ISSN 2349-7807

International Journal of Recent Research in Commerce Economics and Management (IJRRCEM)
Vol. 5, Issue 2, pp: (33-54), Month: April - June 2018, Available at: www.paperpublications.org

FACTORS AFFECTING INVENTORY MANAGEMENT PRACTICES ON SERVICE DELIVERY IN COUNTY GOVERNMENT HOSPITALS IN KENYA (A CASE OF TRANS NZOIA COUNTY)

[1]Mukuna, Khasakhala, David, [2]Dr. Osoro, Antony

[1](Msc. Procurement And Logistics), Jomo Kenyatta University of Agriculture& Technology
[2](Lecturer Ph.D), Jomo Kenyatta University of Agriculture & Technology

Abstract: **Managing stock effectively is important for any organization, running a hospital is no exception because without enough stock, services to patients will come to a halt. Stock represents the largest single investment in assets for most organizations. Health facilities must provide 24-hour services and accordingly, the need to keep stocks of certain medicines and other medical supplies to be able to discharge their duties effectively. It is a generally held opinion that where stock management by health facilities is poor, delivery of healthcare is normally affected. Hence, this study examined the factors affecting inventory management practices on service delivery using Trans-Nzoia County Referrals Hospitals. The specific objectives for this study were inventory technique, training, lead time and information technology. This study was to be enhanced in different theories relevant to the variables covered under this study. The target population was 400 management staff working at the following departments; Human Resource and Administration ,Finance, Audit, Procurement Stores ,Inspection, Transport ,Kitchen and Cleaning which include the senior, middle and junior staffs involved directly or indirectly. Sample sizes of 120 respondents were selected from the population. The research designs used were both quantitative and qualitative since it contains both numeric and word as the design. Data was presented in the form of tables. Questionnaires were used to collect data which contained both open and closed ended questions and covered all the areas of inventory management to come up with good raw data and descriptive statistics data analysis method applied to analyze data using Statistical Package for Social Sciences version 20. The study concluded that the inventory management practices affect the service delivery of health of public hospitals. There were certain limitations such as resource constraint which prohibited collecting information from the respondents and time constraint was also a challenge. Although the study was on the factors affecting of inventory management practices on the service delivery in hospital, it is recommended that the similar studies should be done in other sectors of the Kenya economy for comparison purposes and to allow for generalization of findings on the inventory management in Kenya.**

Keywords: **Inventory techniques, Training, Lead time and Inventory management practices.**

1. INTRODUCTION

Background of the study:

In the earlier years, Inventory Management was treated as a cost Centre, since Purchasing Department was spending money on inventory while Stores was holding huge stock of inventory, blocking money and space, Ramakrishna (2008 **).** However, with the process of liberation and opening up of global economy, there has been a drastic change in the business environment, resulting in manufacturing organizations exposed to intense competition in the market place.

Service companies worldwide has been working out various strategies to face the challenges and to cut down manufacturing costs to remain competitive.The terms "stock" and "inventory" can be used interchangeably. Coyle et al. (2012), defines inventory as raw materials, work-in-progress, finished goods and supplies required for creation of a company's goods and services. It is also the number of units and/or value of the stock of goods a company holds. The basic reason why stock is held is so as to avoid stock out and it resulting problems. The extent of the stock is influenced by operational needs of the organization, time required to obtain deliveries of stock, availability of capital, cost of storage and the need for detailed records in the form of stock issues which should be kept through the use of store records. Having considered funds available, storage facility available, rate of consumption of materials, lead time, margin of safety, and the stock level can then be set for each material. Stock levels should also be indicated on the stock records. Items should not be issued unless covered by Materials Requisition form.

According to Kotler (2013), inventory management refers to all the activities involved in developing and managing the inventory levels of raw materials, semi-finished materials (work-in-progress) and finished good so that adequate supplies are available and the costs of over or under stocks are low. Inventories are essential for keeping the production wheels moving, keep the market going and the distribution system intact. They serve as lubrication and spring for the production and distribution systems of organizations. Managing stock effectively is important for any organization, running a hospital is no exception because without enough stock, health services to patients will come to a halt. Stock represents the largest single investment in assets for most organizations.In most organizations, employees have become habituated with high levels of commodity availability resulting in higher stock holding levels. (Chopra & Meindl, 2015). Inventory management aim is holding inventories at the most reduced conceivable cost, given the goals to guarantee continuous supplies for progressing operations. Management needs to discover a tradeoff between the distinctive cost parts when deciding for example, the inventory holding costs, cost of providing stock and expenses coming about because of lacking inventories. (Blanchard, 2010).

Inventory management plays a crucial role in inventory of business firms in enhancing effectiveness and efficiency. It has been of sympathy toward numerous years to business firms around the world. Organizations in their operations have been constantly in hunt down wellsprings of reasonable upper hand. In this way, with a specific end goal to enhance their aggressiveness there is requirement for business endeavors to grasp powerful practices in overseeing stock. (Rajeev, 2008).In the world today, every organization wants not only to mitigate the system wide cost, but also to maintain minimum inventories along the supply chain while maximizing the service level requirements of the customer (Sandeep, 2007). This however cannot be achieved without modern technologies. The advancement of technology and innovation has shortened the product life cycle and thus improved inventory management systems of firms. This has led to reduced costs, increased efficiency and thus boosted performance of firms It is physical unthinkable and unsound economically having goods arriving in a system exactly when demands occurs. Clients would need to sit tight for longer period before satisfying what they requested in situations where there is no stock at hand.Management of inventory involves control of company's materials stored and used with the aim of exactly providing what is required when and where it is required incurring the least possible cost when minimum of residual stock is employed (Agha, 2010). Wisner and Leong (2011) define inventory management is the process of efficiently overseeing the constant flow of units into and out of an existing inventory. This process usually involves controlling the transfer in of units in order to prevent the inventory from becoming too high or dwindling to levels that could put the operation of the company into jeopardy.

Agus and Noor (2010), proper inventory management also seeks to control the costs associated with the inventory, both from the perspective of the total value of goods included and the tax burden generated by the cumulative value of the inventory. Brigham and Gapenski (2013), argue that inventory management is important because firms will ensure assets and stock are well managed and accurate demand forecasting is maintained to avoid unplanned procurement processes. This will assist the firm in executing successful procurement processes that match demand and supply forces.

Agus and Noor (2010), points out that demand forecasting helps the organization to minimize operational costs, increased efficiency and on time delivery of goods and services. This enables the organization to plan for the future demand by meeting the growing needs of customers. This highly contributes to improved customer satisfaction due to quality of goods and services offered.Inventory management practices are activities and functions used by organizations to manage stocks of finished products, semi-finished products and raw materials. Proper implementation of these activities enables the firm to minimize waste and costs and increase revenue (Jianbin and Yang 2013). Some of the inventory management practices used discussed in this study includes; economic order quantity, radio frequency

identification systems, vendor management inventory, enterprise resource planning, Just in Time, ABC Analysis and E-procurement.)Inventory management is the active control program which allows the management of sales, purchases and payments. According to Coyle et al (2012), inventory is a critical factor for success in many companies. They further stressed that inventory plays a dual role in companies. Inventory impacts the cost of sales, but it also supports order fulfillment (customer service). As stated earlier in chapter one, Inventory management is vital for the successful operation of most organizations due to the cost inventory represents. Effective management of inventory is a major concern for firms in all industries (Mentzer, et al., 2007). In order to achieve this, there is therefore the need for firms to effectively and efficiently manage their inventories. There are two main concerns about inventory management.

First, inventory management concerns the level of customer service, that is, to have the right goods in sufficient quantities, in the right place and at the right time. Another concern is the cost of ordering and carrying inventories (Stevenson, 2015).

Global Perspective of Inventory Management Practices:

Brigham and Gapenski (2013), argue that inventory management is important because firms will ensure assets and stock are well managed and accurate demand forecasting is maintained to avoid unplanned procurement processes. This will assist the firm in executing successful procurement processes that match demand and supply forces. Dobler (2014) argues that well and efficiently controlled inventories can contribute to the effective operation of the firm and hence the firm's overall profit. Proper management of inventory plays a big role in enabling other operations such as production, purchases, sales, marketing and financial management to be carried out smoothly. Basic challenge however is to determine the inventory level that works most effectively with the operating system or system existing within the organization. Management historically, inventory management globally has often meant too much inventory and too little management or too little inventory and too much management. There can be severe penalties for excesses in either direction. Inventory problems have proliferated as technological progress has increased the organization's ability to produce good in greater quantities, faster and with multiple design variations. The public has compounded the problem by its receptiveness to variations and frequent design changes (Ayad, 2011).Since the mid-1980s the strategic benefits of inventory management and production planning and scheduling have become obvious. The business press has highlighted the success of Japanese, European, North American firms in achieving unparalleled effectiveness and efficiency in manufacturing and distribution. In recent years, many of the firms have raised the bar',yet again by coordinating with other firms in their supply chains. For instance, instead of responding to unknown and variable demand, they share information so that the variability of the demand they observe is significantly lower (Silver, Pykeab and Peterson, 2016).Countries have different policies and plans in relations to the personal and population-based healthcare goals within their societies. Healthcare systems are organizations established to meet the health needs of target populations. In all cases, according to the World Health Organization (WHO), a well-functioning healthcare system requires a robust financing mechanism; a well-trained and adequately paid workforce; reliable information on which to base decisions and policies and well-maintained facilities and logistics to deliver quality medicines and technologies.

Inventory represents the largest single investment in assets for most organizations. In most organizations, clients have become accustomed to high levels of commodity availability, for which the result has mostly been higher inventory levels. (Chopra and Meindl, 2015).

Regional Perspective of Service Delivery:

In a rapidly changing world, particularly in the field of inventory (materials) handling and communication, the institute that's the hospital has to balance the need of utilizing and controlling inventory effectively. Since among its important assets of the hospital are its stock resources, that is the drugs, treatment equipment, building material, food, which supply them their success, creativity and drive. The hospital should therefore apply or use the proper methods of acquiring, utilizing and monitoring the inventory for the mutual benefit of the hospital.According to Ganeshan. (2010), the uncertainty and variability of the timing and content of information flow and goods flow leads to uncertain planning, increased costs, stock outs and delays. Therefore, there is the need to take measures especially on inventory to deal with uncertainties and dynamics on the operational level of business. However, in order for this to be effective, there is the need for strategies applied at the tactical and strategic levels of organizations which will steer their supply chain strategy to achieve competitive strategy and excellence. Inventory management is needed as being a portion of supply chain network to guard the healthcare delivery towards any type of disturbance.

According to Versha Kaushal (General Manager, Amrita Institute of Medical Sciences), as most departments depend heavily on supplies, inventory management can ease or cramp a health facility's operations. From a low-cost needle to a high-end orthopaedic implant, micro steel instruments, supplies (health commodities) are indispensable during a patient's stay at the health facility. Quality care cannot be provided on time unless required health commodities are available in adequate quantities. Versha Kaushal, further explained that inventory management therefore plays a crucial role in providing efficient healthcare in relation to three vital aspects of medical supplies used in the health facilities; available, safety and affordability. Inventories represent a sizeable investment and a potential source of waste that needs to be carefully controlled.

Local Perspective of County Government Hospitals:

Inventory is essential to organization for production activities, maintenance of plant and machinery as well as other operational requirements. This results in tying up of money or capital which could have been used more productively. The management of an organization becomes very concerned in inventory stocks are high. Inventory is part of the company assets and is always reflected in the company's balance sheet. This therefore calls for its close scrutiny by management, Saleemi (2010) Management is very critical about any shortage of inventory items required for production. Any increase in the redundancy of machinery or operations due to shortages of inventory may lead to production loss and its associated costs.These two aspects call for continuous inventory control. Inventory control and management not only looks at the physical balance of materials but also at aspects of minimizing the inventory cost. The efficiency and effective of an organization depends mainly on its inventory control methods systems. Poor inventory control e.g. lack of material may result in loss of millions of shillings, loss of life of patients and it can spoil the good image of the organization. According to the staff members, the hospital has an out dated organizational structure that is, it's not easy or rather it's hard to establish the existing structure of professionalism as workers might be given jobs, which they did not specialize in thus poor quality of work produced when inventory control is concern hence leading to increased total cost, (Aissaoui et al., 2007).

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

Inventory consists of all goods owned and held for customer satisfaction. Inventory is a necessary evil to any organisation although there are various costs that accrue as a result of keeping inventory. It is therefore important for any organisation to keep a good balance between the amount of inventory to keep at any one time so as to ensure that both internal and external customers are satisfied without causing the organisation to incur high inventory costs.Inventory management is required at different locations within a facility or within multiple locations of a supply network toprotect the regular and planned course of production against the random disturbance of running out of materials or goods. (Williams,2015). The scope of inventory management also concerns the fine lines between replenishment lead time, carrying costs of inventory, asset management, inventory forecasting, inventory valuation, inventory visibility, future inventory price forecasting, physical inventory, available physical space for inventory, quality management, replenishment, returns and defective goods and demand forecasting.

Statement of the Problem:

Inventory management plays an important role in an organisation's service delivery and ability to satisfy customers. For many organizations, there is no doubt that inventory management enhances their operations. Organizations with high levels of finished goods inventory can offer a wide range of products and make quick delivery from their backyards to the customers. To continue serving the demand of customers most firms have realized the need to maintain proper inventory management. Proper management of inventory enables firms to mitigate inventory costs, reduce lead time and on-time delivery of goods and services.

According to Wisner et al (2011) organizations that maintain proper inventory of raw materials are more likely to complete their production on time. According to Sarmah, (2016) inventory management control is part of the inventory management: that helps to maintain continuity of production operations by maintaining a smooth flow of raw materials

without shortages. According to Mungu, (2013) states that in hospitals, inventory management is set up to ensure an optimal stock level of medicine in general and essential medicine to enable satisfactory service that touches on human life unlike procurement in other sectors.

Emergencies pose health threats that are of sudden onset in nature, are beyond the capacity of an individual/community to manage and are life threatening or will lead to irreversible damage to the health of individuals/community if not addressed. Thus, inventory management is the heart of pharmaceutical system and poor management will lead to wastage of financial resources, shortages of essential medicines, average of others resulting in expiration and deadline in quality health care (USAID, 2012). Despite the threats, in most public hospitals patients are always turned away due to lack of essential drugs and infrastructural facilities.

Public hospitals have a procurement department that is responsible for the provision of goods services to the hospitals with the aim of providing quality health care services in order to achieve customer satisfaction. They maintain inventory management system which is aimed at ensuring that facilities and equipment are supplied and delivered at the right time. The hospitals should consider implementing inventory management practices for reduced costs and improved supply chain performance.

To undertake this critical role, the Health Policy orientation on health products and technologies, stressed the need for effective and reliable procurement systems that will enhance public and private investment to advance patients access to essential health products and technologies and ensure value for money across the system.

Study Objectives:

General Objectives:

The general objective of this study was to establish factors affecting inventory management practices on service delivery in county government hospitals in Kenya.

Specific Objectives:

The specific objectives of this study ware to:

1) To determine how inventory techniques affects inventory management practices on service delivery in county government hospitals in Kenya
2) To examine how if training of the personnel affects inventory management practices on service delivery in county government hospitals in Kenya
3) To determine if lead time affects inventory management practices on service delivery in county government hospitals in Kenya.
4) To establish out if information technology affects inventory management practices on service delivery in county government hospitals in Kenya.

Research Questions:

Following were the research questions.

1) Can inventory techniques affect the inventory management practices?
2) Can training of the personnel affect the inventory management practices?
3) Can lead time affect the inventory management practices?
4) Can information technology affect inventory management practices?

Justification of the Study:

Inventories represent a sizeable investment and a potential source of waste that needs to be reviewed regularly and closely reviewed e.g. through perpetual stock taking, periodic reviews also as well as internal and external auditing. The study will benefit the following;

Academicians or Scholars:

Academicians will benefit from this study as it will serve as a platform for further research, review and critiques which will notably help bring to fore new knowledge in inventory management in Kenya. Additionally, new insights can also be drawn from the comparison of inventory management processes across economies as shall be presented in the paper hence new knowledge.

County Government:

The findings of this study will be useful to the Ministry of Health since it will shed more light on the inventory management challenges faced by Public hospitals. This will enable the Ministry of Health and the County Governments to join hands in concerted efforts in allocating more resources and facilities to enhance better inventory management practices on service delivery and thus contribute to the achievement of quality health care services. Thus, the Trans Nzoia County Referral Hospital may adopt the finding of this research and implement them in the institutions.

Citizen:

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

Staff:

The study will serve as management policy guide for the Stakeholders in the Health Sector since the study will reveal the state of the hospital's inventory management practices and also the level of service delivery to the clients (patients). Management can hence use the results to determine how best to run operations. To a policy maker, the study will be used as basic information by inventory control staff to develop friendly policies and procedures for receiving inventory and controlling their levels as well.

Scope of the Study:

This study focuses on inventory management of County Referral Hospital, TransNzoia with 80 respondents were sample size, so the study findings cannot be generalized. The management of medicines and non-medical supplies were also covered by this study. Data were gathered from management and staff of the hospital with specific focus on those officers responsible for acquiring and managing the hospital stocks. It had been the major poor management that brought down Trans Nzoia County Hospital in Kenya since it needs to serve Kiminini, Kwanza, Cherangany, and Endebes as their sub-county hospitals as it referral hospital and Mt. Elgon hospital as private wing.

Limitations:

The purpose was to find out how other authors conceptualized the concepts as well as the findings and methodology that has been adopted in past empirical studied on the inventory management. Secondly, time constraints and inadequate financial and material resources were challenges that limited the depth of coverage of the research work. A longer time and enough resources would have helped to unearth more findings especially with other healthcare institutions in other regions of the country to determine how inventory management affects their service delivery level.

2. LITERATURE REVIEW

Introduction:

The chapter provides a substantial evaluation of the theoretical review, conceptual framework, literature review, empirical literature, and critique of existing literature, research gaps and finally the literature review summary.

Theoretical Framework:

The theoretical framework of a research relates to the philosophical basis on which the research takes place and forms the link between the theoretical aspects and practical components of the investigation undertaken .According (Kothari, 2013) a theory is a coherent group of tested propositions commonly regarded as correct that can be used as principles of explanation and prediction for class of phenomena.

Theory of Inventory and Production:

The theory of inventory and production is described as specialty in operations research and is commonly referred to as the mathematical theory of inventory and production (Hillier &Lieberman, 2012). The theory is concerned with the development and adoption of inventory and production systems that are effective and that will result in the minimization of institutional cost. In this connection, the theory studies the following organizational functions: supply chain, warehousing, manufacturing and production, spare part allocation, and logistics.

According to Hillier and Lieberman (2012), institutions should follow the following steps in order to have an effective inventory management system: develop a mathematical model which describes the behavior of inventory; design and adopt an optimal inventory policy with respect to the firm's mathematical model; develop a computerized information processing system that will provide information on the current inventory levels; use the current inventory levels information to apply the optimal inventory policy to replenish existing inventory levels.In addition, the theory of inventory and production considers and uses the following measures: ordering costs, shortage costs, holding costs, salvage costs, discount rates, and revenues. This theory is considered to be relevant to this study for understanding effects of inventory techniques on inventory management on service delivery.

Scientific Management Theory:

The study will be based on scientific management theory to investigate the influence of staff training and scheduling process on effective store operations. The theory involves the work of Fredrick Taylor. He started the era of modern management in the late nineteenth and early twentieth century's; Taylor regularly sought to overthrow management by rule of thumb and replace it with actual aimed observations leading to the one best practice (Watson, 2016). Taylor advocated for the systematic training of workers in the one best practice rather than allowing them personal discretion in their tasks. Taylor believed that the workload would be evenly distributed between the workers and management with management performing the science and instruction and the workers performing the work, each group doing the work for which it was best suited (Watson, 2016).

Fredrick Taylor strongest positive legacy was the concept of breaking a complex task down into a number of subtasks and optimizing the performance of the subtasks, thus his stopwatch measured time trials (Osdorne and Rubinstein, 1990). As a result, he proposed four underlying principles of management. Firstly, there is need to develop a science of work to replace old rule of thumb methods, pay and other rewards linked to achievement of optimum goals, measures of work performance and output. Failure to achieve these would in contrast result in loss of earnings. Second is that workers should is that workers should be scientifically selected and developed; training each to be first class at some specific task (Watson, 2016). Thirdly the science of work to be brought together with scientifically selected and trained people to achieve the best results. Finally, work and responsibility to be divided equally between workers and management cooperating together in close interdependence. This theory is considered to be relevant to this study for understanding effects of training on inventory management on service delivery.

Application Control Theory:

A theory called the application control theory was pioneered by Ortega and Lin in 2004 to reduce inventory variation, reduce demand amplification and optimize ordering rules (Sourirajan & Ramachandran 2008). In a flexible demand environment, other organizations have doubts on inventory control, but Bijulal, Venkateswaran and Hemachandra (2011) point out that application control theory plays a vast role to deal with uncertainties of demand. For example, to answer the question when and how much to reorder in the situation of uncertainty demand, the theory can suggest guidelines on reordering processes. It is clear that uncertainty of demand is subjected into intervals and can result in great effort placed upon procurement because there is no specific lead time in between of the demand and the extent to reorder. Satisfying customers in this situation may also require strong management support and advanced procurement strategies that derive theory into practice (Minner and Transchel, 2010). This theory is considered to be relevant to this study for understanding effects of inventory techniques on inventory management on service delivery.

Adaptive Structuration Theory:

Based on this theory, the study intends to determine the effects of information technology on inventory management practices on service delivery. Structuration theory was first proposed by Anthony Giddens in his Constitution of society in

1984, which was an attempt to reconcile social systems and the micro/macro perspective of organization structure. Hond and Boersma (2012) borrowed from Giddens in order to propose Adaptive Structuration Theory (AST) and the rise of group decision support systems (DSS). AST provides the model whereby the interaction between advancing information technologies, social structures and human interaction is described, which focuses on social structures, rules and resources provided by information technologies as the basis for human activity's is a viable approach in studying how information technology affects inventory management this is because it examines the change from distinct perspectives. In conclusion AST's appropriation process is a good model to analyze the utilization and penetration of new technologies in organization. This theory is considered to be relevant to this study for understanding effects of inventory techniques on inventory management on service delivery.

Conceptual Framework:

This indicates the interrelationship between concepts and variable within the problem based on the facts obtained and also previous research report. The goals or objectives of the organization be short or long term had not been achieved due to poor procurements and store management.

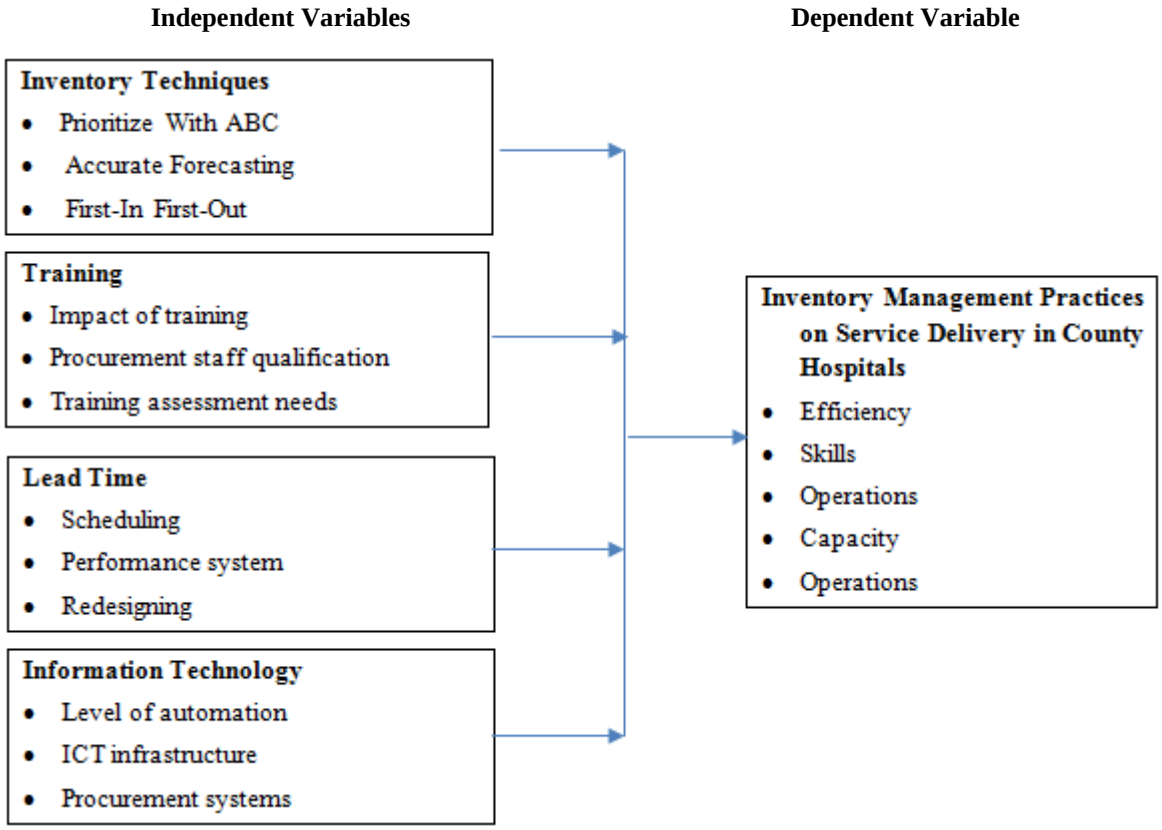

Figure 2.1: Conceptual Framework

Inventory Techniques:

According to Zhang (2013) inventory management process begins as soon as the organization has started production and ordered raw materials, semi-finished products or any other thing from a supplier. Inventory management relates to the tracking and management of commodities which includes the monitoring of commodities moved into and out of stockroom locations and the reconciling of the inventory balances. Some of the techniques used in managing inventories were discussed below:

ABC Analysis is an inventory control technique in which inventory items are classified into three groups according to their value. Group A: High value items. These are 15-20% of the items that account for 75% of the total inventory value. Items in this category should be monitored regularly. Group B: Medium value items. These are 30-40% of the items that account for approximately 15%of total value (Croom and Jones, 2010). Dai and Kauffman (2006) argues that Group B

items should be given less attention. Group C: Low value items, the 40-50%of the items that account 10-15% of the annual inventory value. These items should receive least attention. Thus, ABC system facilitates inventory control, over-usage, selective control and enables companies to concentrate on the most cost-effective areas. In addition, it eliminates unnecessary paperwork and reduces stock holding costs. ABC technique assigns items to three groups according to the relative impact or values of the items that makes up the group. Those thought to have the greatest impact, or value, for example, constituted the 'A' group, while those items thought to have a lesser impact or value were contained in the 'B 'and 'C' groups respectively (Coyle et al., 2012). The purpose of this classification is to ensure that purchasing staff use resources to maximum efficiency by concentrating on those items that have the greatest potential savings. Selective control will be more effective than an approach that treats all items identically (Lysons and Gillingham, 2016). The relevance of this theory to this study is that it suggests that though all categories of inventory is important, inventory must be categorized or classified in accordance to their relative impact or value and treated differently.

Bose (2007) defines Economic Order Quantity as an accounting formula that determines the point at which the combination of order costs and inventory costs are the least. Lysons and Gillingham (2016), also defines Economic Order Quantity as the optimal ordering quantity for an item of stock that minimizes cost. According to Lysons and Gillingham (2016), to calculate the Economic Order Quantity, a mathematical model of reality must be constructed. All mathematical models make assumptions that simplify reality. The model is valid only when the assumptions are true or nearly true. When an assumption is modified or deleted, a new model must be constructed. Economic Order Quantity approaches have proven to be effective inventory management technique when the demand and lead time are relatively stable, as well as when significant variability and uncertainty exist. This theory is relevant to this study in that it suggests that the appropriate or optimum level of stock or inventory that an organization should keep or store must help to reduce the cost of doing business.Coyle et al. (2012), defined Just-In-Time (JIT) System as an inventory control system that attempts to reduce inventory levels by coordinating demand and supply by the point where the desired item arrives just in time for use. Ideally, products should arrive exactly when a firm needs it, with no tolerance for late or early deliveries. Lysons and Gillingham (2016), also defined Just-In-Time System as an inventory control philosophy whose goal is to maintain first enough material in just the right place at just the right time to make just the right amount of product. It is a lean production system used mainly in repetitive manufacturing. The Just-In-Time System suggests that inventories should be available when an organization needs them, not any earlier, nor any later. Bowersox and Closs (2013), defined Just-In-Time System as a program which seeks to eliminate non-value-added activities from any operation with objectives of producing high-quality products, high productivity levels, lower levels of inventory, and developing long-term relationships with channel members.

Bailey (2012), defined material requirement planning as a mechanical method of supply scheduling where the timing of purchase or of production output is synchronizing to meet period by period operations requirement. Bailey (2012), explained further that material requirement planning methods try to avoid carrying more inventory than is needed at a time. Thus, the emphasis is on carrying only the quantities of stock needed at any point in time, and this is achieved through precise timing of material flows to meet requirements.

Training:

Training can have considerable influence on the organizational finances as there are several potential training costs that organizations incur. These can be direct training costs which include instructor salary, materials, and follow- up supervision. The second type of training costs is related to output and productivity during and after the completion of the training.Once that training is completed, the workers' productivity is expected to rise and the benefit will be for the company due to the increased worker output as the increased productivity will translate to higher wages and opportunities for career advancement. Overall the organization will determine the cost and returns to determine the amount of investment it will incur (Kaufman, 2006) .Training should be geared towards meeting an organization's needs. It involves learning of various skills and knowledge, for an organization to have successful products it must take an active role in establishment training programs, Clifford (2008).Training programs increases the organizations efficiency, effectiveness and flexibility to meet new challenge. Successful organization design competency-based training programs to contribute to corporate goals and fit the work place. Training provide staff with the specialized skills and knowledge essential for meeting the challenges for having competitive advantages and enables management to make right decisions which have good interest in to the company. Motivation knowledge helps organizations to be able to understand the utilization of employee's involvement to achieve process involvement. (Summer 2005).

According to Khawaja & Nadeem (2013), to survive in such an environment, organizations need to focus on strategies that deal with the emerging environment challenges. The purpose of training is to improve employee's performance in their current jobs and equip them for more demanding roles as it is considered as one of the most valuable, significant and important tools for human resource development in an organization. Training is a systemically planned in the development of knowledge skill and attitudes needed by an individual to perform a job in a satisfy level. Satisfying level becomes the quality level that an organization thrives always to achieve to meet customers' needs and expectations. Most organizations worldwide both in the service sector and production operations invest heavily in training to be able to have the best products in the market over saturated with competition. This goes beyond saying that without continuous review to the training system of an organization; it faces challenges of closing down or retrenchment (Rohan 2012).

Lead Time:

Lead time is the length of time taken to obtain or supply a requirement from the time a need is ascertained to the time the need is satisfied (Kenneth & Farrington 2016).Lead time is period taken to obtain a requirement from the time of the need is ascertained to its fulfilment and composes of preparation of requisition, forwarding of requisition to purchasing, processing by purchasing from enquiry to preparation of order, transmission of order to supplier, execution of the order by supplier, transportation of order, receipt inspection and storage and issue to production or sales (Lyson &Gillinham 2016). When goods are bought in bulk the frequency of lead time are reduced thus saving on inventory carrying costs.

Technical engineering system Division (2007), Lead time is one main competitive factor among companies. The ability to deliver quickly influences export sales and thereby revenue. The definition of lead time can vary, depending on what part of the company is focused upon. Lead time begins with the first receipt of a customer order and ends with customer receipt of the product or service. Everything in between is the lead time. Lead time refers to the time lag between placing an order and receiving it (Li,2013). Lead time is therefore defined as the time it takes from getting order from customer and receiving the delivered product by that customer (Azad, 2008).

Information Technology:

Morgan (2009) conducted a research study in United States of America on inventory management performance to Alien Technology Corporation. That was involved with pharmaceutical products where by other companies wins to supply pharmaceutical product to the government of United States of America because of its good customer services well organized and planned. The findings revealed that Alien Technology Corporation is almost 95% efficiency on inventory management practices where by the corporation manufactures products very high volume and at a low cost. The company provides a family of Radio Frequency Identification product for a variety application including supply chain management, logistics to improve inventory management and reduce operating costs. Underlying any economic environment is its technological base; the technical skills and equipment that affect the economic resources are converted into output.

Technological development affects the telecommunication industry in various ways. According to Mwebi (2013), technologies have created important industries that didn't exist years ago. Many of the big advances in business have come from early recognition of new ways to do things. The rapid pace of technology change opens up new opportunities but it also poses challenges to the telecommunication industry in terms of performance. Lack of new technology affects the firm's profitability and performance. According to Mwebi (2013), Technological advances do not go smoothly and when they do acknowledge of consumers is still an advantage to securing a success Technological change can also pose threat to those company gradually find they cannot compete effectively with their more advance rivals. Technology involves the knowledge, tools, equipment's and work techniques used by an organization in delivering its products or services.

Inventory Management Practices:

Beamon et al (2006) indicate that High-Medium-Low value approach is one of the inventory management models that check on costs of items. H-M-L this stands for high value, medium value and low value items on unit price of item. For instance, a firm might decide to classify items that have a value of more than 5000 high, 1000-5000 medium and below 1000 low. SDE stand for Scarce Difficult Easy analysis. Under this model unit value is the basis of this analysis and not the annual consumption value. To keep vigil on availability, inventory should be kept in stock keeping in mind difficulty of procurement and may follow forward buying (Kotleba, 2006).

Dai et al (2006) notes that the stores when subjected to analysis based on their criticality can be classified into Vital, Essential and Desirable stores. This analysis is termed as VED analysis. Vital items without which treatment comes to standstill that is non- availability cannot be tolerated. Under the essential items the organization looks at non-availability which can be tolerated for 2-3 days, because similar or alternative items are available. In desirable items, non-availability can be tolerated for a long period. Fast Slow and Non-moving (FSN) analysis is based on rate of consumption. Under this control model items can be classified into: fast moving, slow moving, non-moving, and obsolete. An understanding of the movement of items helps to keep proper levels of inventories by deciding a rational policy or reordering.

This method is based on the fact that some stock items have a much higher annual usage value than others (Dai and Kauffman, 2006). First-In, First-Out (FIFO) is one of the methods commonly used to calculate the value of inventory on hand at the end of an accounting period and the cost of goods sold during the period. This method assumes that inventory purchased first is sold first and newer inventory remains unsold. Thus, cost of older inventory is assigned to cost of goods sold and that of newer inventory is assigned to ending inventory. The actual flow of inventory may not exactly match the first-in, first-out pattern (Watson and Zhang, 2013).

Empirical Review:

Inventory Techniques:

Lysons and Gillingham (2016) defined Distribution Resource Planning as an inventory control scheduling technique that applies material requirements planningprinciples to distribution inventories. It may also be regarded as a method of handling stock replenishment in a multi-echelon environment. Distribution Resource Planning (DRP) serves a central role in co-coordinating the flow of goods inside the factory with the system modules that place goods in the hands of the customers and provides the basis for integrating the manufacturing resource planning (MRP II) system from the firm to the field.

According to Coyle et al. (2012), Distribution resource planning is a widely used and potentially powerful technique for outbound logistics systems to help determine the appropriate level of inventory. They further explained that, DRP helps companies to improve customer service (decrease stock out situations), reduce the overall level of finished goods, and improve distribution center operations. The underlying rationale for Distribution resource planning (DRP) is to more accurately forecast demand and to explode that information back for use in developing production schedules. In that way, a company can minimize inbound inventory by using material requirements planning (MRP) in conjunction with production schedules. Outbound inventory is minimized through the use of Distribution resource planning (MRP) (Coyle et al, 2012).

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

Manufacturing resource planning (MRP II), has been defined by the American Production and inventory Control Association as a system built around materials requirement planning and also including the additional planning functions of production planning, master production scheduling and capacity requirement planning. Lysons and Gillingham (2016), explained that, manufacturing resource planning (MRP II) has wider implications than material requirements planning (MRP I). Bowersox and Closs (2013), also explained that, material requirements planning (MRP I) developed into manufacturing resource planning (MRP II) with the addition of financial, marketing and purchasing components.

According to Coyle et al. (2012), manufacturing resource planning (MRP II) allows a firm to integrate financial planning and operations/logistics. They further explained that manufacturing resource planning (MRP II) serves as an excellent planning tool, and it helps describe the likely results of implementing strategies in areas such as logistics, manufacturing, marketing, and finance. Thus, it helps a firm to conduct “what if? Analysis and to determine appropriate product movement and storage strategies at and between points in the firm’s logistics system. Both material requirements planning (MRP I) and manufacturing resource planning (MRP II) are relevant to this study in that they place emphasis on carrying quantities of stock that is needed at any point in time and avoid unnecessary stock. This therefore helps reduce holding or carrying cost.

Training:

According to Ahuja (2011), employees who participate in the most number of training programs and rated the training as they ended as most relevant, view the organization as more supportive to them and looks at the organization as more favourable and have less intent to quite the organization. The trainings enhance the employee sense of debt towards the organization and the result is a more committed employee with a greater desire to remain in the organization. Reciprocity holds that the organization's employee received benefit of training from the organization and will attempt to repay in the future. Therefore, the employees will remain committed to the organization until the benefit is paid off. According to Augustine, (2013) on their study revealed that inventory management, storage and distribution of goods to users is efficiently done for example to hospitals drugs are distributed in an efficient manner because qualified people are employed with right qualifications and experience in materials related functions and the entire system of inventory management is computerized to ensure good performance.Training is Organized activity aimed at imparting information and/or instructions to improve the recipient's performance or to help him or her attain a required level of knowledge or skill. Organizations are operating in a dynamic and rapidly changing environment. The powerful forces of globalization are fundamentally changing the nature and the general way of doing things (Ahuja 2011). According Ogbo, (2011), the impact of globalization, information technology and rapid changes in the business environment can no longer be ignored. In the recent past, and with the advance growth of I.T the way of doing things is hard to change. Liberation and the increasing of customers demand are posing a major challenge to business.

Lead Time:

According Jader, (2012) emphasized the importance of lead time in the experience of inventory management. Customers bring their earlier experiences and overall perceptions of a service firm to each encounter because customers often have continuous contacts with the same service firm (Jader,2012). Therefore, the lead time issue was introduced as yet another important component in the perceived quality inventory management model, so that the dynamic aspect of the service perception process was considered as well. A favorable and well-known time strategy is an asset for any firm because it has an impact on customer perceptions of the communication and operations of the firm in many respects.

If a service provider has a strong inventory management in the minds of customers, minor mistakes will be forgiven. If mistakes often occur, however, the image will be damaged. If a provider's image is negative, the impact of any mistake will often be magnified in the consumer's mind. In a word, lead-time can be viewed as a filter in terms of a consumer's perception of quality Parasuraman et al. (2005). Bowersox and Closs (2013), articulated that improvement in continuity of supplies with reduced lead times, will lead to improvement in cooperation and will also enhance cooperation's and communications with reduced duplication of efforts, reduction in material costs and improvement in quality control, which are the main benefits of materials management.

Information Technology

In Uganda, (Namagembe,2010) her study revealed that a significant positive relationship between information sharing and inventory management means that if chain partners implement information technologies and collaborate among each other, then inventory management could improve, also in her study revealed that a significant positive relationship between inventory management and customer satisfaction means that in order to obtain high levels of customer satisfaction there is need for better inventory management. She further showed that significant positive relationship between information sharing and customer satisfaction which implies that increased levels of information sharing among chains partners lead to improved levels in customer satisfaction.

According to Kodama (2013), technology change includes any application of new ways to transform resources into the product or service. These include new machines/equipment's e.g. computers and new techniques and methods of work procedures e.g. the management of information system (MIS).

The adoption of new technology involves the current decision to adopt the organization design to that technology. According to Kotler (2007) technology is becoming critical as a competitive tool. Retailers are using computers to produce better forecasts, control inventory costs, order electronically from suppliers and e-mails between stores and even to sell to customers within stores. They are adopting check out scanning systems, electronic fund transfer, electronic data interchange, in store television and imported merchandise handling systems and smart cards.

Inventory Management Practices:

Silver (2007) indicate that stock-taking or inventory checking is the physical verification of the quantities and condition of items held in an inventory or warehouse. This may be done to provide an audit of existing stock valuation. It is the source of stock discrepancy information. Stock-taking may be performed as an intensive annual check or may be done continuously by means of a cycle count. The above is also referred to Periodic Count. Periodic counting is usually undertaken for regular, inexpensive items. The term periodic generally refers to annual stock count. However, periodic may also refer to half yearly, quarterly, monthly, bi-monthly or daily.

Refrigeration is an inventory management practice that involves all the activities that ensure maintenance of the refrigerator equipment by an organization. This activities include: updating of the equipment, storage information on items stored in the refrigerator by scanning radio frequency tags attached to the items whenever a door of the refrigerator is opened, transmitting the storage information to a mobile terminal, updating the storage information stored in the mobile terminal with the storage information transmitted from the refrigerator, and displaying, comparatively, the items of the updated storage information and items for the specific list set by a user or registering the items included in the specific list but not in the updated storage information as purchase information (Mehra and Inman, 2014).

Eckert (2012) argues that the standard operating procedures (SOPs) for inventory control consists of a step-by-step process that is easy follow and understand by the employees.

These steps are inventory receiving, storage and product rotation and warehouse and inventory security.

These steps also serve to hold employees accountable for adhering to inventory control policy expectations. Creating and following an SOP is essential to managing inventory and controlling inventory costs. Even small organizations should not underestimate the power of an inventory-control SOP.

Critique of Existing Literature:

More than a decade now, there has been uproar over the rise and fall of the inventory management in public sector (Silver, 2007).Further, this author argues that inventory control planning, keeping inventory track, procurement and inventory management strategy are important keys in inventory management but studies in this area are inadequate. Stores or inventory are important aspects that will hinder an organization from achieving its goals and objectives. Though too much emphasis has been identified in this area, inventory management has a lot to do with the challenge of the environment. Some environmental facts crop into the organization, thus making it difficult to move forward without changing its policies and strategies. There is a great need for the further studies on the inefficiently in inventory or stock control in organization, Thus is because of the effect of the even increasing pace of information technology, organization, structural and social changes.This research will try to impact an understanding that inventory control is a very essential investment in any organization for attainment of quality output and competitive receives. Inventory management systems obtain and move supplies and equipment to places where they are needed in a timely manner and at an optimum cost. Supplies and equipment usually cannot go directly from their source to the end user. They frequently must be held in the warehouse at some points along the way. In view of this warehouse of supplies maintained and inventory of supplies and equipment are held at all levels in the Kenya Health Service.

Summary:

Hospitals are complex organisations providing large number of services of patients, physicians and staff. These services include dietary, linen, housekeeping, pharmacy, laboratory, surgery, administration, and others. Each area has specific and unique material and supply need creating a requirement in these facilities for supply management system that can provide the necessary supplies when needed.

In the current scenario of increasing health care costs, systems inventory must be optimized without sacrificing the level of service provided. Good inventory management is essential to the successful operation of any health care organization, for a number of reasons. One of the most important is the proportion of the organizations' budget that represents money spent for inventory. Although the amounts and dollar values of the inventories carried by different types of health care providers vary widely, in a typical hospital's budget 25 to 30 percent goes for medical supplies and their handling. On the national scene, health care supplies constitute 8 to 9 percent of health care expenditures.

Research Gaps:

Various studies are reviewed previously have not adequately indicated extensively the role played by inventory management in public sector in Kenya. Inventory management has adversely affected the public sector in Kenya and contributed to poor operations performance as indicated by (Waters, 2013). There is therefore great need to investigate further to get a solution.One might expect the seemingly infinite inventory theories related research to be a key resource for managers seeking to gain a competitive advantage through stores control. However, some have suggested that managers who turn to inventory theory research may find it to be of little significance (Krautter,2009) or that it has little to offer in terms of enhancing stores practices (Wagner, 2016).

This has led to continued existence of a gap between inventory theory and practice (Lenard and Roy, 2005). While the varied solutions offered to bridge this gap represent valuable research, input from practitioners is noticeably absent (Patton and Steele, 2010). There is no study that have been comprehensively been done on factors affecting inventory management in the public sector, in particular County Government and TransNzoia region and hence this study intends to fill these gaps.

3. RESEARCH METHODOLOGY

Introduction:

This chapter sets out various stages and phases that were followed in completing the study. It involves a blueprint for the collection, measurement and analysis of data. In this stage, most decisions about how research was executed and how respondents were approached, as well as when, where and how the research was completed. Therefore, in this section the research identifies the procedures and techniques that was used in the collection, processing and analysis of data.

Research Design:

The research design used was a descriptive survey as it was concerned with describing the characteristics of public institutions with regards to inventory management. According to Mugenda and Mugenda (2009) a descriptive survey is an attempt to collect data from members of a population in order to determine the current status of that population with respect to one or more variables. A descriptive survey design was used. A survey is used to collect original data for describing a population too large to observe directly. A survey obtains information from a sample of people by means of self-report, that is, the people respond to a series of questions posed by the investigator (Rose & Catherine, 2017). In this study the information was collected through self-administered questionnaires distributed personally to the subjects by the researcher.

Target Population:

According to Burns and Grove (2012), a population is defined as all elements (individuals, objects and events) that meet the sample criteria for inclusion in a study. The study population of this consisted of all Staff and Management in the Trans Nzoia County Referral Hospital. The target population of the study is employees of Trans Nzoia County Referral Hospital with a population of 400 employees. A list of Male and Female employees was obtained from the Human Resource Department as below.

Table 3.1: Total Population

Departments	Male	Female	Total
Human Resource and Administration	**60**	**40**	**100**
Finance	**15**	**5**	**20**
Audit	**15**	**6**	**21**
Procurement	**20**	**4**	**24**
Stores	**40**	**12**	**52**
Inspection/ quality	**35**	**20**	**55**
Transport	**10**	**5**	**15**
Kitchen	**38**	**60**	**98**
Cleaning	**10**	**5**	**15**
Total	**253**	**147**	**400**

Source (Trans Nzoia County Hospital 2018)

Sample Size and Procedure:

The main factor considered in determining the sample size was to keep it manageable enough. Also, to enable the researcher to derive from it detailed data at an affordable cost in terms of time, finances and human resource (Mugenda and Mugenda 2003). The study adopted stratified sampling techniques to select suitable sample size. The researcher selected (30%) of the target population to act as the sample size, since it has been argued that such a sample size is adequate for a descriptive survey study (Patton, 2014). The target sample was 120 employees chosen randomly because it provides more information within a given sample size and ensures homogeneity within each stratum. They are all based at Administrative department of the Trans Nzoia County Referral Hospital. The staff range between the age of 21 and 50. Their minimum level education is'0' level, college and university levels. AS the sample number was not so large, the questionnaire was distributed in only five (5) departments namely Human Resource and Administration, Finance, Audit, Procurement. Questionnaires were distributed to employees in the 5 departments and this included management and union staffs. All these employees are based in Trans Nzoia County Hospital.

Table 3.2: Sample size

Departments	Male	Female	Total
Human Resource and Administration	**20**	**15**	**35**
Finance	**10**	**5**	**15**
Audit	**11**	**4**	**15**
Procurement	**20**	**4**	**24**
Stores	**19**	**12**	**31**
Total	**80**	**40**	**120**

Sample and Sampling Techniques:

Stratified random sampling technique was used to determine the sample size. This method was preferred because; the population that was sampled was divided into homogenous groups based on characteristics considered important to the indicators being measured. This method also helped to achieve precision, flexible in the choice of the sample design for different strata and finally one is able to get estimates of each stratum in addition to the population estimate (Kothari, 2013). The strata for the study were divided into top managers, a middle level managers and supervisors. The sample was distributed equally among the strata.

Data Collection Instruments:

A questionnaire was chosen as the main data collection instrument. A questionnaire is a printed self-report form designed to elicit information that can be obtained through the written responses of the respondents. The information obtained through a questionnaire is similar to that obtained by an interview, but the questions tend to have less depth (Burns andGrove, 2012). Data was collected with the aid of questionnaires to evaluate the management and staff knowledge and views the subject matter and how it affects service delivery in the hospital. The questionnaire was designed to meet the objectives of the study.

Data Collection Procedure:

Data was collected through an administration of questionnaire distributed to the sample group of 120 participants and to an extend interview was applied where there was need for further clarification. The respondents were asked to answer questions without regard to gender, age, or qualifications. The questionnaire was preferred due to its ability to collect data from a large group within a short time. Questionnaires were mainly administered to the respondent to complete the questions themselves, the questioners were hand-delivered to them. Secondary data was collected through reviews of both empirical and theoretical data from books, journals, magazine and the internet.

Pilot-Test:

The study pre-tested the questionnaires with key literature such as Oballah et al. (2015) and Anichebe and Agu (2013) as well as some experts. The rationale behind this exercise was to ascertain the level of understanding of the items in the questionnaire and to achieve face validity of the data collection instrument where by 10% of the sample size was used as a pilot test. Also, it was to find out whether the feedback from the pre-test provides the type of information needed or whether the respondents were misinterpreting any of the questions. Consultation of the experts and a pilot study was therefore undertaken.

Reliability:

Rose & Catherine, (2017) refer to reliability as the degree of consistency with which an instrument measures the attribute it is designed to measure. Data collection bias was minimized by the researcher's being the only one to administer the questionnaires, and standardizing conditions such as exhibiting similar personal attributes to all respondents, e.g., friendliness and support.The data gathered from the pilot study was subjected to cronbach's alpha coefficient of reliability. According to Zinbarg (2005), Cronbach's alpha is coefficient of reliability that gives an unbiased estimate of data generalizability. The theoretical value of alpha varies from zero to 1, since it is the ratio of two variances' alpha coefficient of 0.7 was achieved that indicates that the gathered data has a relatively high internal consistency and could be generalized to reflect opinions of all respondents in the target population. Commonly accepted rule of thumb for describing internal consistency using cronbach alpha is as follows,

Table 3.3: Internal Consistency

Cronbach's alpha	Internal consistency
$\alpha \leq 0.9$	Excellent
$0.8 \leq \alpha < 0.9$	Good
$0.7 \leq \alpha < 0.8$	Acceptance
$0.6 \leq \alpha < 0.7$	Questionable
$0.5 \leq \alpha < 0.6$	Poor
$\alpha < 0.5$	Unacceptance

Source:(Zinbarg, Revelle, Yovel&Li 2013)

After obtaining an alpha coefficient of higher than 0.7, questionnaire were issued to respondents. Data reliability played an important role generalization of the gathered data to reflect the true characteristics of the study problem.

Validity:

The validity of an instrument is the degree to which an instrument measures what it is intended to measure (Rose & Catherine,2017). Content validity refers to the extent to which an instrument represents the factors under study. To achieve content validity, questionnaires included a variety of questions on the knowledge of the top management officials and their staff about inventory management and its effect on service delivery of TransNzoia County Referral Hospital. Questions were based on information gathered during the literature review to ensure that they were representative of what respondents should know. Content validity was further ensured by consistency in administering the questionnaires.

Data Analysis Procedure and Presentation:

Gallagher (2012) opined that data analysis can be the most challenging and interesting aspect of research. It refers to deriving meaning from the data that had been collected in a study. Data analysis assumes many forms. Quantitative data analysis involves the use of statistical methods to assemble, classify, analyze and summarize the data to derive meaning. As indicated earlier, the author conducted field research to collect data from Trans Nzoia County Referral Hospital using questionnaires. After the data collection, data reduction was conducted to select, arrange, refine, focus and summarize the data for onward analysis. The data collected was transformed into a form appropriate for manipulation and analysis. The data gathered from the questionnaire was edited to ensure completeness, consistency and accuracy. Data collected were analyzed through the use of Statistical Package for Social Sciences (SPSS) version 20. In analyzing the data, tables which include distribution and percentage were used as analytical tools. Quantitative explanations were made of quantitative data to give meaning to them as well as explain their implications. From these, appropriate conclusions and recommendations were made from the findings of the research. Analysis of Variance (ANOVA).The resultant data presentation was tabulated and presented using tables, bar graphs and pie charts. Multiple regressions formula was applied in this study to determine the relationship between the independent variables and one dependent variable. The formula for multiple regressions was expressed as follows: $Y=\beta_0+\beta_1X_1+\beta_2X_2+\beta_3X_3+\beta_4X_4+\varepsilon$, Where;

Y= Factors Affecting Inventory Management Practices on Service Delivery in County Government Hospitals in Kenya,

β_0=constant (coefficient of intercept),

X_1=; Inventory Techniques

X2=Training

X3=Lead Time;

X4=Information Technology;

ε =error term; β1…

β_4=regression coefficient of four variables.

An Analysis of Variance was used to measure statistically the significance in predicting how dependent variables Inventory Management Practices on Service Delivery. The test of significance was correlation coefficient, the R square as a measure of significance. The coefficient is a standard measure of an assumed linear relationship between variables. A coefficient of value between (+ve) 0.5 and (-ve) 0.5 or higher indicates a strong relationship and by extension a significant variable in influencing the trend of the dependent variable.

4. RESEARCH FINDINGS AND DISCUSSIONS

Introduction:

This chapter comprises of data analysis, presentation and interpretation of the findings. The data presented includes response rate, general information of the respondents and presentation of findings. Descriptive statistics were used in analyzing the findings of this research project.

Response Rate:

In the study, 120 questionnaires were administered to the staff of TCRH Kitale. Out of the 120 questionnaires that were administered, 96 questionnaires were filled and returned successfully and as such they were considered as the sample with a response of 80%. Such a response rate is viewed as being highly favorable according to (Mugenda & Mugenda, 2009) who assert that a response rate of 70%and above may be rated as being very good, 60% good and 50% adequate. This is a nutshell implies that the respondents were an adequate representational of the entire targeted population as shown in table 4.1

Table 4.1: Response Rate

Questionnaires	Frequency	Percent (%)
Male	56	58%
Female	40	42%
Total	**96**	**100%**

General Information:

The research analyzed the background of the respondent using the following parameters, gender, level of education, age, job group and duration each respondent have been working with the hospital. This result were summarized and presented as follows.

Gender of the Respondent:

Different gender has different opinion about various issues. The researcher wanted to find out the views of different gender interviewed. The findings are as indicated in table 4.2. The findings show that 67% of the respondents were male and 33% of the respondents were females. This shows that more male were given and distributed with questionnaires during the research.

Table 4.2: Gender of the Respondent

Gender	Frequency	Cumulative Frequency	Percentage
Male	80	80	67
Female	40	120	33
Total	**120**	**200**	**100**

Level of Education:

Education level may have an impact on how people respondents to different opinions. The researcher sought to establish the education level of the respondents. The findings indicated in table 4.3.The finding reveals that 31%of the respondents have education level of secondary, 42% of the respondent are college holders, 21% of the respondents are university holders and 6 % of the respondents were post graduate. This shows that majority of the respondents were college holders**.**

Table 4.3: Level of Education

Level of Education Frequency	Frequency	Cumulative	Percentages
Secondary	30	30	31
College	40	70	42
University	20	90	21
Post graduate	6	9 6	6
Totals	**96**	**1 86**	**100**

Analysis of the Specific Objectives:

In this section, the study analyses the specific objectives of the study regarding the perceived factors affecting of the various inventory management practices on service delivery used by TCRH**.**

These specific objectives relate to effects of inventory techniques on inventory management practices on service delivery, lead time on inventory management practices on service delivery, training on inventory management practices on service delivery and information technology on inventory management practices on service delivery in Trans Nzoia County Referral Hospital.

Inventory Techniques Effects on Management Practices:

The core duty of the study was to determine the effectiveness of inventory techniques on inventory management practices on service delivery. To determine the study asked respondents about their opinion if yes or no why they think so as presented in table 4.4.

Table 4.4: Inventory Techniques Effects on Management Practices.

Response	Frequency	Percentage
Yes	86	90
No	10	10
Totals	**96**	**100**

The results indicated that majority of the respondents were of yes 86(58%) stated inventory techniques affects inventory management practices on service delivery where those respondents explained that due to the inventory techniques available are not fully properly used which can enhance inventory management and they have not adopted to the new techniques while 10(10%) were of no stated that inventory techniques do not affect inventory management on service delivery in that inventory techniques are used to control inventory not for management.

Table 4.5: Model Goodness of Fit

R	R^2	Adjusted R^2	Std. Error of the Estimate
0.871	0.781	0.796	0.056

a. Predictors: (Constants), scheduling, redesigning, ABC prioritizing, impact on training, level of automation

b. Dependent Variable: Inventory management practices on service delivery

With an adjusted R-squared of 0.781, the model shows that scheduling, redesigning, ABC prioritizing, impact on training and level of automation explains 78.1% of the variations inventory management practices on service delivery on county government hospitals while 21.9% is explained by other indicators which are not inclusive in study or model. A measure of goodness of fit synopses the discrepancy between observed values and the values anticipated under the model in question (Capelli, 2010).

ISSN 2349-7807

International Journal of Recent Research in Commerce Economics and Management (IJRRCEM)
Vol. 5, Issue 2, pp: (33-54), Month: April - June 2018, Available at: www.paperpublications.org

Analysis of Variance (ANOVA):

From the results in table 4.6 analysis of variance statistics was conducted to determine the differences in the means of the dependent and independent variables to show whether a relationship exists between the two.The P-value of 0.05 implies that inventory management on service delivery has a significant relationship with inventory techniques, training, lead time and information technology which is significant at 5 % level of significance. This is in line with the findings of Barney (2011), who observed that this also depicted the significance of the regression analysis done at 95% confidence level. This implies that the regression model is significant and can thus be used to evaluate the association between the dependent and independent variables. This is in line with the findings of Berkowitz (2012) who observed that analysis of variance statistics examines the differences between group means and their associated procedures.

Table 4.6: ANOVA

	Sum of Squares	Df	Mean Square	F	Sig.
Regression	4.147	1	1.049	.514	.004
Residual	6.433	95	.495		
Total	**10.580**	**96**			

5. SUMMARY, CONCLUSIONS, AND RECOMMENDATIONS

Introduction:

This chapter presents a summary of the findings, conclusions, recommendations and areas for further studies on inventory management practices on service delivery.

Summary of Finding:

Inventory Techniques on Inventory Management Practices on Service Delivery

From this study, one can conclude that ABC techniques affects inventory management. This is because a large of respondents strongly agreed to it. The findings show that majority of the respondents at 52% agreed with the statement that the accurate forecasting enhances inventory techniques. This fosters better planning for inventory which reduces time wasting. About the issue of that first-in first-out improves inventory techniques, 35% of the respondents strongly disagree to a very great extent. Majority of the respondents on the open-end question indicated that inventory techniques affect inventory management practices on service delivery in that without the use of the techniques there will be poor management meaning the hospital has ignored the use of the techniques and some lack the knowledge on use of the modern techniques like radio frequency among others.

Conclusions:

Inventory management practices play a very big role in public entities that is especially in county hospitals Trans Nzoia in this study. Conclusions as a whole, the hospital in Kenya that is Kitale should look forward to improve inventory management practices in order to deliver services to the patient. Though a lot of studies have been made in provision of inventory management practices on service delivery in Kenyan hospitals, still there are couples of challenges which hamper full implementations of these attributes. From the research findings it was concluded that there are some noticeable challenges which include. The TCRH lacks proper modern inventory techniques in place. There was lack of continuous and on job training of the staff in order to equip them with the latest skills and knowledge. Lead time is inadequately followed whereby there is no order follow up from time to time leading to late and delayed deliveries of other goods or services which are offered by the hospitals. Poor infrastructure and modern technology leading to theft of goods e.g. drugs and monitoring of the movement of goods. The TCR lacks and inadequate proper inventory management practices. It therefore concluded that inventory officers or personnel involved should be empowered, motivated and inventory management should be on its own without mixing its roles and left to make decisive decision on some issues and hence improve the inventory management practices.

Recommendations:

Inventory Techniques on Inventory Management Practices:

In order to have a full turn around in regard to provision of inventory management practices the study recommends that the hospital should ensure that good and right inventory technique tools or facilities for use are provided to yield quick inventory management hence being efficient. These techniques should be viewed strategically and not as support tools. The study further recommends that the hospital should introduce new more techniques of inventory management which was to provide upstream and downstream inventory visibility. Some of these techniques are; ABC analysis, bar coding, radio frequency identification and inventory software.

Area for Further Studies:

The study covered four factors affecting factors affecting inventory management practices on service delivery in county government hospitals in Kenya with emphasis on Trans Nzoia County. The study recommends a further study on other counties to validate the findings with their results and arrive at generalization of findings.

ACKNOWLEDGEMENT

I am grateful to Almighty God for giving me strength and wisdom to undertake this work. His grace and sufficiency has brought me this far and I really appreciate the life and successes he has helped me chalked this far. I am thankful to Dr. A. Osoro my supervisor who has been supportive and cooperative in making this work successful. I must mention that without him, this work could not have been completed. I also acknowledge the several writers whose work I referenced and support of all those who contributed to the success of this work .My gratitude goes to Jomo Kenyatta University of Agriculture and Technology (Kitale Campus) for offering me the opportunity to study in their institution and all lectures and staffs .Finally, I wish to thank my family, friends and colleagues for their support and cooperation till the completion of this work and indeed I am grateful to you.

REFERENCES

[1] Agus, A. & Noor, Z. (2010). *Supply chain management and performance: an empirical study*, University of Malaysia, Singapore.

[2] Ahuja M., Mahlawat S., Masood R. Z. (2011). Study of Service Quality Management With SERVQUAL Model: An Empirical Study of Govt/Ngo's Eye Hospitals in Haryana. Indian Journal of Commerce & Management Studies., 2(2)

[3] Akintonye, N. (2014). *The effect of inventory management on performance of German service firms, Journal of Operations Management,* 2(1), 1-5

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

[5] Augustine, A. N. (2013). Effect of inventory management on organizational effectiveness.*European Management Journal,* 3 (8), 52-76.

[6] Ayad K. Ali. Inventory Management in Pharmacy Practice: A Review of Literature.Archives of Pharmacy Practice. 2011; 2(4) 151-156.

[7] Bachetti, A., Plebani, F., Saccani, N. and Syntetos, A.A. (2010). *Spare Parts Classification and Inventory Management: a case study. Global Thinking Sustainable Practice,Professional Success.* University of Salford. Manchester: Salford Business School.

[8] Barbara Xu, 2008, Manager of Order Fulfilment department, Nokia Telecommunication Ltd. Dongguan Branch.

[9] Beamon, B. & Kotleba, S. (2006). Inventory modeling for complex emergencies in humanitarian relief operations, *International* Journal *of Logistics: research and applications*, 9, 1 – 18

[10] Blanchard, D. (2010). *Supply Chain Management. Best Practices* (2nd ed.). Hoboken, New Jersey, USA: Published by John Wiley and Sons, Inc. BPP. (2008). *Professional Accountant.* London: BPP Publishers.

[11] Bowersox D. J., Closs D.J., M., Cooper B.M. (2013), "*Supply Chain Logistics Management*", 4th ed. Singapore, McGraw-Hill.

[12] Bijulal, D., Venkateswaran, J. and Hemachandra, N. 2011. Service levels, system cost and stability of production–inventory control systems. *International journal of production research*, 49(23): 7085-7088.

[13] Brigham, E. & Gapenski, L. (2013). *Intermediate Financial Management*, Pearson, New York

[14] Burns, N. and Grove, S. (2012), "*The Practice of Nursing Research: Appraisal, Synthesis, and Generation of Evidence"* (7th ed.) Elsevier Health Sciences, Publisher

[15] Chopra, S., and Meindl, P., (2015), "*Supply Chain management strategy, planning and operation*", 3rd Ed, Pearson Education Inc. Jersey

[16] Coyle, J. J., Bardi, E. J., and Langley, C. J. Jn., (2012), *"Supply Chain Management :A Logistics Perspective"* (9th ed.) Cengage Learning, Publisher. Quebec, Canada, Transcontinental Louisevill.

[17] Croom, S. & Jones, A. (2010). *E-procurement: Key Issues in inventory control implementation and operation in the Public Sector*.

[18] Dobler, W.D., Lee, L., and David, B. (2014).*Materials Management a Supply Chain* Perspective: Text and Cases.PHI Learning Pvt. Ltd. Publisher.

[19] Robert, M. W., Robert, B. H., Larry C.G., James C.P. (2015), Purchasing and Supply Chain Management: Text and Cases, McGraw-Hill Series in Management, 6th Ed, The McGraw-Hill Companies Inc, USA.

[20] Dryden, P. & Brownell, J. (2012). *Strengthening the purchase vendor management inventory*, Cornell University, Dublin.

[21] Eckert, S. (2012). *Inventory management and its effects on customer satisfaction*, *Journal of Public Policy*, 1(3):15.

[22] Frederick S.H., Lieberman G.J., Bodhibrata N. Preetam B. (2012) *Introduction Operations Research*, (9th edition), Tata McGraw Hill Education Private Limited New Delhi.

[23] Gakuru, N. (2012). *Application of inventory models in drug inventory management the case for the Nairobi city council health services*, *Unpublished MBA Project* University of Nairobi, Nairobi.

[24] Gallagher, C., Hipkins, R., & Zohar, A. (2012). *Positioning thinking within national curriculum and assessment systems*: Perspectives from Israel, New Zealand and Northern Ireland. Thinking Skills and Creativity, 7(2), 134-143.

[25] Ganeshan, R., Boone, T. & Stenger, A. (2010). The impact of inventory and flow planning parameters on supply chain performance. An Exploratory Study Elsevier Journal, 12(2), 35-54.

[26] Hond, F. den, Boersma, F.K., Heres, L., Kroes, E.H.J., & Oirschot, E. van (2012). *Giddens à la Carte?Appraising empirical applications of Structuration Theory in management and organization studies*. Journal of Political Power, 5 (2), 239-264.

[27] Jianbin Li, Ruina Yang, Niu Yu. Optimal capacity reservation policy on innovative product. Journal of Industrial & Management Optimization, 2013, 9 (4): 799-825.

[28] Khawaja & Nadeem (2013): "Training and Development Program and its Benefits to Employee and Organization: A Conceptual Study". European Journal of Business and Management. ISSN 2222-1905 (Paper) ISSN 2222-2839 (Online). Vol.5, No.2, 2013.

[29] Kaufman, B. and Hotchkiss, J. (2006). *Economics of Labour Markets (7th ed.).* Mason, OH:Thomson South-Western.

[30] Kenneth L, (2016), *Purchasing and Supply Chain Management*, 6th edition, Financial Times Prentice Hall

[31] Kitheka, S. (2012). *Inventory management automation and the performance of supermarkets in western Kenya*, *Unpublished MBA Project*, University of Nairobi, Nairobi

[32] Kodama, M. (2013). *Competing Through ICT Capability: Innovation in Image Communication*. Palgrave MacMillan.

[33] Kothari C.R (2013). *Research Methodology: Methods and Techniques*, 3rd edition.New Age International (P) Limited, Publishers, New Delhi, India.

[34] Kotler and Armstrong, (2007), Principles of Marketing, 3rd edition, Prentice Hall, New Jersey.

[35] Lapide, L. (2010). *Inventory management in service firms: forecast errors*, *The Journal of Business Forecasting*, 1-2

[36] Li C.and Zhang F., (2013) "*Advance demand information, price discrimination, and preorder strategies," Manufacturing and Service Operations Management*, vol. 15, no. 1, pp. 57–71

[37] Lysons, K. and Gillingham, M. (2016), "*Purchasing and Supply Chain Management*",9th Edition, Prentice Hall.

[38] Lysons, K. and Farrington, B. (2016). Purchasing and Supply Chain Management, Pearson Education Ltd, England

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

[40] Mehra, S. & Inman, R. (2014). *Inventory management and efficiency of manufacturing firms*, *Journal of Operations Management*, 1(2), 1-4.

[41] Mugenda, O. M. and Mugenda, A. (2009). *Research Method: Qualitative and Quantitative approach.* Nairobi, ACTS Press.

[42] Mungu, S. (2013). *Supply chain management practices and stock levels of essential drugs in public health facilities in Bungoma East Sub County*, Unpublished Research Project, University of Nairobi, Nairobi.

[43] Mwebi, J. O. (2013). Information and communications technology and operational efficiency in supermarkets in Nairobi. *Unpublished Doctoral dissertation*, University of Nairobi.

[44] Nieswiadomy, Rose M. Bailey, Catherine. (2017), "Foundations of Nursing Research", 7th edition. Pearson Publisher.

[45] Paton, M. (2014). *Qualitative Research and Evaluation Methods: Integrating Theory* and Practice *(3rd Edition)* London: Sage Publications.

[46] Rohan, S. & Madhumita, M. (2012): "Impact of Training Practices on Employee Productivity: A Comparative Study". Interscience Management Review (IMR) ISSN: 2231-1513 Volume-2, Issue-2, 2012.

[47] Schonberger, R. (2008). *Best Practices in Lean Six Sigma Process Improvement. A Deeper Look.* Hoboken, New Jersey, USA: Published by John Wiley and Sons Inc.

[48] Waters, D. (2013). *Global logistics and distribution planning: strategies for management (4th edition)*, Kogan Page Limited, London

[49] Watson N. & Zhang Y. (2005) Decentralized serial supply chains subject to order delays and information distortion, *Manufacturing and Service Operations Management* 7, 152-168

[50] Wisner, T. & Leong, G. (2011*). Principles of supply chain management: A Balanced Approach (3rd Edition)*, USA

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