-mean, SD-Standard deviation.

The above table 6 revealed that 53% agreed, 17% strongly agreed and 16% of respondent remained on the item of having proper inventory record system at the hospital with (M=3.64, SD =1.02). From this analyses researcher can conclude that the institution has proper inventory recording system.

Regarding to interruption of service, 43% agreed and 29% strongly agreed and 14% of respondents strongly disagreed that proper inventory record has a significant effect on un-interruption of service delivery and practice of inventory management system in the hospital with (M=3.64, SD=1.345). So it can be concluded that proper inventory record has a significant effect on service delivery.

On item related with separate record, 42% strongly disagreed and 35%of respondents disagreed and 18% of respondents remained neutral that separate record for all health commodities is not practiced in the hospitals inventory management system with (M=1.97, SD=1.101). From this analysis it can be concluded that there were no separate record for all health items.

From total respondents, 35% disagreed, 31% strongly disagreed and 18% of respondents remained neutral on up-dating and checking accuracy of store record and which is less practice of inventory management practices at the hospital with (M=2.22, SD=1.123).It can concluded

that there was no practice of up-dating and checking accuracy of store records. And also 35% disagreed and 33% of respondents strongly disagreed 18% remained neutral and 12% of respondents agreed on record of all health commodities through computerized system at the hospital with (M=2.22, SD=1.123). From this discussion it can be conclude that there was no computerized system used to record items. On the other hand, the standard deviation shows the spread of ideas of the respondents and from the table the standard deviation ranges from 1.02 to 1.345 indicating that it is a small value thus respondents were agreeing to the same idea.

4.8. Access to Qualified Personnel

Qualified staff that is competent and skilled will help the organization to achieve its goals and objectives by being efficient and effective when carrying out their various functions. For an organization to succeed, qualification is therefore a pre-requisite and must be matched with job requirement, hence the need to hire and develop ambitious personnel. If staff involved in inventory management is not qualified and competent, then there will be ineffectiveness in inventory management,(Ng'anga', 2013)

Table 9: Descriptive Statistics on Access to qualified personnel

Items	SD		DS		Ne		AG		SA		M	SD
	Fr	%	Fr	%	Fr	%	Fr	%	Fr	%		
Pharmacy professional has their role in the procurement of hospital items	10	4	23	9	14	6	137	56	61	25	3.88	1.186
Lack of proper training for employees about inventory management.	13	5	40	16	31	13	111	45	50	20	3.59	1.140
Lack of adequate knowledge for employees on inventory management.	10	4	39	16	40	16	113	46	43	18	3.57	1.078
Hospital has qualified personnel in its inspection area.	27	11	35	14	51	21	102	42	30	12	3.47	1.161
Drugs and other hospital items are procured by Authorized personnel.	17	7	35	14	55	22	90	37	48	19	3.29	1.019
Valid N (listwise)	245											

Source: Researcher's Survey Result, (2020)

Input: SD- Strongly disagree; DS-Disagree, Ne-Neutral, AG-Agree, AG-Strongly agree, M-mean, SD-Standard deviation.

The above table 7 revealed that from total of 245, 56% agreed and 25% of respondents strongly agreed that pharmacy professionals has significant effect on procurement of items with the mean and standard deviation of (M=3.88, SD=1.186). Having the finding from the above table7, researcher can conclude that pharmacy professionals have a role in procurement of hospital items.

Related with training, also 45% agreed, 20% strongly agreed and 16% of respondents disagreed that lack of training given for employees about inventory management with (M=3.59, SD=1.140). From this it can be concluded that employees have no training provided on inventory management related issues.

Related with item of adequate knowledge, 46% of respondent agreed, 18% strongly agreed, 16% remained neutral and 16% of respondents disagreed on lack of adequate knowledge for employees about inventory management at the hospital with (M=3.57, SD =1.078). It can be concluded that employees has no awareness about inventory management. and also 42% agreed, 21% remained neutral, 14% disagreed and 12% of respondents strongly agreed on access of qualified personnel in its inspection area of the hospital with (M=3.47, SD=1.186). It also can be concluded that the hospital has access at its inspection area. And from out of 245, 37% agreed, 22% remained neutral and 19% of respondents strongly agreed on procurement of hospital items by authorized personnel with (M=3.29, SD=1.019), on this it can be concluded that hospital items were procured by an authorized personnel. On the other hand the standard deviation show the spread of ideas of the respondents and from the table the standard deviation ranges from 1.019 to 1.186 indicating that it is a small value thus respondents were agreeing to the same idea.

In addition to the above the finding in this study by interview, majority of interviewee revealed that Pharmacist and store keeper mainly involved in inventory control and store management and store keeping department are poorly trained on inventory management and supply chain management as well as poor knowledge and awareness on most commonly used scientific pharmaceutical inventory control techniques such as ABC analysis, VEN analysis and Economic order quantity.

Researcher can conclude from the above discussion was that, providing proper training for the employees in the inventory management, availability of adequately knowledge employees at its store management were not the practice of the Hospitals. On other hands procurement of health-

care items by authorized personnel with support of pharmacy professionals and inspection of items were practiced.

4.9. Technology Based Information Usage

Similarly under inventory management practice used in the organization, technology based information usage was tested, the results of the research study are provided below.

Table 10: Descriptive Statistics on Technology based Information usage

Items	SD		DS		Ne		AG		SA		M	SD
	Fr	%	Fr	%	Fr	%	Fr	%	Fr	%		
Computerized share of information with suppliers.	65	27	84	34	48	20	45	18	3	1	2.33	1.094
The hospital uses automatic stock tracking	62	25	88	36	56	23	38	15	1	.4	2.29	1.026
The hospital uses computerized information to know about safety stock	76	31	82	33	46	19	36	15	5	2	2.23	1.104
Use of computerized record management system	91	37	77	31	39	16	35	14	3	1	2.23	1.093
The hospital uses computer system to determine quantity to be ordered	82	34	80	32	39	16	44	18	-	-	2.18	1.08
Valid N (listwise)	245											

Source: Researcher's Survey Result, (2020)

Input: SD- Strongly disagree; DS-Disagree, Ne-Neutral, AG-Agree, AG-Strongly agree, M-mean, SD-Standard deviation.

Based on the finding on above table8, from total respondents, 34% disagreed 27% strongly disagreed, 20% neither nor and 18% of respondents agreed on computer supported share of information with suppliers with (M=2.33, SD=1.094).From this researcher conclude that there was no computer supported share of information with suppliers. And from total of 245, 36% disagreed, 25% strongly disagreed, 23% neither nor and 15% of respondents agreed on the use of automatic stock tracking with (M=2.29, SD=1.026).It can be concluded that there were no use of automatic stock tracking system at the hospital.

Related with safety stock 33% disagreed, 31% strongly disagreed, 19% neither nor and 15% of respondent agreed with use of computerized information system to know about safety stock with (M=2.23, SD 1.104). It can be concluded that no use of computerized information system to know about safety stock at the hospital.

And from total respondents, 37% strongly disagreed,31% of respondents disagree ,16% remained neutral and 14% of respondents agreed on use of computerized record management system with (M=2.23, SD=1.093). From this it can be concluded that there was no computerized record management system at the institution similarly 34% strongly disagreed,32% disagreed,16% remained neutral and 18% of respondents are agreed with use of computerized system to determine quantity to be ordered with (M=2.18, SD=1.08). In this it can be concluded that no computerized system used to determine quantity to be ordered. On the other hand the standard deviation showing the spread of ideas of the respondents and from the table the standard deviation ranges from 1.026 to 1.104 indicating that it is a small value thus respondents were agreeing to the same idea

Majority of interviewee revealed on technology usage was that, most inventory management process such as calculating the consumption and quantification of the required quantity were done manually. There is absence of modern information technology application in the area of controlling inventory and quantification of drugs. In addition to that finding in this study by interview, the respondents also mentioned that most of inventory management processes are manual and non-value adding activities. There is lack of integrated and networked inventory management system. The inventory system is not supported by automated system. In general, there is lack of modern information technology application in the area.

Having the above data from discussion, researcher can conclude the using technology supported information such as computerized share of information, computerized systems for share of information with suppliers and using computerized system to order items, to safety stocks, in stock tracking were not the practice Hospital and it has contribution to the poor service delivery since it indicates poor inventory management practice.

This finding of the research was supported by Oballah et al , (2015) ,the finding of this study indicated that use Information technology for Inventory management practice has a significant effects on health-care service delivery of the organizations.

4.10. Maintaining the Quality of inventory in Storage

Expired goods should not be accepted from the supplier; they must be sent back immediately. The resources of the health facility should not be used to pay for these items. Sometimes having expired items becomes unavoidable, however. For example, items may be held in reserve for

emergencies, they might be vital items that are not used regularly, or they were overstocked and were not redistributed to another health facility. Remove any expired, damaged, or obsolete items immediately from the storage area and secure them in a clearly labeled container or box with a label warning other not to use the contents. Indicate that the items are going to be destroyed. This box should be stored in a different room, away from any regular stock. If feasible, this box should be returned to the supplier (pharmaceutical depot or hospital). If it is not feasible, the items have to be destroyed at the facility.

Table 11 : Descriptive Statistics on Quality maintenance issue in storage

Items	SD		DS		Ne		AG		SA		M	SD
	Fr	%	Fr	%	Fr	%	Fr	%	Fr	%		
There is minimal waste, less under stock and overstock	6	2	36	14	16	7	148	61	38	16	3.72	0.977
The facility management makes it a practice to separate damaged commodities.	4	2	35	14	41	17	121	49	44	18	3.67	0.982
Obsolete, expired, or damaged inventories properly identified.	6	2	42	17	38	16	106	43	53	22	3.64	1.075
Storage area is secured, accessible during normal working hours and access is limited to authorized personnel.	9	4	35	14	43	17	112	46	46	19	3.61	1.059
Inventory waste &Stock disposal are checked and done regularly.	8	3	43	17	29	12	128	52	37	15	3.58	1.047
Store room is maintained in good condition (clean, all trash removed, sturdy shelves, organized boxes).	26	10	111	45	31	13	67	27	10	4	2.68	1.106
Valid N (listwise)	245											

Source: Researcher's Survey Result, (2020)

Input: SD- Strongly disagree; DS-Disagree, Ne-Neutral, AG-Agree, AG-Strongly agree, M-mean, SD-Standard deviation.

Based on the finding on above table 9, Out of 245, 61% agreed, 16% strongly agreed and 14% of respondents disagreed that there were minimal waste, less under stock and overstock of inventory with (M=3.72, SD=0.977).and also 49% agreed, 18% strongly agreed, 17% neither nor and 14% of respondents disagreed on separation and removal of damaged commodities with

(M=3.67, SD=0.982). From the above discussion it can be concluded that there were minimal waste, no over or under stock and damaged commodities were removed properly.

Related with damaged item, 43% agreed,22% strongly agreed,17% disagreed and 16% of respondents remained neutral that Obsolete, expired, or damaged inventories are properly identified with (M=3.64, SD=1.075). Regarding to store room condition, 45% disagreed, 27% agreed 10% strongly disagreed and 12% of respondents remained neutral with maintenance condition of store room with (M=2.68, SD=1.106). In this it can be concluded that damaged inventories were identified properly and the store room was not maintained in good conditions.

From out of total respondents, 46% agreed, 19% strongly agreed, 17% neither nor and 14% of respondents disagreed with Storage area's security, accessibility within normal working hours and accessibility was limited to authorized personnel with (M=3.61, SD 1.059) and related with items of waste disposal 52% agreed,17% disagreed and 15% strongly agreed and 12% of respondents remained neutral on regular waste disposal practice at the hospital with (M=3.58, SD=1.047).So it can be concluded that storage area was secured and wastes were disposed regularly. And On the other hand the standard deviation show the spread of ideas of the respondents and from the table the standard deviation ranges from 0.977 to 1.075 indicating that it is a small value thus respondents were agreeing to the same idea.

The above quantitative result was supported by interview result in that the interviewee revealed that hospital uses expiry tracking chart to follow expiry date of Pharmaceutical products, about possible medication shortages, obsolete, expired and damaged. As revealed by interviewee in this study all hospital pharmaceutical stores were applied for pharmaceutical store management practices such as item are stored and organized in first-to expire, first out (FEFO), separate and remove expired and damaged products from the stock, secure storage area practiced.

The study was supported by, (Susan Wauna , 2015)found out that, quality is important all along the supply chain, whether its checking quality at the supplier, monitoring quality along the production line, or checking final quality of the finished items before it is delivered to the customer. However, one area that is very important in the monitoring of quality is the inspection of items that arrive at the facility from your suppliers. Ensuring that the parts and raw materials are of the correct quality or specifications before the item even enters the plant are a key aspect of ensuring total quality of the finished goods.

4.11. Result of Inferential Statistics

This section covers the findings of regression and correlation analysis. It includes direction and magnitude of relationship, Goodness of fit Model and Test of significant of model

4.11.1. Correlation Analysis

Correlations are the measure of the linear relationship between two variables. A correlation coefficient has a value ranging from -1 to 1. Values that are closer to the absolute value of 1 indicate that there is a strong relationship between the variables being correlated whereas values closer to 0 indicates that there is little or no linear relationship. As described by (Makhamara,2017) the correlation is a commonly used measure of the size of an effect: values of ± 0.1represent a small effect, ± 0.3 is a medium effect and ± 0.5 is a large effect.

In this section, correlation analysis conducted in the light of each research variables relationship with service delivery was investigated using correlation analysis. This provided correlation Coefficients which indicated the strength and direction of relationship. The p-value also indicated the probability of this relationship's significance.

Table12. Table for Correlation Analysis

		CSMP	**EIMPSD**	IRS	AQPIM	TBIU	IQMI
CSMP	Pearson Correlation	1	.728**	.618**	.594**	.587**	.139*
	Sig. (2-tailed)		.000	.000	.000	.000	.015
	N	245	245	245	245	245	245
EIMPSD	Pearson Correlation	.728**	1	.709**	.670**	.583**	.215**
	Sig. (2-tailed)	.000		.000	.000	.000	.001
	N	245	245	245	245	245	245
IRS	Pearson Correlation	.618**	.709**	1	.774**	.688**	.139*
	Sig. (2-tailed)	.000	.000		.000	.000	.014
	N	245	245	245	245	245	245
AQPIM	Pearson Correlation	.594**	.670**	.774**	1	.759**	.201**
	Sig. (2-tailed)	.000	.000	.000		.000	.002
	N	245	245	245	245	245	245
TBIU	Pearson Correlation	.587**	.583**	.688**	.759**	1	.165**
	Sig. (2-tailed)	.000	.000	.000	.000		.010
	N	245	245	245	245	245	245
IQMI.	Pearson Correlation	.139*	.215**	.139*	.201**	.165**	1
	Sig. (2-tailed)	.015	.001	.014	.002	.010	
	N	245	245	245	245	245	245
**. Correlation is significant at the 0.01 level (2-tailed). *. Correlation is significant at the 0.05 level (2-tailed).							

Source: SPSS Output, (2020)

Input: CSMP-Challenges in store management, EIMPSD-Effects of inventory management on service, IRS-Inventory record management; AQPIM-Access to qualified personnel, TBIU-Technology based information usage, IQMI-Inventory qualified maintenance issue.

The results of correlation analysis are as shown in Table10, the findings indicated that there was strong positive and significant relationship between Service delivery and Storage management practice in the Hospital with a Pearson correlation coefficient r=0.728, p-value <0.05 which was significant at 0.05 level of significance.

This implies that improved Storage Management practice results in improvement of service delivery at the Hospital. There was strong positive and significant relationship between Inventory Record management system and Service delivery with a Pearson correlation coefficient r=0.709, p-value <0.05 which was significant at 0.05 level of significance. This

implies that good inventory record management system results in increase of Employee Performance.

There was strong positive and significant relationship between Access to qualified personnel in inventory management and service delivery with a Pearson correlation coefficient r=0.670, p-value <0.05 which was significant at 0.05 level of significance. This indicates that having qualified personnel results in improved Service Delivery.

The finding of this study was supported by Waiganjo, (2013) who indicated that organizations having qualified personnel at the right position have a significant effect on its performance. This can also be achieved through training that enabled people to acquire new knowledge, learn new skills and performed tasks better than before. It further went on to reveal that Job training helped an organization create a workforce that is able to cope with change, meet the increasing demands of fastest consumer's service and prepare its future leadership. The finding also noted that one of the main purpose training methods was to build strong, competent and qualified personnel whose work performance in any service organization,(Waiganjo, 2013).

There was strong positive and significant relationship between Technology Based information management and Service Delivery with a Pearson correlation coefficient r=0.583, p-value <0.05 which was significant at 0.05 level of significance. This implies that having Technology based information usage results to improved way of managing inventories and it improves health-care Service delivery. There was weak positive and significant relationship between Quality maintenance issue and Service Delivery with a Pearson correlation coefficient r=0.215, p-value <0.05 which was significant at 0.05 level of significance. This indicates that even having weak relation, it was positive and has significant effects on Service Delivery; it leads to improved Service Delivery.

4.11.2. Regression Analysis

A regression analysis was used to find out the statistical relationship between inventory management practices and Hospital service delivery. The regression analysis, as provided by Cooper, D., & Schindler, (2006) is a technique for establishing the statistical relationship between the independent and dependent variables. Regression analysis was undertaken with respect to service delivery as the dependent variable and the five independent variables; Challenges in storage management, inventory record management, access to qualified personnel,

technology-based information usage and quality maintenance system. Multiple linear regression analysis was a general statistical technique used to analyze the relationship between a single dependent variable and several independent variables, (Stevenson, 2009). It is one of the most extensively used multivariate statistical techniques for predicting values for dependent variables.

Table: 13. Regression Coefficients

Model	Unstandardized Coefficients		Standardize Coefficients	t	Sig.	Collinearity Statistics	
	B	Std. Error	Beta			Tolerance	VIF
(Constant)	.027	.172		.160	.873		
Challenges in storage management practices at the Hospital	.438	.051	.438	8.65	.000	.561	1.78
Inventory recording system at the hospital	.304	.062	.316	4.93	.000	.350	2.85
Access of qualified personnel in the hospitals store management	.172	.066	.181	2.60	.010	.296	3.37
Inventory quality assurance issues at the hospital.	.087	.042	.080	2.06	.040	.957	1.04

model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Durbin-Watson
1	.810[a]	.657	.650	.49035	1.772

Source: SPSS output, (2020)

The unstandardized coefficients B column, gives us the coefficients of the independent variables in the regression equation including all the predictor variables as indicated below.

Predicted score for Y = 0.027 + .438 (Storage management) + .304 (Inventory record) + .172 (Qualified personnel) + .087(Quality maintenance).

Hence, the coefficient explains the average amount of change in dependent variable (Hospital service delivery) that is caused by a unit of change in the independent variable (Inventory management practices); accordingly, the unstandardized beta coefficients (β) tell us the unique contribution of each factor to the model.

As per the above table11, storage management related factors (Beta=0.438) were the largest beta coefficient. this indicate that store management practice makes the strongest unique contribution

of 43.8% unique contribution to explaining the dependent variable in which the results revealed that, a one unit of positive change in store management practice would lead to a 0.438 unit changes the level of hospital service delivery effectiveness and inventory recording system (B=0.304) and then followed by access to qualified personnel and quality maintenance factors with a beta value of 0.172 and 0.087 respectively.

Based on the results of Table11, the relationship between Effective store management practices and service delivery is statistically significant having been measured at a p-value of 0.000, which is less than 0.05. The relationship between inventory record management system and service delivery is statistically significant since p-value is 0.000<0.05. On the other hand, the relationship between access to qualified personnel and service delivery is statistically significant at p-value of 0.010<0.05.

As per the above Table 11 the result of the Durbin-Watson statistics was 1.772. As a general rule, Durbin-Watson statistic ranges within 1.50 - 2.50. In this case, it is within the acceptable range. So, it can be assumed as independence of residuals.

This result was supported by studies conducted in Kenya revealed that poor records management practices negatively affected service delivery in the public sector,(Ndambuki, 2015). Another study conducted by (Kaudunde, 2013) also discovered that poor records management negatively affected timely and effective healthcare services. These studies concluded by recommending that the public sector agencies should improve their records management programs by implementing appropriate records management policies, developing records management standards and procedures and implementing Electronic Records Management Systems (ERMS). The reviewed literature clearly shows that poor records management has a negative effect on service delivery.

The relationship technology-based information usage and service delivery is statistically significant since the p-value is lower than the significance level of 5%, p (0.000<0.05) which is 0.040<0.05.

This study result was supported by article done in India by Rajesh K., (2010) suggested that the creative use of computer technology is one of the most promising means of improving quality, timeliness, clarity, presentation and use of relevant information for public health-care management. The ultimate aim of technology-based information in health-care is to provide optimal information support to the healthcare professionals, managers and policy makers for

quality decision making, care and treatment. Technology support in health-care provide highly-secure, economical, easy-to-use, always available, point-of-care application in improving program efficiency by collecting, processing and analyzing a large amount of data quickly. As the manual systems are by nature paper-heavy, managers are often buried of data result in which they are unable to navigate the information for quality decision making and automatic validation helps the care providers to improving the quality of data collection through automatic validation during data entry and automatic preparation of immediate feedback reports on error for individual health facilities.

Here having the above output, researcher can conclude that inventory management practice had a significant effect on service delivery at the Hospital. The findings of this research is aligned with research finding of (Bosibori, 2015)whose finding on his research shows that inventory management practice has significant effect on operational performance organizations in Ethiopia and also the research finding by KINYUA,(2014) whose finding indicates that inventory management practices impact significantly the operational performances of consumer goods manufacturing companies in Kenya. The implementation of an effective inventory management leads to many benefits in many organizations, including providing uninterrupted service, ensuring optimal operation, client satisfaction and on-time delivery of service.

The adjusted R square, which is the coefficient of determination, shows the degree of variation of the dependent variables as a result of change in the predictable variable. The coefficient of determination is a measure used in statistical analysis that examines how well a model explains and predicts the future outcomes or the accuracy of the model.

Based on the results of the above Table 11, of Adjusted R Square of 0.65, at least 65% of the variation in Hospital service delivery is explained by the model. In other words, 65% change in effect of Service delivery at hospital is attributable to Effectiveness in inventory management Practice, technology-based information usage, Store management practice, inventory record system, access to qualified personnel and inventory quality maintenance issues.

R stands for correlation coefficient indicates the relationship between the independent and dependent variables. Based on the results of Table 11, there is a strong and positive relationship between Hospital service delivery and inventory management practices as illustrated by a correlation coefficient of 0.81. Based on the results of this study, there are 35% of other factors

that impact Service delivery of hospitals, and such factors should be established by the future researches.

Table 14: Results for ANOVA with Service delivery as Dependent Variable

Model		Sum of Squares	Df	Mean Square	F	Sig.
1	Regression	110.025	5	22.005	91.517	.000[b]
	Residual	57.467	239	.240		
	Total	167.491	244			

a. Dependent Variable: EIMPSD

b. Predictors: (Constant), CSMP , EIMPSD, IRS, AQPIM, TBIU, IQMI

Source: SPSS Output, (2020).

Based on Table 12, the ANOVA test shows that the regression model has a significant impact on Service delivery since the p-value (0.000) is less than 0.05 (0.000<0.05). This shows that the regression model is statistically significant. Since, the regression model, which explains the relationship between the Service delivery (dependent variable) and the inventory management practices, (independent variables), is statistically significant. From this it can be concluded that inventory management practice and Service delivery were significantly related to each other.

4.12 Multiple linear regression assumptions

Testing assumption of multiple linear regression analysis models is very important So each assumption results were discussed in the following sub topics. In the previous section of this paper the descriptive and inferential analysis was carried out separately with the existence of association between the dependent and independent variables. However, identification of this determinant is not enough for meaningful conclusion. Therefore, the influence of each independent variable must be assessed and identified sequentially. The researcher used multiple linear regression models assumptions as follow

4.12.1 Multicollinearity Test between independent variables

According to Gujarati (2003) Multicollinearity tests helps identify the high correlation between explanatory variables and to avoid double effect of independent variable from the model. When independent variables are Multicollinearity there is overlap or sharing of predictive power.

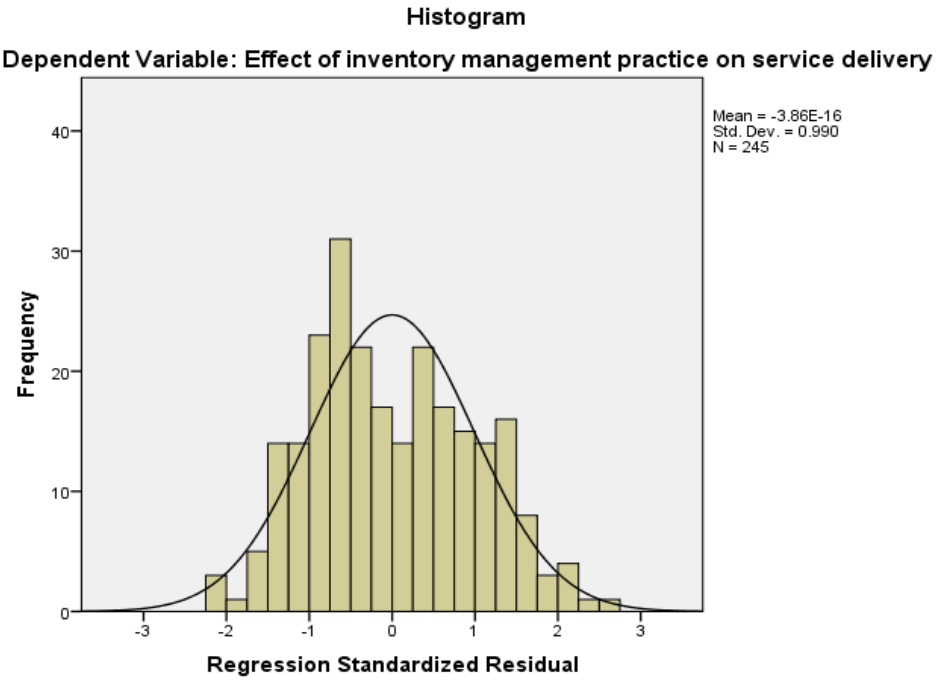
Predictor variable should be strongly related to dependent variable but not strongly related to each other. This may lead to the paradoxical effect, whereby the regression model fits the data well but, none of the explanatory variables (individually has a significant impact in predicting the dependent variable. For this purpose, variance inflation factor (VIF) and tolerance test were used to check Multicollinearity for variables if the value of VIF is less than 10 there is no Multicollinearity and on the other hand if VIF greater than or equal to 10 there is a serious Multicollinearity problem.

The above Table 11.shows the division result that the value of VIF all variables were by far less than 10 and the value of tolerance statistics being above 0.1 they were accepted entered in to regression model for the estimation of variables.

4.12.2 Normality test

Normality assumption is around the mean of the residuals is zero and used to determine whether a data set is well modeled by a normal distribution or not and also to indicate un underlying random variable is to be normally distributed (Gujarati.2009). Therefore the researcher was used histogram methods of testing the normality of the data. If the residuals are normally distributed about its mean of zero, the shape of histogram should be a bell-shaped and regression standardized residual plotted between -3.3 and 3.3. From the figure below data normality can be indicated

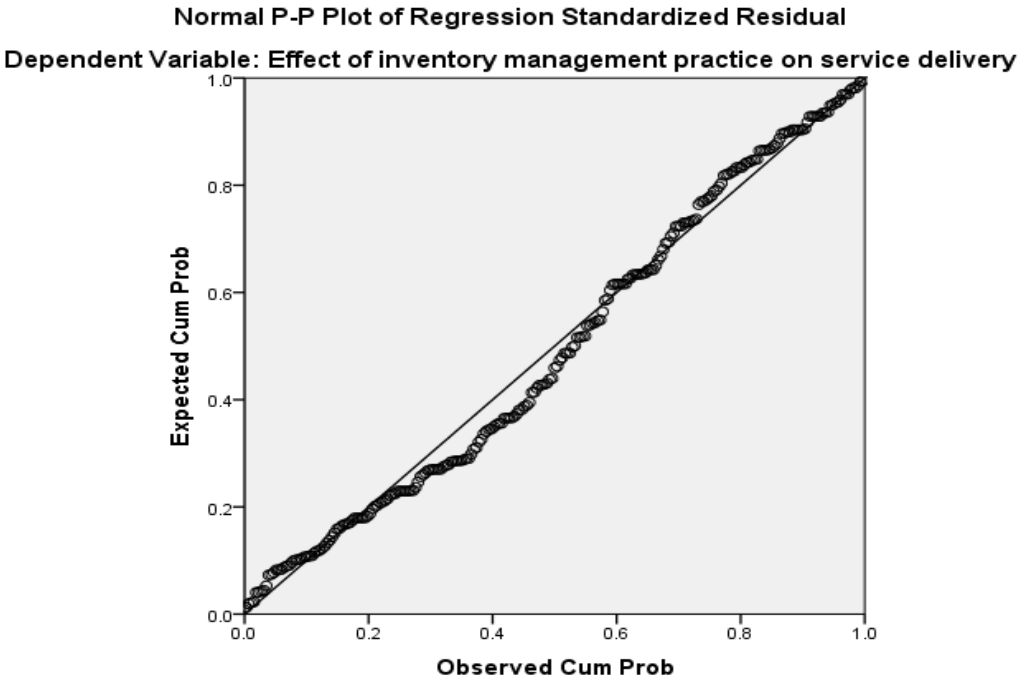
Figure 2 histogram regression standardized residual



4.12.3. Linearity Test

Linearity is used to check whether all the estimates of regression including regression coefficients, standard errors and tests of statistical significance are biased or not (Keith, 2006). To check the linearity assumption in multiple linear regressions the normal P-P plot was used, the plot shows all observed values somewhat spread along the straight diagonal line. Figure 3 in below shows us most of the observed values are spread very close to the straight line

Figure 3 p-p plot; Linearity test results



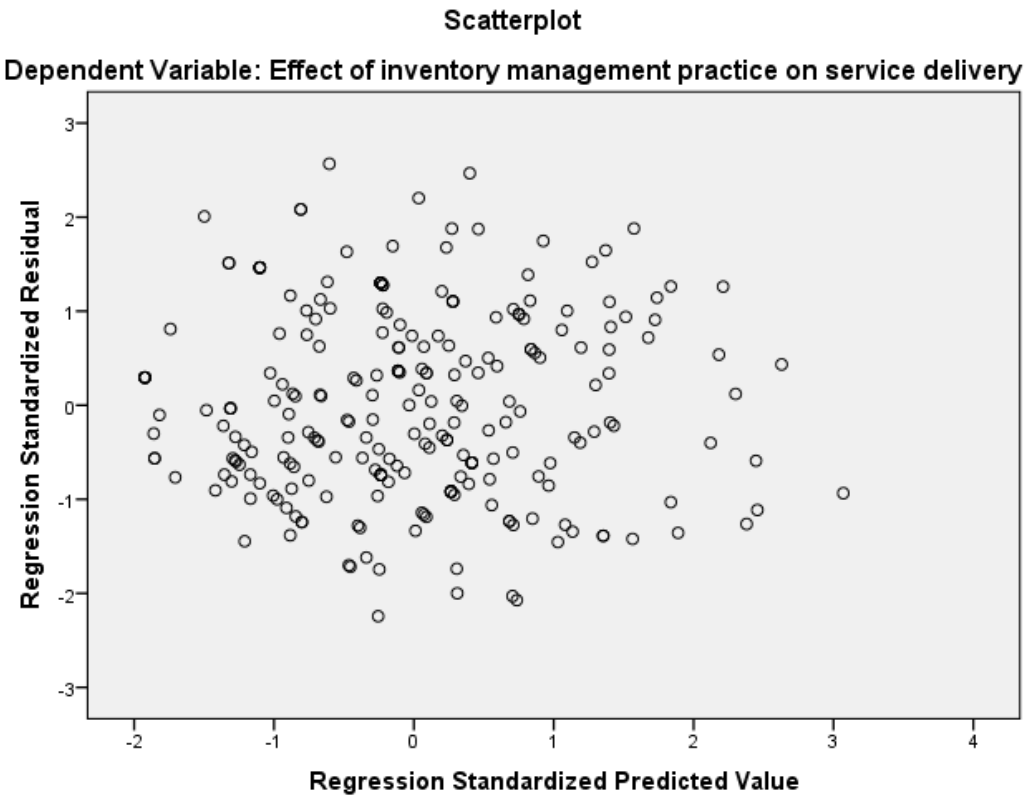
4.12.4. Independence of residual

The value of the Durbin-Watson statistic ranges from 0 to 4. As a general rule, the residuals are independent (not correlated) if the Durbin-Watson statistic is approximately 2, and an acceptable range is 1.50 - 2.50, (Babatunde S., 2014). In this case, Durbin-Watson from the above table11 is 1.772, within the acceptable range. We can assume independence of residuals.

4.12.5 .Heteroscedasticity test

Heteroscedasticity is the equality or violation of the residuals for every set of values for independent variable. So the researchers assume that errors are spread out constantly between the variables. Heteroscedasticity problem exist when scatter plot is greater than 3.3 and less than -3.3. Therefore, as it was indicated in figure 4 below the data did not violate Heteroscedasticity assumption and instead it was homoscedastic.

Figure 4 Scatter plot Heteroscedasticity test result



CHAPTER FIVE

SUMMARY, CONCLUSIONS AND RECOMMENDATIONS

5. Introduction

The study sought to establish the Effects of Inventory management practices on Service delivery in some selected Hospitals in South western Ethiopia. This chapter summarizes the findings and conclusions that were drawn from the study. The summary, conclusions and recommendations are presented in line with the objectives of the study.

5.1 Summary of the Research Finding

The researcher summarized the research findings in the order of study objectives. The aim of summarizing was to enable the researcher come up with key findings of the study from which conclusions and recommendation would be drawn. Under this study the researcher sought to assess whether inventory management has effect on service delivery at the Hospital. Both descriptive and inferential statistical methods were used to arrive at the findings.

Based on the Findings of the research on challenges of storage management, 53% of respondents agreed followed by 16% of respondents strongly agreed with the mean and standard deviation of M=3.60 and SD=1.09 on that unavailability of large enough storage area was the challenges related with store management practice.

The finding on inventory planning indicated that 42% disagreed and 35% of respondents strongly disagreed with the mean and standard deviation of M=1.97 and SD=1.101 respectively on inventory planning practice was comparable with storage capacity at the hospital.

Related with management support, 54% of respondents agreed and 16% of respondents strongly agreed with mean and standard deviation of M=3.58 and SD=1.119 respectively on lack of management support on storage management were the challenges affecting the inventory store management Practice and inventory management as whole and as a result service delivery was affected.

The finding of the research related with inventory record management system shows ,42% of respondents disagreed and 35% of respondents strongly disagreed with mean and standard deviation of M=1.97 and SD=1.101 there were separate record for all health commodities at the Hospital,

Regarding with update and accuracy of store records, 35% of respondents disagreed and 31% of respondents strongly disagreed with M=2.22 and SD=1.123 indicating that there were problem of accuracy check and up to dated store record management at the hospital.

The response on computerized record management shows that, 35% of respondents disagreed and 33% strongly disagreed with M=2.22 and SD=1.123 indicating that of lack of computerized record management of commodities were the problems in record management and hence the affect the inventory management practice and service delivery. The finding also revealed that proper recording system enables un-interruption of service.

Based on the discussion result on access to qualified personnel,46% of respondents agreed and 18% of respondents strongly agreed,16% neither nor and 16% of respondents disagreed with M=3.57 and SD=1.078 that employees has no adequate knowledge about inventory management.

The study discussion on training shows that, 45% agreed and 20% strongly agreed with M=3.59 and SD=1.140 that there was no proper training provided for employees on inventory management and as per the finding lack of access to qualified personnel has a great contribution on poor health care service delivery.

As per the research discussion on technology-based information usage, 37% strongly disagreed and 31% of respondents disagreed with the mean and standard deviation of M=2.23 and 1.093 respectively indicating that of lack of computer supported record keeping or record management at the hospital.

The discussion also shows that, 34% strongly disagreed 32% disagreed, 18% agreed and 16% remained neutral with M=2.18 and SD=1.08 referring that no support of computerized system that helps to know about amount to be ordered. Related with safety stock, 33% disagreed and 31% of respondents strongly disagree access of computerized system to know about safety stock with M=2.23 and SD=1.104.It also shows that 36% disagreed and 25% of respondents strongly disagreed on use of automatic stock tracking with M=2.29 and SD=1.026 and 34% disagreed and 27% of respondents strongly disagreed on use of technology based share of information with suppliers with M=2.33 and SD=1.094. The study discussion revealed that lack of a fully computerized system for inventory data was one of the factors that affect the effectiveness of inventory management to a great extent. The studies revealed that majority of respondent were disagreed with the current inventory recording system used as it presented the above problems.

According to the research finding, on quality maintenance in storage, damaged inventories were checked, identified and removed regularly and there was minimal waste, no overstock and under stock, since they have a great effect on inventory management. But the finding related with Store room indicated that store room is not maintained in good condition (clean, no use of ventilator in the store room, all trash removed, sturdy shelves, organized boxes), 45% disagreed and 10% of respondent strongly disagreed on the item.

Results of finding on Inferential Statistics

As it is clearly indicated in the table 11, a strong positive relationship was found between Storage management & Service ($r = .728$, $p < .05$), Inventory record & service ($r = .709$, $p < .05$), Qualified personnel &service ($r = .670$, $p < 05$), Technology usage &service($r = .583$,$p < .05$), and Quality maintenance &service($r = .215$,$p < .05$), which are statistically significant at 95% confidence level. This implies that at a 5% level of significance it was discovered that the independent variable plays a significant role in effectiveness of service delivery.

The finding also shows the division result that the value of VIF all variables were by far less than 10 and the value of tolerance statistics being above 0.1 they were accepted entered in to regression model for the estimation of variables.

The finding on regression analysis shows that Adjusted R Square of 0.65, at least 65% of the variation in Hospital service delivery is explained by the model. In other words, 65% change in effect of Service delivery at hospital is attributed by change in independent variables.

The finding in the ANOVA test shows that the regression model has a significant impact on Service delivery since the p-value (0.000) is less than 0.05 ($0.000 < 0.05$). This shows that the regression model is statistically significant.

5.2. CONCLUSIONS

The study concludes that that inventory management is a process that is continuous in the organization and therefore there is always need for managing inventory throughout using a certain technique, good inventory management can lead to good performance in any organization.

The study determined that Inventory storage management has significant effects on health-care service delivery as indicated by the finding in both descriptive and inferential statistics.

According to the finding related with storage management practice, it can be concluded that unavailability of large enough storage area, lack of proper inventory planning which was comparable with storage capacity and lack of management support on store management were the challenges related with storage management practice at the hospital. It was therefore concluded that the top management had the responsibility to take measures on how to control storage management related challenges at the Hospital because it has an effect on improved service delivery.

The study indicated that Inventory Record management has significant effects on health-care service delivery as the finding in both descriptive and inferential statistics indicated.

Based on the discussion of finding on record management, it can be concluded that the current documentation system or record management system was not effective in that lack of separate record of all items, the record were not up-dated throughout the time and its accuracy was not checked and no computerized documentation system for keeping inventory related data at the Hospital.

It was therefore concluded that the top management had the responsibility to take measures on how to manage recording related problems, specifically computerized record keeping, accuracy check & up-date and separate record for different items at the Hospital because it has an effect on improved service delivery.

The study to this variable indicated that Access to qualified personnel in inventory management has significant effects on health-care service delivery as the finding in both descriptive and inferential statistics indicated.

From the finding on access to qualified personnel, it can be concluded that currently inventory management at the Hospital has the problems due to lack of proper training for employees on inventory management and lack adequate knowledge for employees about inventory management related with access to qualified personnel.

Therefore, research concluded that the top management had the responsibility to take measures on recruitment and selection methods, and even provide training activities at the Hospital because it has an effect on improved service delivery.

The study on this variable indicated that technology supported information management has significant effects on health-care service delivery as the finding in both descriptive and inferential statistics indicated.

From the finding of discussion on information usage, the research concludes that there was poor in using support of modern technologies in share of information with suppliers, to know about safety stock, to know about amount to be ordered and in computerized stock tracking.

Therefore, research concluded that the top management had the responsibility to take measures on recruitment and selection methods, and even provide training activities at the Hospital because it has an effect on improved service delivery.

From the finding on quality maintenance at the storage, it can be conclude that inventory management practice at the hospital indicates that obsolete, expired, or damaged inventories were checked, identified and removed regularly and there were minimal waste, no overstock and under stock, since they have a great effect on inventory management and the problem related with Quality maintenance issue is that store room is not maintained in good condition (clean, no use of ventilator in the store room.

Generally it can be concluded that there was strong and positive relationship between dependent and independent variables, the regression model is statistically significant since the p-value (0.000) is less than 0.05 (0.000<0.05),from the inferential finding.

5.3 Recommendation

Hospital should use inventory management practice as they contribute a lot to the service of the organization. This is because an effective inventory management has an overall impact on enhancing Hospital service delivery.

The research study would like to recommend that it was better to have good storage management practice and proper inventory planning which was comparable with storage capacity. The research study also highly recommends that top managing bodies were needed to support and follow the employees in inventory management and the organizations inventory planning should be balanced considering the capacity of storage.

The research study would like to recommend improving the inventory record management system by using computer-based inventory management practices and engaging its entire staff to use the available system properly, so the study recommends that facilities management should be effective and efficient in practicing and keeping records to improve Hospital inventory management practice.

The research study recommends that staff skills should be developed continually, continuous training and coaching program has to be developed and made standardized and implemented to improve the know-how of the employees. The study also recommends that top management should provide support for personnel that directly related to stock and inventory management practice by providing proper training on inventory management and properly store facilities.

The research study would like to recommends that in managing the inventory especially the organization should adopt modern technological systems in the managements of inventories. It is also recommended that the government should help public hospitals to have the access of modern information technologies and training in inventory management to reduce associated cost, wastage and improve quality health care delivery even through allocating more funds.

Finally, the study recommends that all facilities management should have to focus on quality issues of items at the Hospital through regularly removing damaged and expired items from the store and use the first- expiry, first out (FEFO) method in the storage. And additionally, it is better to keep the store room in good condition, use ventilator, clean refreshed regularly.

5.4. Limitations of the Study and Recommendations for Further Studies

Like other research, this study has limitations such as Reluctance of respondents to participate due to the fear of new pandemic"Covid 19" made difficult of employees to fill and respond the questioner as fast as expected and Furthermore, the quality and accuracy of data gathered through structured questionnaire may also have its own limitation due to respondents' difference in truthfulness, understanding and interpretation were another challenge in doing the research. From the research findings, it was noted that there are other factors affecting service delivery and this study can be improved by considering other factors. Future researchers can investigate on other variables that affecting the effectiveness of service delivery like employee turnover, budget related problems. The results of the study were limited to GSH, MTUTH and TGH since these were the organization under the study focus, and thus recommendations are for further studies to be conducted in other institutions of higher learning, and for the focus to be concentrated on other factors apart from those considered in this study.

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APPENDEX I

JIMMA UNIVERSITY

COLLEGE OF BUSINESS AND ECONOMICS

DEPARTMENT OF MANAGEMENT

INVENTORY MANAGEMENT PRACTICE SURVEY QUESTIONNAIRE

This questionnaire is part of a research work required by Jimma University College of Business and Economics, Department of management as a partial requirement for Masters of Business Administration. The questionnaire is designed to request your independent views on effect of Inventory Management Practices on service delivery at Mizan Tepi University Teaching Hospital, Gebretsadikshawo Hospital and Tepi General Hospital, Southwest Ethiopia. All information provided shall be treated as confidential and used strictly for Academic purpose only. Please answer the following questions freely without indicating your name.

Part I: Background Information

1. Gender: Male ☐ Female ☐
2. Age: Less than 25 ☐ 26-35 ☐ 36-45 ☐ Above 45 ☐
3. Level of education: Diploma ☐ Degree ☐ Above degree ☐
4. Profession: Store keeper ☐ Pharmacist ☐ Lab. Professional ☐
   Purchase &Inspection ☐ Others ☐
5. Work experience: Less than 3year ☐ 3-6 ☐ 7-10 ☐ Above 11 ☐

PART II: INVENTORY MANAGEMENT PRACTICE QUESTIONS

Directions: please think about effects of inventory management practice on your service delivery. Then show the extent to which you are affected by the feature described by each statement, you are kindly requested to rate your opinion based on the following items listing rank. 1 = Strongly Disagree, 2 = Disagree, 3 = Neutral 4 = Agree, 5 = Strongly Agree

No	Statement	1	2	3	4	5
I	**Pharmaceutical store management practices at the Hospital**					
1.	Unavailability of large enough storage area is the challenge at the hospital	[ ]	[ ]	[ ]	[ ]	[ ]
2.	There is standard guide line for items storage and management system	[ ]	[ ]	[ ]	[ ]	[ ]
3.	Inventory management practice enables clients to get on time service	[ ]	[ ]	[ ]	[ ]	[ ]
4.	Has proper inventory planning practice	[ ]	[ ]	[ ]	[ ]	[ ]
5.	Hospital has standard inventory control system at health facilities.	[ ]	[ ]	[ ]	[ ]	[ ]
6.	Commodities are stored through (FEFO) method.	[ ]	[ ]	[ ]	[ ]	[ ]
7	Lack of Management support on inventory management is the challenge	[ ]	[ ]	[ ]	[ ]	[ ]
II	**Items on service delivery**					
1	Inventory Management practices contribute greatly to the health-care service delivery	[ ]	[ ]	[ ]	[ ]	[ ]
2	Inventory Management practices helps in inventory planning and scheduling at the hospital	[ ]	[ ]	[ ]	[ ]	[ ]
3	Long Procurement procedures affect inventory management and health-care service delivery	[ ]	[ ]	[ ]	[ ]	[ ]
4	Insufficient funds towards Inventories contribute greatly to the poor health-care service delivery	[ ]	[ ]	[ ]	[ ]	[ ]
5	Inadequately trained staff in the inventory management section at the hospital contribute greatly to the poor health-care service delivery	[ ]	[ ]	[ ]	[ ]	[ ]
6	Improved customer service can be realized with proper inventory management at the hospital	[ ]	[ ]	[ ]	[ ]	[ ]
7	JIT purchasing system is practiced to reduce expire date	[ ]	[ ]	[ ]	[ ]	[ ]

III	**Inventory recording system at the hospital**					
1	Hospital has proper inventory recording system.	[ ]	[ ]	[ ]	[ ]	[ ]
2	There is a separate record for all health commodities.	[ ]	[ ]	[ ]	[ ]	[ ]
3	Proper inventory record enables un interruption of service.	[ ]	[ ]	[ ]	[ ]	[ ]
4	Store record is up- to- dated and checked its accuracy.	[ ]	[ ]	[ ]	[ ]	[ ]
5	There is computerized record for all health commodities	[ ]	[ ]	[ ]	[ ]	[ ]
IV	**Access of qualified personnel in the hospitals store management**					
1	Lack of adequate knowledge for employees on inventory management.	[ ]	[ ]	[ ]	[ ]	[ ]
2	Lack of proper training for employees about inventory management.	[ ]	[ ]	[ ]	[ ]	[ ]
3	Drugs and other hospital items are procured by Authorized personnel.	[ ]	[ ]	[ ]	[ ]	[ ]
4	Hospital has qualified personnel in its inspection area.	[ ]	[ ]	[ ]	[ ]	[ ]
5	Pharmacy professional has their role in the procurement of hospital items	[ ]	[ ]	[ ]	[ ]	[ ]
VI	**Technology based information usage at the hospital**					
1	Use of computerized record management system	[ ]	[ ]	[ ]	[ ]	[ ]
2	The hospital uses computer system to determine quantity to be ordered	[ ]	[ ]	[ ]	[ ]	[ ]
3	The hospital uses computerized information to know about safety stock	[ ]	[ ]	[ ]	[ ]	[ ]
4	The hospital uses automatic stock tracking	[ ]	[ ]	[ ]	[ ]	[ ]
5	Computerized share of information with suppliers.	[ ]	[ ]	[ ]	[ ]	[ ]
VII	**Inventory quality assurance issues at the hospital.**					

1	Obsolete, expired, or damaged inventories properly identified.	[ ]	[ ]	[ ]	[ ]	[ ]
2	Store room is maintained in good condition (clean, all trash removed, sturdy shelves, organized boxes).	[ ]	[ ]	[ ]	[ ]	[ ]
3	Storage area is secured, accessible during normal working hours and access is limited to authorized personnel.	[ ]	[ ]	[ ]	[ ]	[ ]
4	Inventory waste &Stock disposal are checked and done regularly.	[ ]	[ ]	[ ]	[ ]	[ ]
5	The facility management makes it a practice to separate damaged commodities.	[ ]	[ ]	[ ]	[ ]	[ ]
6	There is minimal waste, less under stock and overstock	[ ]	[ ]	[ ]	[ ]	[ ]

Annex II:

Interview questions

1) What are the main problems that encounter in the existing inventory and store management system at your facility?

2) Is there checking of stock status regularly is practiced in the hospital? If Yes, How often?

3) At your Hospital, the inventory management practice was supported by technology based information?

4) Do think that there were problems related with availability of qualified personnel or poor in providing training to the employees to improve their know how at your Hospital?

AppendexIII

Descriptive Statistics			
Statement	N	Mean	SD
Unavailability of large enough storage area is the challenge at the hospital	245	3.6041	1.09131
There is standard guide line for items storage and management system	245	3.5673	1.15967
Proper store management practice enables clients to get on time service	245	3.7347	1.01577
Has proper inventory planning practice comparable with storage capacity	245	3.7633	1.04464
Hospital has standard store control system at health facilities.	245	3.7429	.95127
Commodities are stored through (FEFO) method.	245	3.6735	1.03599
Lack of Management support on store management is the challenge	245	3.5837	1.11901
Inventory Management practices contribute greatly to the healthcare service delivery	245	3.8000	.90354
Inventory Management practices helps in inventory planning and scheduling at the hospital	245	3.6408	1.01705
Long Procurement procedures affect inventory management and healthcare service delivery	245	3.6408	1.01705
Insufficient funds towards Inventories contribute greatly to the poor healthcare service delivery	245	3.5918	1.11837
Inadequately trained staff in the inventory management section at the hospital contribute greatly to the poor healthcare service delivery	245	3.6653	1.01334
Improved customer service can be realized with proper inventory management at the hospital	245	3.7224	1.03845
Strategic agreement with suppliers to reduce its lead time & holding cost is practiced	245	3.8000	.90354
JIT purchasing system is practiced to reduce expire date	245	3.6408	1.01705
Hospital has proper inventory recording system.	245	3.6408	1.01705
There is a separate record for all health commodities.	245	1.9755	1.10114
Proper inventory record enables un interruption of service.	245	3.6490	1.34562
Store record is up- to- dated and checked its accuracy.	245	2.2204	1.12370
There is computerized record for all health commodities	245	2.2204	1.12370
Lack of adequate knowledge for employees on inventory management.	245	3.6408	1.01705
Lack of proper training for employees about inventory management.	245	3.6653	1.01334
Drugs and other hospital items are procured by Authorized personnel.	245	3.6490	1.34562
Hospital has qualified personnel in its inspection area.	245	2.2939	1.12505

Pharmacy professional has their role in the procurement of hospital items	245	3.6490	1.34562
Use of computerized record management system	245	2.2327	1.09346
The hospital uses computer system to determine quantity to be ordered	245	2.1837	1.08781
The hospital uses computerized information to know about safety stock	245	2.2327	1.10465
The hospital uses automatic stock tracking	245	2.2980	1.02679
Computerized share of information with suppliers.	245	2.3347	1.09499
Obsolete, expired, or damaged inventories properly identified.	245	3.6449	1.07525
Store room is maintained in good condition (clean, all trash removed, sturdy shelves, organized boxes).	245	3.6204	1.06682
Storage area is secured, accessible during normal working hours and access is limited to authorized personnel.	245	3.6163	1.05957
Inventory waste &Stock disposal are checked and done regularly.	245	3.5837	1.04712
The facility management makes it a practice to separate damaged commodities.	245	3.6776	.98248
There is minimal waste, less under stock and overstock	245	3.7224	.97746
Valid N (listwise)	245		