

**INVENTORY MANAGEMENT AND SERVICE DELIVERY IN GOVERNMENT
HOSPITALS. A CASE STUDY OF KABALE REGIONAL REFERRAL HOSPITAL**

BY

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DECLARATION

I, **Muhindo Patience**, hereby declare that this is my original work and has never been submitted to any other academic institution for any award. I declare that I have cited all sources from which I used for this work.

Signature.....

Date.....

Student

APPROVAL

This is to certify that this Reserch Dissertation has been done under my supervision and has been submitted for examination with my approval.

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DEDICATION

I dedicate this work to my Husband; Sabiti William Kalende and my children; Akantorana Kaylisa, Atwine Elsa and Atuha Liam that stood with me during tough times, and their smile that leaves me with unconditional love and joy.

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LIST OF ABBREVIATIONS AND ACRONYMS

FY	Financial Year
GYN	Gynecology
IM	Inventory Management
IMT	Inventory Management Technique
IT	Inventory Turnover
KRRH	Kabale Regional Referral Hospital
SD	Service Delivery

ABSTARCT

The study aimed at establishing the effect of Inventory management on service delivery in government hospitals using Kabale Regional Referral Hospital (KRRH) as a case study.

The research employed a correlational research design to enable the researcher establish the relationship between study variables. The researcher also used mixed methods approach in which qualitative data was used to triangulate quantitative data. Out of the targeted 97 staff, 86 of them were interviewed which resulted into an 89% response rate.

The findings revealed that service delivery at KRRH was lacking with majority (63%) of the interviewed staff saying that the patients' level of satisfaction in regards to the health services offered was generally low and also majority (65%) of them said the health services were not readily available.

The chi square test of association revealed that there exists a significant relationship between Service Delivery and Inventory Turnover which implied that inventory management and service delivery in government hospitals were related.

The major Inventory Management Techniques that were found out to be used at KRRH were Bulk shipment and ABC Inventory Management. The other techniques that were being used included: Economic Order Quantity (EOQ); Last in First Out (LIFO); First Expire First Out (FEFO); and First In First Out (FIFO) among others.

The major challenges that KRRH was facing in IM processes included: Late delivery by the suppliers; Inadequate tools and equipment to use in inventory management like computer software; Manual documentation; Inconsistent tracking of ordered goods and services; Lack of collaboration between the Procurement and Inventory department and other departments; Poor inventory management process; Lack of Transparency amongst the store staff; and Entrance of unauthorized personnel among others.

Based on the study findings, the researcher recommended that; efforts should be made by both the government especially the Ministry of Health and development partners to improve the quality of services offered in different healthcare facilities such as recruitment of professional staff and enhancing the storage spaces.

CHAPTER ONE: INTRODUCTION

1.0 Introduction

This chapter of the study presents the background of the study, statement of the problem, objectives of the study, research questions, scope of the study, significance of the study, conceptual framework and definitions of key terms.

1.1 Background of the study

The background of the study covered four major sub themes namely: historical, theoretical, conceptual and contextual backgrounds.

1.1.1 Historical Perspective

The health sector in Uganda has been evolving over the years since independence. The health sector prior to Amin's rise to power in 1971 has been described as "one of the best government health care systems in Africa" (Whyte 1992). Most of the traditional government hospitals including Kabale Regional Referral Hospital (KRRH) were built under the Obote's regime as a result of strong policies that favored the health sector. New hospitals have been constructed in the past years like; Kirudu, Kawempe women's hospital and the old ones like; Mbale, Jinja, Soroti, Moroto, Lira, Gulu, Arua, Mubende, Hoima, Masaka, Fort Portal, Mbarara and Kabale have been rehabilitated under the NRM government (Vision New, 2016).

The biggest proportion of the health sector in Uganda today is ran by the private sector due to the efforts by the NRM government as well as global development politics to revive the country's economy and liberalize the public sector (USAID, 2015).

KRRH was Established in 1918 and started as a small unit serving expatriate staff and business communities until when it became a government district hospital in 1930. It remained as the only district hospital in Kabale up to 1995 when it became a Regional Referral hospital. It was accorded the status of Semi- Autonomy in November 2002(KRRH, 2022). The Hospital is located in the South Western part of Uganda 426 kilometers from Kampala. The hospital serves an estimated population of 2million and has a bed capacity of 280, with a staffing level currently at 62%. It also serves the districts of Kabale, Kisoro, Rukungiri, Kanungu, Rubanda, Rukiga and some parts of Ntungamo as well as neighboring countries of Rwanda, Burundi and the eastern part of the Democratic Republic of Congo, through the border posts of Katuna, Bunagana, and Kamwezi (EA Health, 2021).

Patients at Kabale Regional Referral Hospital usually face a challenge of long waiting hours especially at the point of receiving their medication. This is mainly because of the bureaucratic process involved to secure the drugs and other medical sundries from the Hospital store to the user departments.

1.1.2 Theoretical Perspective

Different theories have been developed over the years to understand the relationship between inventory management and service delivery.

These include; the resource-based theory, the lean theory, swift even flow theory, and theory of constraints. This study however adopted the Resource Based Theory to clearly understand the relationship between the study variables.

The theory states that a firm's performance is determined by the resources it has at its disposal. The way these resources are used and availed enable the firms to perform to their expectations and help them earn a competitive advantage over other firms(ICAEW, 2022).This theory is

very applicable in the health sector as proper management of resources would culminate into higher performance (service delivery).

1.1.3 Contextual Perspective

Uganda's health care structure is sub-categorized from the national level up to the local/community level. On the national level there are National Referral Hospitals followed by Regional Referral Hospitals. On the District level; there are general hospitals, followed by Health Center IVs, then Health Centre IIIs and Health Center IIs at the parish level (Susan, 2016). The national referral hospitals and regional referral hospitals are responsible for cases that require more expertise (specialists) and equipment's that aren't readily available at the lower levels. The lower health centres act as entry points into the healthcare system. They are responsible for simpler cases and in case of difficulties they are mandated to refer patients to the next level that offers the required service (WHO, 2017).

Service delivery is more excellent at National Referral Hospitals than the lower health centers due to the availability of more specialized personnel and infrastructure. In extreme cases like cancers, patients are usually referred abroad for more specialized treatment.

A number of health-related policies have been put in place to improve the rate of service delivery amongst the population. These policies include: subsidized or free treatment at all levels of the health structure, construction of new health facilities, renovation and re-equipping of the already existing ones, capacity building among the health professionals etc (New Vision, 2016).

Nevertheless, with all these policies in place, Inventory Management is still lacking at all levels of the health structure in Uganda with the rate of service delivery always despised by the

general populace. Most of the people always prefer going to private facilities where services are more readily available though at a higher cost.

According to the Health Sector Financial Report 2019/2020, KRRH which serves the whole of Kigezi subregion, was among the government hospitals with the lowest (60%) staffing level which hinders service delivery. The report also showed a limited (338) bed capacity compared to the rate of patient inflows. It was also reported that maternal deaths had increased by 121% from the FY 2018/19 to 2019/20 (Ministry of Health, 2020).

It is against this background that the researcher wants to find out the effect of inventory management on service delivery in public hospitals in Uganda.

1.1.4 Conceptual Perspective

Inventory management refers to the practices and processes used to control inventory holding levels, minimize costs and bottlenecks and manage current and future stock requirements. It is used to manage required service levels for internal and external customers and inventory visibility in supply chains (CIPS, 2022). Inventory management is required at different locations within a facility or within multiple locations of a supply network to protect the regular and planned course of production against the random disturbance of running out of materials or goods for improved performance (Garry, 1997). The scope of inventory management also concerns the time 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 (Lau & Snell, 2006).

Inventory refers to all the items, goods, merchandise, and materials held by a business for selling in the market to earn a profit (Tanoy, 2020). In a health setting, inventory includes: medicines, gloves, injections, bandages, cleaning equipment's etc.

Service Delivery is the socio-economic provision of goods and services such as roads, schools, and hospitals etc (IGI Global, 2022a). The researcher used patients' level of satisfaction and availability of health services as measures/indicators of service delivery.

The services maybe privately owned or publically owned. Health Service delivery is an immediate output of the inputs into the health system, such as the health workforce, procurement and supplies, and financing. Increased inputs should lead to improved service delivery and enhanced access to services (WHO, 2010).

1.2 Statement of the Problem

According to the United Nation Sustainable development goal 3 (Good Health and Well Being), each human has the right to access essential medicines to improve their health wellbeing. Improving medicine availability as well as facilitating efficiency in the pharmaceutical supply chain enables a country's health system to deliver the right medicines to the target population in the right quantities at the right prices, at the right time, and in the right places (Alliance, 2014). Every patient walks to a hospital with hopes of getting the right amount and quality of the prescribed drugs to cure his or her illness. For this expectation to be fulfilled, one can think of how to control inventory in the Hospitals to ensure that medical supplies are readily available. This would in turn also help to avoid expiry of drugs and misuse of the supplies. This will eventually reduce the cost of holding inventory in health facilities' stores (Choolwe, 2020).

The Ugandan public health system has been lacking and underequipped over the years. The level of service delivery in the health units has still remained below expectation and most of

them still lack essential drugs over and over again(Okello, 2014).This was further pronounced by the emergency of COVID- 19 pandemic in 2020(Onen & Hodgson, 2021). Kabale regional hospital is one of the hospitals across the country that ran short of medical supplies especially for treatment of the deadly virus in the second wave (Parliament of Uganda, 2021). A collaborative effort by the National Drug Authority (NDA), National Medical Stores (NMS), Joint Medical Stores (JMS) and Ministry of Health (MoH) conducted a national collection and disposal of expired and unwanted drugs in all health facilities around the country last year which amounted to 1,200 to 1,500 tones(NMS, 2021). This has been the trend over the years; for example in 2016, 54% of the health facilities in the country were found with expired drugs that were still in shelves ready to be served to different patients which possesses a great threat to their health (Nakabugo, 2016).

These challenges can be attributed to poor inventory management in the health sector- right from the suppliers (majorly National Medical Stores) to the end user (patient). A number of inefficiencies have always been registered along the inventory management cycle which has always greatly costed the health service delivery.

It is against this background that the researcher would wish to find out whether inventory management has an effect on service delivery in the health sector using KRRH as a case study.

1.3 Objectives of the Study

The main objective of the study was to establish the effect of Inventory Management on service delivery in government hospitals - a case study of KRRH.

1.3.1 Specific Objectives of the Study

The specific objectives of the study were:

- i. To establish the relationship between Inventory Turnover and service delivery in public hospitals.
- ii. To identify the Inventory Management techniques that are used in public hospitals.
- iii. To find out the challenges faced in the Inventory Management process in public hospitals.

1.4 Research Questions

- a) What is the relationship between Inventory Turnover and service delivery in public hospitals?
- b) Are there Inventory Management techniques used in public hospitals?
- c) What are the challenges faced in the Inventory Management process?

1.5 Scope of the study

1.5.1 Geographical Scope

The study was conducted in Kabale Regional Referral Hospital targeting hospital employees and the administrators.

1.5.2 Content Scope

The research study aimed at establishing the relationship between Inventory Turnover and service delivery in public hospitals.

1.5.3 Time Scope

The study was cross sectional in nature, implying that the researcher spent a few weeks (less than a month) doing data collection on the targeted respondents then after wrote a report (dissertation) on the study findings.

1.6 Significance of the study

The study findings shall guide key stakeholders in different organizations/institutions in their decision-making concerning inventory management for efficient service delivery. In addition,

the findings will help the relevant key stakeholders to develop friendly policies and procedures for purchasing the relevant health services and also controlling their levels. The findings also point out the different challenges that are faced in the inventory management processes and appropriate remedies have been suggested.

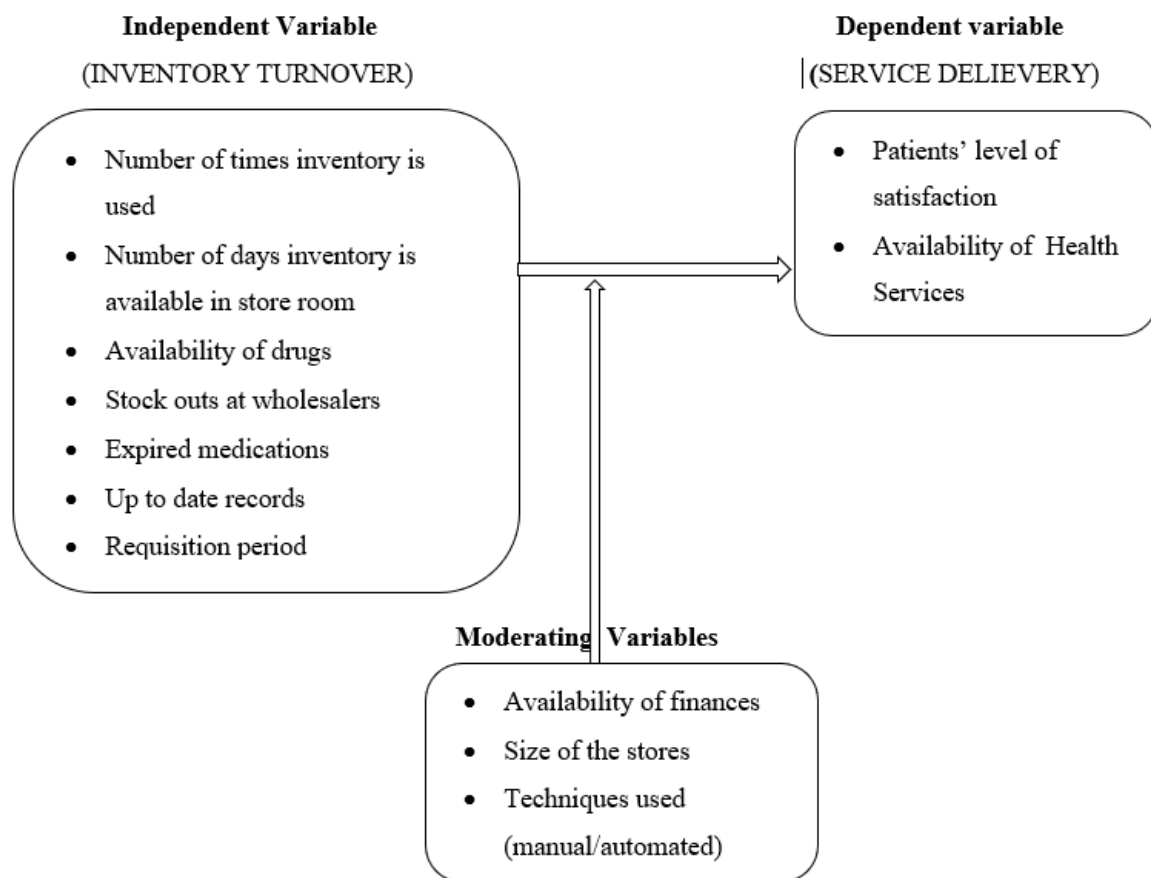
This study findings will form a basis on which future studies in the area of inventory management could build from.

The study will be submitted to the Faculty of Economics and Management Sciences in partial fulfillment of the requirements for the award of a master of Business Administration of Kabale University.

1.7 Conceptual framework and measurement variables

The conceptual framework below relates the dependent variable to the independent variable (inventory turnover), given the moderating variables. The dependent variable of this study was service delivery which was measured by; Patients' level of satisfaction and availability of health services. Inventory turnover was the independent variable of the study and it was measured by: number of times inventory is used; number of days inventory is available in store room; availability of drugs; stock outs at wholesalers; expired medications; up to date records; requisition period. The moderating variables included: availability of finances; size of the stores; and techniques used (manual/automated). This study assumed that service delivery depends on the level of inventory turnover in presence of the mentioned moderating variables.

Figure 1: Conceptual framework/model



Source: Okello (2014) and modified by the researcher 2023

1.8 Definition of key terms

Inventory is the amount of goods, materials or parts carried out in stock or store house for example, work in progress (W.I.P), raw materials, financial goods resale MRO items.

Inventory management involves the planning, ordering and scheduling of the materials used in the manufacturing process. It exercises control over three types of inventories i.e. raw materials, work in progress, and finished goods.

Inventory control refers to the process whereby the investment in materials and parts carried in stock is required within pre-determined unit set in accordance with inventory policy established by management.

A technique refers to the ways which may be adopted in order to minimize on the uncertainties or outcomes of poorly inventory levels like stockless purchasing system, determining order quantities and inventory levels.

CHAPTER TWO

LITERATURE REVIEW

2.0 Introduction

This chapter presents a critical review of related literature to this study. It begins with the discussion of the theoretical literature followed by empirical studies.

2.1 Theoretical Literature

Different theories have been developed over the years to understand the relationship between inventory management and service delivery as highlighted below. They include; the resource based theory, the lean theory, swift even flow theory, and the theory of constraints. However, this study adopted the Resource Based Theory to clearly understand the relationship between the study variables. This theory was appropriate for this study because proper management of resources especially in the health sector culminates into higher performance in form of service delivery.

2.2 Resource Based Theory

The Resource Based theory was developed in the late 1980s and early 1990s by Barney (1991) and it has since evolved with other extensions by numerous scholars (Utami & Alamanos, 2020). The theory states that a firm's performance is determined by the resources it has at its disposal.

The way these resources are used and availed enable the firms to perform to their expectations and help them earn a competitive advantage over other firms (ICAEW, 2022). This approach analyzes and interprets resources of the organization to understand how organizations achieve sustainable competitive advantage. It argues that firms possess resources, a subset of which enable them to achieve competitive advantage, and a subset of those that lead to superior long-

term performance. These resources should be valuable, rare, non-substitutable and inimitable to lead to the creation of competitive advantage (IGI Global, 2022b).

The ability to acquire or develop these resources greatly determines the firm's level of performance. Developing and maintaining this competitive advantage depends on whether a firm is able to identify, deploy and protect these internal resources.

According to this theory, organizations/institutions/firms that are well equipped with resources have an upper hand of performing better than those with limited or no resources at their disposal.

The theory relates two sides of the coin; one being the resources (inventory) and the other being products (service delivery). The two sides can never be separated if the firm/institution is to meet its performance targets (Matthias, 2016). Efforts should be made by the relevant stakeholders in a given organisation to ensure that the resources are kept in their rightful quantities and qualities to ensure all time quality service delivery to their targeted customers or clients.

The theory is based on two major assumptions: that resources are not the same across the different firms; and the resources are imperfectly mobile which makes firms' differences abt stable over time (Matthias, 2016). The theory assumes that every firm is different from another in terms of the resources that they posses or own and their performance entirely depends on them. However, in the real world, these assumptions don't hold in most cases since no individual firm has monopoly over any resource and the competitive advantage is hard to sustain over time.

In this context, firms which have extraordinary inventory management skills/ resources usually outcompete those with hardly no or little resources. This in turn helps to ensure their great

performance in relation to service delivery in their areas of operations. It is thus prudent for every business manager to keep a close watch on the amount of resources/stock available in his stores if his or her goal of offering excellent services is to be achieved.

2.3 Lean Theory

The lean theory was developed by the Japanese auto industry in the 1970s and 1980s to aid its production system (Ramunè & Milita, 2012). The major goal of the theory was to enable the company to reduce the cost of managing large quantiles of inventory and providing optimum quality of their services at the least cost possible.

The lean approach looks at how companies can continuously leverage on different interventions to minimize wastage of time, resources and work (Abbey, 2021). This helps to improve efficiency and ultimately helps to deliver more value to the customers. It is all about how the firm handles its supply chain and the production process to ensure its final products reach the final customer at the least possible cost.

The theory stipulates that bottlenecks that affect production should be fixed as soon and possible and also employees should be trained to follow a strict first in-first out process to minimize costs associated with storing inventory for long. A company should only hold what it needs at all stages of production. This could call for the adoption of production on order methodology or approach.

It is almost known by everyone that once inventory is purchased it does not gain value until it is sold to the customer. This is to say that it is a cost to a business. The most applicable example here is perishable inventory such as agricultural products, medicines and vaccines that go bad in a few days or hours. It is therefore imperative for firms or companies to sell out this kind of

inventory as quickly as possible if profits are to be realized thus a need to adopt the concept of the lean theory.

2.4 Swift Even Flow Theory

This theory was developed by Schnenner (1998) and stipulates that good inter-linked processes lead to higher operational performance due to reduced hinderances and delays within the intergraded business processes (Schmenner, 2001). The more swift and even the flow of resources are in a process/system the more productive that system is. This is to say the productivity of any given institution thoroughly relies on how quick the inputs/resources reach its premises all through to the final consumer/client through the different production processes (Barhane, 2020). The theory aims at reducing the clock time involved in finishing the different operational processes.

2.5 Theory of Constraints

The theory was developed by Goldratt (1984) and aims at pinpointing the most important factor/constraint that hinders any institution in achieving its set goals and objectives. Its incumbent for the stakeholders to devise means of solving such constraint to improve production efficiency (Itasca IL, 2020). There are usually a number of constraints that affect any given business operations; however, this theory suggests that there is always one major constraint that if solved the rest can be restructured around it.

2.2.5 Agency Theory

Agency theory is thought to be relevant for this study in understanding the effect of lead time on Service Delivery in Trans Nzoia County level four hospital in Kenya, hence it gives a theoretical background for this study. According to Jensen and Mackling (1976), an agency relationship is a contract under which one or more persons (principals) engages another

person (the agent) to perform some service on their behalf, which involves delegating some decision-making authority to the Agent. Agency theory is concerned with agency relationships. The two parties have an agency relationship when they cooperate and engage in an association wherein one party (the principal) delegates decisions and/or work to another (an agent) to act on its behalf (Eisenhardt, 2009). The important assumptions underlying agency theory is that; potential goal conflicts exist between principals and agents; each party acts in its own self-interest; information asymmetry frequently exists between principals and agents; agents are more risk averse than the principal, and efficiency is the effectiveness criterion. Two potential problems stemming from these assumptions may arise in agency.

An agency problem and a risk-sharing problem (Xingxing, 2012). An agency problem appears when agents' goals differ from the principals' and it is difficult or expensive to verify whether agents have appropriately performed the delegated work (i.e. moral hazard). A risk-sharing problem arises when principals and agents have different attitudes towards risk that cause disagreements about actions to be taken (Xingxing, 2012). By their nature, buyers expect suppliers to provide good quality and to improve the quality of supplied products and/or services, but suppliers may be reluctant to invest substantially especially if they perceive that buyers are reaping all the benefits. The difference between buyers and suppliers will result in the two parties concerning themselves only with their self-interests (Xingxing, 2012).

The agency theory is widely used in procurement, Cliff Macure and Eric Prier did a study on using agency theory to model cooperative public purchasing and the operational linkages between government organizations, their purchasers, and their suppliers are vied as important contributors to the success of government policy and decision-making. Although cooperative purchasing has been a topic of study for many years (Wooten, 2003), researchers revisited issues related to cooperative public purchasing (CPP) in search of more clarification on with

respect to its theoretical underpinnings (Aylesworth, 2003). Dixit (2002) consider that although the procurement official might believe that the actual purchase is an outcome, the purchase is merely considered an action from the viewpoint of the stakeholder for whom the purchase was made. In other words, the level of analysis is important in determining what behavior is an action as opposed to an outcome. Another reason why agency theory is a fruitful method for modeling public purchasing performance is that it helps to identify the various incentives of the stakeholders. By clarifying the opportunities and constraints they face, there is hope that efficiency, effectiveness, and accountability will be increased. This theory explains that procurement managers in the public sector play a relationship role. According to this theory, procurement managers including all civil servants concerned with public procurement must play the agent role. Therefore, procurement managers take on the role of agent for elected representatives. This theory holds that shirking is likely to occur when there is some disagreement between policymakers and the bureaucracy.

2.2.6 Theory of Reasoned Actions (TRA)

Theory of Reasoned Actions (TRA) is considered to be relevant for this study in order to understand the effect staff competence on service delivery in Trans Nzoia level four hospital, Kenya, hence it gives a theoretical background for this study. The second most cited theory was the Theory of Reasoned Actions (TRA). The theory originates from social psychology, and it is a special case of the Theory of Planned Behavior (TPB) (Ajzen, 2010). Fishbein and Ajzen (1975) developed TRA to define the links between the beliefs, attitudes, norms, intentions, and behaviors of individuals. The theory assumes that a person's behavior is determined by the person's behavioral intention to perform it, and the intention itself is determined by the person's attitudes and his or her subjective norms towards the behavior. The subjective norm refers to "the person's perception that most people who are important to him

think he should or should not perform the behavior in question” (Fishbein and Ajzen, 1975, 302). Ajzen and Fishbein’s (1980) book is focused on the prediction and understanding of human behavior to help in solving applied problems and making policy decisions. The authors state that TRA is applicable, for example, when studying consumer behavior, women’s occupational orientations, or family planning behaviors. In these studies TRA was used to compare it with TAM (Davis et al., 1989), or in combination with DOI (Karahanna et al., 1999). For example, Karahanna et al. (1999) examined users’ pre-adoption and post-adoption beliefs and attitudes by combining aspects of TRA and DOI.

2.6 Empirical Literature

This section includes empirical studies related to the variables of study. The researcher has revised different kinds of literature as per the study objectives and some of scholars’ findings are as below;

2.7 Relationship between Inventory Turnover and Service Delivery

In the manufacturing industry, Inventory Turnover ratios were negatively correlated with gross margin and debt cost, but positively correlated with capital intensity, although the results varied by segment. Moreover, IT ratios did not show significant correlations with other financial ratios categorized for growth, profitability, stability, productivity, and value of companies (Kyung, 2019).

Inventory Turnover and profit margin percentage have a negative correlation between, while Inventory Turnover and Sale surprise have a positive correlation. But its rate of correlation varies between categories and channelstructure (Khan et al., 2016).

Inventory, sales and profit have significant relationship among them and the product inventory structure show some relationship with profit and sales (Bernard V, 1991). This study is relevant

to both inventory and finance departments of firms. Cost of inventory and financing of the investment of these assets are important for financial managers. As a result, a negative correlation was found between ‘finished goods inventories to sales’ ratio and operating income margin (Mehmet & Yunus, 2013).

Mbiriri (2018) in his study titled “the influence of inventory management systems on the service delivery in Kenya”, found out that there was a strong positive correlation between inventory management and service delivery. The coefficient of determination (R) equaled 0.788 implying that 78% of the variations in the dependent variable were explained by the independent variables of study.

Record management practices have the strongest correlation to service delivery ($r = 0.357$), while the weakest relationship lies between information and communication technology and service delivery ($r = 0.386$). Staff competence and record management practices are strongly and positively correlated with service delivery at correlation coefficient of 0.357 and 0.386 respectively. Service delivery significantly influences effort of respondents, most notably through the JIT shortening of lead time, staff competence, record management practices and the up-take of information and communication technology in all level four hospital in Kenya (Karani & Osoro, 2020).

Using regression analysis, Onyango (2016) found that the the adjusted coefficient of determination between the dependent variable (service delivery) and dependent variable (inventory management techniques) was 0.75 which implied that 75% of the variations in service delivery were explained by the inventory management techniques. The study also found out that the the two variables had a positive correlation between the two variables.

Inventory turnover ratio showing how many times a company's inventory is sold and replaced over a period of time (Padachi, 2006). Inventory turnover indicates the efficiency of the firm

in producing and selling its products (Manasseh, 2007). The importance of inventory turnover is to indicate how rapidly the inventory is turning into receivables through sales. Generally, a high turnover is indicative of good inventory management. A low inventory turnover implies excessive inventory levels than warranted by sales activities, slow moving or obsolete inventory. However, a relatively high inventory turnover may be a result of low levels of inventory resulted in frequent stock outs; the firm may be living from hand to mouth. The turnover al- so be high if the firm replenishes the inventory in small batches (Salawati, 2012).

The need to maintain inventory of raw materials, work in progress, loose tools and other components is to ensure that there is enough safety stock. Companies should however not keep large inventory for safety purposes to reduce the cost of operations and of maintaining inventory. In the recent past, companies have changed their strategies in inventory management by maintaining low levels of inventory hence the adoption of just in time (J-IT) system. This system is a situation where inventory is only acquired when needed (Kolias et al., 2011).

The inventory turnover ratio is a key measure for evaluating just how efficient management is at managing company inventory and generating sales from it. It is calculated by dividing the cost of goods by the average inventory. Usually, a higher inventory turnover ratio is preferred, as it indicates that more sales are being generated given a certain amount of inventory. Alternatively, for a given amount of sales, using fewer inventories to do so improved the ratio. Sometimes a very high inventory ratio could result in lost sales, as there are not enough inventories to meet demand. It is always important to compare the inventory turnover ratio to the industry benchmark to asses if a company is successfully managing its inventory (Manasseh, 2007).

The classical control theory concentrates on capturing the input/output representation of systems (Atieno, 2013). It is a means to control manufacturing systems including the in-process

inventories. The rise of the circular economy pattern and the development of a green supply chain, force businesses to adjust and take a stronger role in the value chain (Bosek, 2016). Within the new value chain, the manufacturer plays an important role re-designing products for various uses and suggesting recent consumption patterns across innovative services encompassing both present and upcoming life cycles of the product. This new level of complication pressurizes the inventory management system. A subsequent stream of research made a considerable development in this classical control theory (Seabra, 2014). This stream investigated the dynamic processes resulting in typical control systems for production. This modern control approach focuses on developing models and techniques to represent the internal dynamics of a system through state space methods. These techniques were developed to deal with the manufacturing control issues (e.g., linear programming and dynamic programming, strong and adaptive management models, genetic algorithms).

Strategic inventory management ensures the efficiency of the whole organization. However, it remains an ongoing challenge for most companies. Inventory efficiency indicates how the management effectively uses the inventory to stabilize the demand of clients and warehouse expenditures. This efficiency is about having the right items, with the right volume, at the proper time, considering cost–benefit rules. Hence, an effective inventory management system allows a company to react quickly to market demands and avoid running short of inventory. Corporate management ought to be conscious of the importance of supply chain integration to accomplish the operational and financial objectives. In this sense, (Ali, 2007)

examined the effect of a vertically integrated organization structure on inventory turnover and operating performance. They selected a sample of 2193 manufacturing firms during the period 1986–2010. Results from causal model and structural equation modelling analysis show that vertical integration positively impacts raw materials and finished goods inventories turnover. However, it has no important effect on work in progress inventory turnover.

Inventory turnover refers to the liquidity and how efficient the company holds and manages its inventory (Asieigbu et al, 2011).

Therefore, a low inventory turnover indicates a big number of unused inventories, while high inventory turnover indicates that inventory is rapidly sold and that the firm handles its inventories efficiently. When inventory is rapidly sold, corporate profit earned is higher. The effect of inventory management (i.e., inventory conversion time and inventory turnover) on financial performance of 29 listed manufacturing companies in Sri Lanka for a period from 2014 to 2018 was analyzed by (D'Avino, 2013). Results of this study showed that inventory turnover is not linked to the performance level of manufacturers in Sri Lanka.

Stock control plays a critical role in the success of any organization that is towards meeting its objectives (Thummalapalli, 2010). In order for the organization to manage stocks effectively and realize high levels of production optimization there is need of carrying out proper practices like keeping the amount of stock, making door to door delivery services, forecasting and establish the function material needs of the organization hence establishment of proper demand can also be over a longer period or demand study. Kimaiyo and Ochiri (2014) state that long term forecast used by telecommunication industry should be more accurate than short term forecasts because the forecast is aggregated over a segment of the operations. Holding the right levels of telecommunication stock is one of the most difficult challenges to most organizations. According to Cachon and Olivares (2010) obsolete inventory has become a prominent phenomenon in most of the organizations. Many organizations are striving to avoid obsolete inventory and are also trying to avoid excessive inventory. The items when become obsolete are unusable and it does not yield any value to the services and in turn they consume valuable storage space in the warehouses, added are the taxes. These excessive costs may yield to increase in the overall facility costs.

The organizations must implement steps and methods that can help inventory managers identify the excessive inventory and make use of the excessive inventory before it turns out to be obsolete (Thummalapalli, 2010). According to Ashok (2013) the decision of how much stock to acquire and when, logically follow classification of what is required. The natural is to say buy as much as you need when you need it which is mostly used by many organization for them the decision of how much to purchase and this is made more important by the close relationship between purchase quantity and scheduled use .therefore for inventory management practices to be effective enough the following techniques should followed. The just-in-time (JIT) inventory method is an approach where materials, parts, and other goods are ordered only in quantities required to meet immediate production needs. These items are then carefully scheduled to be received at precisely the time they are needed. This increases efficiency, reduces waste, and ultimately minimizes inventory management costs and lead time costs.

Mandal, (2012) states that EOQ applies only when demand for a product is constant over the year and each new order is delivered in full when inventory reaches zero. There is a fixed cost for each order placed, regardless of the number of units ordered. There is also a cost for each unit held in storage, sometimes expressed as a percentage of the purchase cost of the item. The economic order quantity, commonly referred to as EOQ, seeks to find a balance between holding too much or too little inventory. The EOQ formula gets quite complex, and to make use of it, a company must know the following information ; annual usage in units, ordering cost in dollars per order, annual carrying cost rate as a decimal of a percentage, unit cost in dollars and the order quantity in units. The EOQ method seeks to find the order quantity that has the lowest total cost of carrying the inventory.

Some reasons for using safety stock as an inventory management method include supplier performance problems, long lead times and material uncertainty. Naude and Badenhorst-Weiss

(2011) warns that calculating safety stock quantities involves another complex formula, but most large companies have software that automatically calculates safety stock values. For the small business that works on a very tight budget, carrying additional inventory in the form of safety stock may do more harm financially than the benefits gained from carrying the inventory. According to Buzzlle (2011) it is best suited for the sort of enterprises that usually keep a high inventory and have a high turnover. It is also well suited for the type of industries where there isn't much processing to do, so the inventory exists at only one level (for sale) rather than at three levels (raw materials, work in progress and for sale). It is well suited for the fact that inventory checking is an important part of the operations of this industry.

2.8 Inventory Management techniques

Inventory Management techniques help in tracking and controlling the inventory orders, their usage, and storage along with the management of finished goods that are ready for sale (Finance Management, 2022). Onyango (2016) states that different humanitarian organizations adopt inventory management techniques to ensure efficient supply chain management and eventually achieve greater performance in terms of better service delivery to their targeted potential beneficiaries in Kenya.

Makori & Muturi (2020) found out that automated systems coordinate inventory management practices. These systems enable better demand management and reduces the storage space. They recommended that there should be an increase in Health sector since it is among the devolved functions. This was in a study “Influence of Inventory Management Practices on Performance of Procurement Function in Health Institutions” in Kenya.

There are a number of Inventory Management Techniques commonly used by institutions / firms. The most commonly used ones include the following:

Just in Time (JIT)

It is a technique that arranges raw material orders from suppliers in direct connection with production schedules. JIT is a great way to reduce inventory costs. Companies receive inventory on an as-needed basis instead of ordering too much and risking dead stock. Dead stock is inventory that was never sold or used by customers before being removed from sale status (QuickBooks, 2022).

The major goal for JIT is to produce goods and different services without a lot of waste; this is to say it helps companies to operate efficiently. It calls for delivery of each item at a time when it is needed, where its needed and in the right amount needed (Mbiriri & Moronge, 2018). These scholars found out that JIT was one of the techniques adopted by Kenyan public hospitals to improve their connectivity with their suppliers. The noted that the technique was adopted by the hospitals to improve their performance.

ABC Inventory Management

This inventory categorization technique splits subjects into three categories to identify items that have a heavy impact on overall inventory cost (Big Commerce, 2022). Category A serves as your most valuable products that contribute the most to overall profit. Category B is the products that fall somewhere in between the most and least valuable. Category C is for the small transactions that are vital for overall profit but don't matter much individually to the company altogether (Big Commerce, 2022).

Njoroge (2016) notes that ABC Inventory Technique is one of the most popular inventory management techniques used in Kenyan public hospitals to aid service delivery. According to Onyango (2016), ABC technique is the most commonly used technique used in inventory since

enables institutions to stock the most valuable and significant items in preference to others. This is to say that what is needed most should never run out of stock.

Bulk Shipment

Bulk shipments is a cost efficient method of shipping when you palletize inventory to ship more at once (Big Commerce, 2022). This method banks on the notion that it is almost always cheaper to purchase and ship goods in bulk. Bulk shipping is one of the predominant techniques in the industry, which can be applied for goods with high customer demand.

The downside to bulk shipping is that you will need to lay out extra money on warehousing the inventory, which will most likely be offset by the amount of money saved from purchasing products in huge volumes and selling them off fast (Quick Books, 2022).

Whenever it is possible, it is advisable for institutions or companies to buy inventory in bulk due to numerous associated benefits. The most notable one is to reduce the frequency of lead time and also transportation costs (Mukuna, Khasakhala & Osoro, 2018). The company ordering in bulk also enjoys discounts offered by the supplier in most cases.

As companies try to maximise their operations whilst minimizing cost, other operational costs may increase inventory management costs. The way a company is able to keep its costs at low levels, the better it is for the year end profits", (Wisner, Tan and Leong 2011). "Most companies engage in buying and selling of their inventory hence the need to balance at the end of the year which normally is always carried over to the next year. Once a firm realizes the importance of this, it can develop an inventory management tool to monitor its inventory information by breaking it down into groups by correlating the categories with its customers.

Since companies operate differently in different fields, the inventory can be classified by either seasons or economic year end of the most significant customers hence, demand forecasting

need to be employed to have an efficient supply chain” (Poiger, 2010). Inventory Management systems have been identified as having a direct relationship with performance and firms trying to maximise productivity must choose a system carefully. Different companies manage their inventory differently depending on the size of the inventory being held and the size of the company. Inventory management entails the tracking and management of commodities which include the monitoring of the movement of commodities in and out of warehouse locations and the reconciliation of the inventory balances for a time period (Muddassir, 2016). Most inventory management techniques used by companies include.

ABC analysis

Under this technique, inventory classification is based on the value of their importance. Inventory is usually categorised as A, B and C as most valuable, valuable and less valuable respectively (Muddassir, 2016). This analysis is derived from Pareto principle which states that there are a “critical few and trivial many”. This implies, companies must put in place effective inventory policies to help focus resources on the few critical inventory items and not the many insignificant ones. Despite the fact that, all inventories are key, categorising them into groups, resources would be efficiently used by concentrating on items that would be cost effective (Annor, 2012). The importance of this theory to this study is that, it suggests that although all groups of inventory are essential, inventory must be categorized or classified in accordance to their relative impact or value and treated differently by the hospitals to maximise their operations. Inventory control under the ABC technique is grounded on an opinion that, a small percentage of items might necessarily represent a huge value sum of the overall inventory used in the production process whilst a large percentage of items may in turn form only a small monetary value sum of stores. This means the technique suggests that high value items are more carefully controlled than lower ones.

Economic Order Quantity (EOQ)

This technique assists companies in reducing overall ordering and holding costs hence an effective inventory control technique and can be defined as the point at which overall inventory cost are minimised by a firm (Oballah, Waiganjo and Wachiuri, 2015). The EOQ influences the quantity of goods to order and the reorder level of such goods (Sukhia, Khan, & Bano, 2014). “With the EOQ technique, it incorporates so many assumptions of inventory including; that demand is constant and known, lead time is known and consistent, orders arrive sequentially, no quantity discounts, stock outs can be avoided and variable costs involved are setup or ordering costs and holding or carrying costs. This technique has been recognised to be an effective inventory management technique because it is assumed that demand and lead time are relatively stable as well as the detection of significant variability and uncertainties that might exist”. “This can only be achieved through the Economic Order Quantity (EOQ) computation. Economic order quantity allows companies/firms to plan their inventory replenishment on a timely basis such as weekly, monthly, and quarterly, half yearly or yearly basis. By so doing, it enables firms to have minimal storage costs or zero within their warehouses because inventory comes in and goes out immediately. Thus, as organizations try to improve on the inventory management, the Economic Order Quantity (EOQ) and Re-Order Point (ROP) are important tools that organizations can use to ensure that inventory supply does not hit a stock out as explained” by Gonzalez and Gonzalez.

Blackburn (2010) however suggests that EOQ is applied constantly as an inventory review system whereby the level of inventory is monitored at all times and a fixed quantity is ordered each time the inventory level depletes to a reorder point hence considers one of the models widely used to manage inventory in most industries. The application of this theory will help

the hospitals optimise their stock levels or inventory and subsequently reducing their operational cost hence its relevance in this study.

Material Requirement Planning (MRP) System

Under this system, dependent-demand inventory is automatically controlled. The main objective is to get the right materials to the right place, at the right time using a computerized system during the production planning process as well as in the control of inventory itself and to ensure the availability of materials, components and products for planned production and for customer delivery, maintain the lowest possible inventory level and plan manufacturing activities delivery schedule, and purchasing activities accordingly and also to ensure that the need purchases or a firm's production inputs are readily available for the next stage of production or for delivery if required (Gbadamosi, 2013). "With this system, companies are able to deduce how much of the final goods clients demand and when they need it as well as the timing and quantity of each component required to satisfy such demand automatically". "It derives information from a master production schedule, bill of materials, production cycle times and material needs, as well as supplier lead times to determine the category of materials that need to be ordered and when it should be done" (Moustakis, 2010).

Enterprise Resource Planning (ERP) system

The Enterprise Resource Planning (ERP) system is a software system that helps companies incorporate operations/logistics such as planning, manufacturing, sales, marketing, inventory management, supplier management, human resource and financial across the enterprise". Enterprise Resource Planning modules can either work as stand-alone units or can be combined to best suit and integrate the company's operations. By implementing ERP systems, companies tend to have an improved operation which advances and controls their business processes together with reductions in their costs.

Re-Order level

The prime of every organisation is to achieve efficiency by maximizing operations and by so doing; they need to understand their Re-Order Level (ROL) in order to know when to order and when not to order to prevent overstocking, stock outs and wastages. This can be realized by a firm through the application of quantitative methods in its operation since it requires proper inventory management. This system tries to abolish wastages by keeping just enough inventories at the right place at the right time to make just the right amount of product (Apte, 2010).

Just-in-time

It is an inventory management system with the main aim of maintaining enough materials in just the right place at just the right time to produce first the right amount of products needed by customers. Its significance is to order for materials and make them available for consumption and such materials should be of high quality for the efficient operation of a particular system. It is used as an inventory control technique to make available products to meet the customers demands at the needed time and in the desired quantity with the minimum use of human resource, materials and equipment. This is an effective way of minimizing inventory costs by preventing movement of surplus inventories and maladministration of raw materials needed for production. The primary objectives of this technique include; no product defects, no inventory storage with its consequential negative effects, no set-ups and no material handling. However, its effectiveness depends on; proper material flow system, good customer-supplier relationship, dependable quality with no defects at all times, reliable and timely delivery, methods and components standardization, short distance between supplier and customer and an even production schedules.

2.9 Challenges Faced in the Inventory Management Process

A number of challenges are faced in the inventory management processes and they vary from one institution to another. The following are some of the challenges as per the previous studies in different areas/regions.

Kwansah (2019) found out that the materials ordered by the hospital are not received on time as a result of poor coordination between suppliers and stores. She also found out that unauthorized personnel are allowed into the stores, and store keys are left at the security gate upon closure of work which increases the risks of theft. This study was done in Edubiase Government Hospital- Ghana.

According to Magenest (2022), the challenges faced in inventory management include: inconsistent tracking of ordered goods and services; using bad vendors; lack of performance measurement parameters in place ; lack of transparency amongst the staff; poor management process; inadequate tools and equipment to use in inventory management like software; poor management of warehouse space; manual documentation; poor problem management; lack of labour collaboration and poor production planning among others.

Njoroge (2016) found out that the major factors that affected inventory management in Kenyan public hospitals were; failure to invest in modern infrastructure, un collaborative support from top management, insufficient funding, and unreliable suppliers.

Mbiriri & Moronge (2018) notes that a number of firms face a number of challenges in the acquisition and disbursement of different kinds of items/materials and these are; overstocking of some items which usually results into expiry or getting outdated, under stocking, poor stock taking, theft of some materials by workers, and delays in the delivery process by suppliers.

These and many more challenges that affect inventory management processes usually result into: poor inventory control; failure to meet customer/client demand; delays in delivering customers' orders; application of inappropriate technology; and generally poor service delivery.

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

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

According to Drury (2011) some organizations especially in the developing economies the top management is reluctant to invest in modern technologies and equipment to facilitate inventory management this inhibits effective management of stocks. This prolongs the cycle time and delay delivery of goods and services to the final consumer and thus may negatively impact on supply chain performance. This causes lack of cooperation between the suppliers and the

organization which eventually leads to delayed delivery of goods and services or no delivery in extreme cases. To succeed in inventory management the organization should ensure that it has reliable suppliers to supply goods and services on time.

Storing excess inventory can cost a lot of money, and reducing the amount of inventory you keep on hand can reduce your carrying costs as well as the number of warehouses they maintain, or even allow them to eliminate those warehouses altogether. According to Dai and Kauffman (2001) lack of trained and competent professionals who understand the concept of inventory management is a major challenge to most organizations that seek to effectively manage their inventory systems.

Executive support has been cited by many authors, including Nelson et al. (2001), as a key characteristic for successful supply chains. In this study participants from the three groups were asked to describe their level of agreement with the statement: “There is executive understanding and support for SCM efforts in my institution”. A significantly high percentage of respondents (45%) reported that they agree with this statement. Additionally 7.8% disagreed with the statement, and 15.8% of participants showed a neutral position. Surprisingly, results for this section are inconsistent with McKoneSweet et al. (2005), which found the lack of executive support as being a barrier. The Mann-Whitney U test at a $P = 0.05$ level did not show any significant difference between participants. Findings in this study might suggest that healthcare executives have become more aware of the importance of materials and supplies and consequently have begun to offer support for SCM practices in their institutions.

In this study conflicting goals regarding inventory choices in the healthcare supply chain was also found to be a barrier. Participants from the three groups were asked to describe their level of agreement with the statement: “There are conflicting goals regarding inventory choices among the stakeholders in my supply chain”. Findings were more diverse than for the previous

question, with 41.1% participants agreeing, 31.3% disagreeing, and 27.6% being neutral. No significant difference was seen from the Mann Whitney U test. As stated in the literature, management of materials in hospitals and other healthcare provider institutions requires the participation of not only those monitoring inventory. It also requires the involvement of physicians, clinicians, nurses, and executives which are often in disagreement. In view of that, people monitoring inventory at the healthcare provider level were further asked to express their opinion about the conflicting goals regarding inventory choices and levels within their institutions. It was found that 47.1% agreed that there is conflicting goals in their institution regarding levels of inventory. Likewise, a 41.1% expressed disagreement with the statement and 11.8% were neutral. Whereas responses about inventory levels were much divided, when asked about conflicts regarding inventory choices in their institution, more than half of the participants (55.9%) agreed with the statement. Additionally, participants commented that conflicts usually arrive because physicians and nurses demand preference items and large inventories. It was also mentioned that such quantities requested are very high and often exceed realistic usage / history.

Though it varies from one facility to another, challenges that face managing inventory exists in all cases. Below are some of the studies done in this area. An indicator based assessment of medicine storage and inventory management practices in various public hospitals in India revealed that, inadequate storage space, inadequate availability of storage equipments and lack of human resource are among the major challenges identified (Iqbal et al., 2015).

According to the study by Nahamya D. (2007) poor record keeping observed in public health facilities was mainly attributed to inadequate training of the staff in the drug logistic management, as the survey revealed that the majority of the staff (80%) was in the category of

nurse/midwife and study results indicate that only 20% of the staff was formally trained in logistic management.

In Ghana an assessment of health commodities management practices in selected hospitals in Ashanti region showed that counterfeit and/or substandard commodities, irrational/incorrect use, delays in approving medicines and non-medicines, undermined distribution, transportation, lack of adequate storage facilities, unavailability of skilled labour, internal bureaucracy, lack of funding, and logistical problems are the main challenges that face managing inventories (Adzimah et al., 2014).

In study by Tadesse (2017) provision of pharmaceuticals without needs and requisition, lack of an automated stock management tool, absence of functional DTC, poor communication between the PFSA and facilities, insufficient pharmacy personnel and weak monitoring and evaluation system were some of the major factors that contributed to wastage of pharmaceuticals in the facilities.

In another study by Legese (2018) it's disclosed that max-min inventory control management was not properly practiced in the hospital assessed, and there was no specific time to order, quantity to order or how much stock to hold. This study identified that inadequacy of storage space, limited capacity of PFSA to supply the quantity requested in the required time, shortage of staff and lack of commitment as well as initiation by the staffs.

2.10 Summary of Literature Review

A number of studies have been conducted on the effect of inventory management on service delivery in the health sector. A number of indicators /variables for inventory management have been used in these studies unlike in this study where the researcher proposes to use inventory turnover as an indicator. These studies were conducted mainly in other countries with little emphasis on Uganda.

With the overall poor level of service delivery in the public health sector, the researcher wanted to find out whether inventory management had a significant effect on the level of service delivery.

CHAPTER THREE

METHODOLOGY

3.0 Introduction

This chapter presents the research design, target population, Sampling Procedure, research instruments, data types, data sources, data quality & error control, data processing and analysis, ethical considerations and limitations of the study.

3.1 Research Design

According to (Ngechu, 2001), a research design is a plan showing how problems under investigation are solved. The study adopted a correlational research design. The design was chosen because it enabled the researcher to examine the relationship between the study variables. The researcher used mixed methods, that is; both qualitative and quantitative data collection approaches were used to collect data on the study variables.

3.2 Target Population

A population is described as the total collection of items that a researcher would make inferences about (Cooper & Schindler, 2014). The target population of this study included; KRRH staff in different departments who had a deeper understanding of the study variables. A total number of 127 staff was targeted.

3.3 Sampling Procedure

Wiersma (1995) describes a sample as a small population of the target population selected systematically from the study. Sampling is a research procedure that is used to select a given number of respondents from a target population.

Stratified random sampling was used in this study. Different strata / departments were considered in this study from which a simple random sample of the staff was selected. The sample size was computed using the formula by Yamane, (1967);

$$n_r = \frac{N}{1 + N(e)^2}$$

Where; n_r was the desired sample size; N was the staff population; e was the allowable error taken as 5%

$$n_r = \frac{127}{1 + 127(0.05)^2}$$

$$n_r = 97$$

Therefore, a total of 97 staff was considered for this study. The staffs were sampled as per the following departments;

Table 1: Targeted Population and Sample for KIs

DEPARTMENTS/SECTIONS	TARGETED POPULATION	TARGETED SAMPLE
Art Clinic	38	29
GYN	6	5
Maternity	10	8
Surgical Ward	11	8
OPD	16	12
Procurement and Inventory	6	5

Laboratory	18	14
Administration	12	9
Medical ward	10	8
TOTAL	127	97

3.4 Research instruments

The researcher relied on self-administered questionnaires. A questionnaire is a research instrument that gathers data over a large sample. Questionnaires were used to gather information and data from the respondents (hospital staff). Questionnaires are ideal for survey study and are widely used in research studies to obtain information about current state of study variables (Mugenda & Mugenda, 1999).

3.5 Data types and sources

This study utilized both primary and secondary data. Primary data is the type of data that a researcher collects directly from primary sources in its original form. On the other hand, secondary data refers to the data that has already been collected through primary sources and is available for researchers to use for their own research (Mugenda & Mugenda, 2003).

Primary data was collected from the sampled hospital staff through the use of questionnaires. On the other hand, secondary data was collected from secondary sources with the help of the desk checking method. This data was extracted from; KRRH records, reports and other relevant documents.

3.6 Data Quality & Error Control

The study instruments were pre-tested in order to allow the researcher to improve their validity as well as familiarize herself with data collection process. Content validity was used to check

the representation of the research questions in the questionnaires (Gay, 1981). The data collected was cleaned to remove any errors that could have been made during data collection.

3.7 Data Collection Tools

The researcher used a pre-determined questionnaire with both open and close ended questions was developed with the help of the research supervisor to capture all the relevant study variables or research questions. This helped the researcher to record accurate data from the sampled respondents.

3.8 Validity of the Instruments

The content and construct validity for this study was evaluated to check if the questions in the research instrument were well formulated and if the questions represented the objectives of the study. The researcher consulted the academic supervisors for guidance and this helped to improve the validity of the data collection instruments.

3.9 Data processing and analysis

The questionnaires were collected and checked for completeness. The data was then entered, cleaned and analyzed using SPSS. Quantitative data was coded by assigning a code to every response. Descriptive statistics such as the mean and frequency distributions were used to summarize the data. The data was organized and presented in form of tables, figures, and graphs to enable the researcher answer the research questions. The research carried out a chi-square test of association to establish the relationship between the study variables.

3.10 Ethical considerations

The researcher first requested for consent from the respondents and assured them confidentiality of their responses before progressing with the interviews. The researcher also used the gathered data for only purposes of this study.

3.11 Limitations of the study.

Limitations are conditions which may not be within the control of the researcher hence can restrict or hinder achievement of the objectives of the study. There are challenges that the researcher experienced during the course of the study. These included;

- **Financial constraints.** The researcher needed some financial resources to facilitate her movements, buy internet data and print her work which were not always readily available.
- **Time constraints.** Considering the nature of work of the researcher, there was limited time available at her disposal to accomplish the study within the planned time.

CHAPTER FOUR

DATA PRESENTATION AND ANALYSIS

4.0 Introduction

This chapter includes; the response rate, the descriptive statistics for the demographic characteristics of the respondents, and the analysis for each of the study objectives.

4.1 Response Rate

Out of the 97 staff of KRRH that were targeted for this study, 86 of them responded to the questionnaires which gave response rate of 89% as shown in table 2. The departments that registered the highest response rate (100%) were maternity,surgical and procurement while the lowest response rate (60%) was registered in the GYN department.

Table 2: Percentage Response Rate per Department

DEPARTMENTS	TARGETED SAMPLE	ACTUAL RESPONDENTS	RESPONSE RATE (%age)
Art Clinic	29	27	93
GYN	5	3	60
Maternity	8	8	100
Surgical Ward	8	8	100
OPD	12	10	83
Procurement and Inventory	5	5	100
Laboratory	14	10	71
Administration	9	8	89
Medical ward	8	7	88
TOTAL	97	86	89

Source: Field Data, 2023

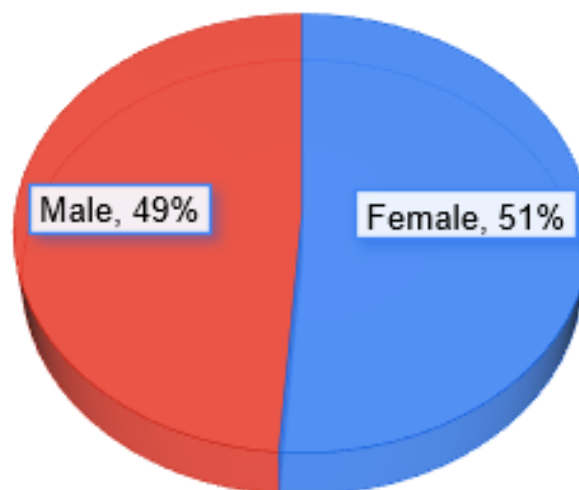
4.2 Demographic Characteristics of KRRH staff

The section includes the descriptive characteristics for different demographic characteristics of the respondents.

4.1.1 Gender of the respondent

Out of the 86 staff that responded to the questionnaire, majority (51%) of them were females while only 49% of them were males as shown in figure 2. This is an indication that there is gender inclusivity at KRRH.

Figure 2: Gender of Respondents

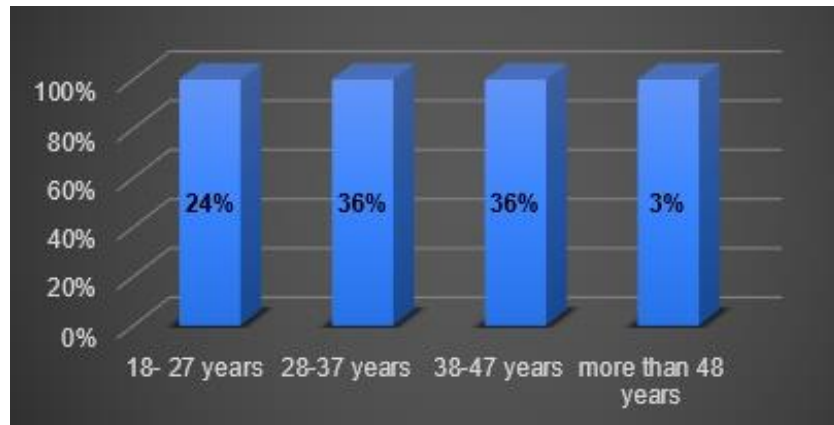


Source: Field Data, 2023

4.1.2 Age of the respondent

Amongst the staff that were interviewed, 36% of them were aged 28-37 years and 38-47 years of age as shown in figure 3. Only 3% of them were 48 years and above old. This is an indication that most of the staff were still in their productive ages which guarantees great performance at the end of the day holding other factors constant.

Figure 3: Respondents' age categories

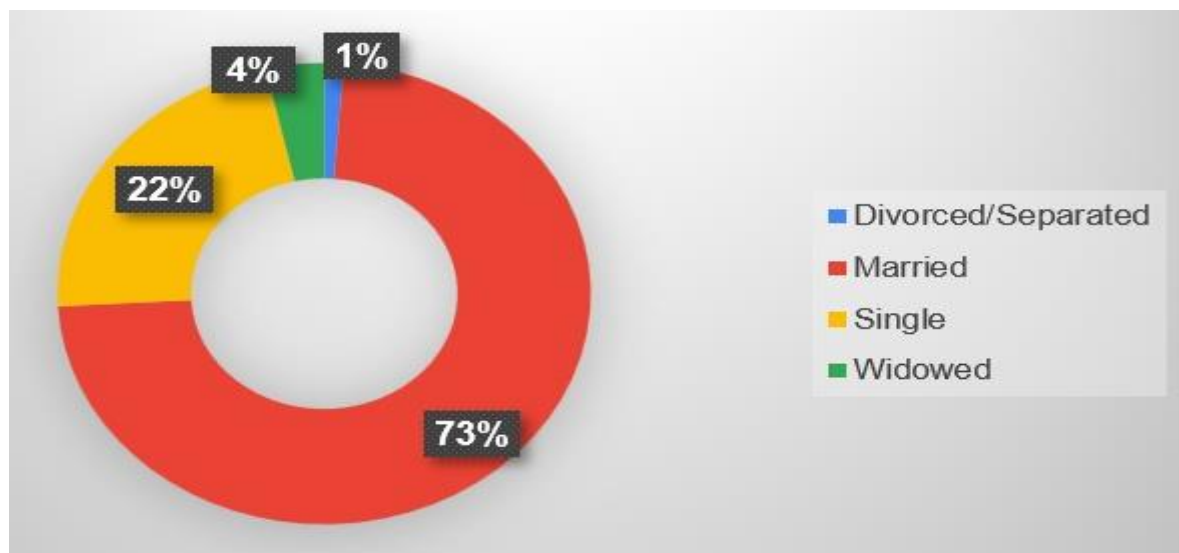


Source: Field Data

4.1.3 Marital status

Out of the respondents that answered this question, majority (73%) of them were married, 22% of them were single while only 1% was divorced as shown in figure 4. Generally, the staff of KRRH have families that they look after.

Figure 4: Respondents' Marital Status



Source: Field Data, 2023

4.1.4 Academic qualification

Out of the 85 staff that responded to this question, 48% were diploma holders, 24% of them had bachelors degrees while only 11% of them had masters degrees as shown in table 3. 18% of the staff had additional qualifications like PHDs and other trainings.

Table 3: Respondent's academic Qualifications

Academic qualification	Frequency	Percentage (%age)
Diploma	41	48%
Graduate	20	24%
Masters	9	11%
None of the above	15	18%
TOTAL	85	100%

Source: Field Data, 2023

4.3 Relationship between Inventory Turnover and service delivery in public hospitals.

4.1.5 Inventory Turnover

The study findings revealed that majority (69%) of the respondents agreed that the available inventory at KRRH was always optimally used which implies that few/no drugs get expired before being given out to patients.

A high proportion (51%) of the respondents said that inventory is oftenly available in the stores on a weekly basis while only 8% said it was on a monthly basis. This implies that the medicines are usually readily available in the stores whenever they are needed for use by the patients.

As per the study findings, majority (53%) of the staff said that it takes a week to have a requisition to the store responded to, 41% said it takes a day while only 5% of them said it takes a month. This finding reveals that the requisition period usually takes a few days which

ensures that the drugs are in most cases availed to the respective departments on time. But an entire week to get drugs to a patient too much according to my thinking (*Refer to Appendix 2 for Analysis Output*).

4.1.6 Service Delivery

Majority (63%) of the respondents said that the patients' level of satisfaction in regards to the health services offered at KRRH was generally low while only 6% of them said that it was high. Also, Majority (65%) of the staff who responded said that most of the health services were not readily available at the hospital.

Generally, the quality of health services offered at the hospital were conducive with 36% of the respondents saying they were average and 30% of them saying they were poor. It was also found out that the finances were not always available to purchase the required inventory with 82% of the respondents answering in negative (*Refer to Appendix 2 for Analysis Output*).

These findings justify the low/poor services offered at KRRH which calls for corrective action from different stakeholders especially the government to come up with appropriate strategies to improve the quality of services offered at the hospital and other health facilities around the country.

4.1.7 Test for Relationship Between Inventory Turnover and Service Delivery

Using the Chi square test of association, the researcher found out that there exists a significant relationship between Inventory Turnover and Service Delivery since the p-value of was found to be less than the 5% level of significance as shown in table 5. This is to say, the null hypothesis of no significant relationship was rejected and the alternative hypothesis of significant relationship was accepted.

Table 4: Chi Square Test of Association

	Service Delivery	
Inventory Turn Over	Pearson $\chi^2 = 147.1286$	P -value = 0.000

Source: Field Data, 2023

4.4 Inventory Management techniques (IMTs) used in public hospitals.

The study findings showed that the most commonly used IMTs at KRRH was Bulk shipment with 78% of the staff that were interviewed responding in affirmative (Yes), followed by ABC Inventory Management with a 66% response in affirmative. Just in Time received the lowest (24%) response in affirmative which is an indication that its either a new technique being used or its hardly applied in the inventory management processes at KRRH.

Table 5: Inventory Management Techniques are used at KRRH

Inventory Management Techniques	YES		NO		TOTAL	
	Frequency	Percentage (%age)	Frequency	Percentage (%age)	Frequency	Percentage (%age)
Just in Time (JIT)	20	24	64	76	84	100
ABC Inventory Management	57	66	29	34	86	100
Bulk Shipment	67	78	19	22	86	100

Source: Field Data, 2023

The study findings also revealed that KRRH uses other Inventory Management Techniques that include: Economic Order Quantity (EOQ); Last in First Out (LIFO); First Expire First Out

(FEFO); and First in First Out (FIFO) among others. This is evidence enough that KRRH used different techniques to manage Inventory processes.

4.5 Challenges faced in the Inventory Management process in public hospitals.

To come up with the major challenges faced in Inventory Management processes at KRRH, the researcher considered those which had a high response rate (that is Strong Agree (SA) and Agree (A)) and then ranked them.

The major challenges cited were; Late delivery by the suppliers and Inadequate tools and equipment to use in inventory management like computer software which scored a response rate of 94% as shown in table 7.

The next most faced challenges were: manual documentation; inconsistent tracking of ordered goods and services; lack of collaboration between the procurement and inventory department and other departments; poor inventory management process; lack of transparency amongst the store staff; and entrance of unauthorized personnel in the stores who the store set-up which scored: 93%, 85%, 84%, 83%, 76%, and 71% respectively.

The above statistics show that all the eight (8) challenges greatly affected the inventory management processes at KRRH since they all scored above the 50% response rate as shown in table 7.

The other challenges that were found to be affecting the Inventory Management process at KRRH included; bureaucracy in the requisitioning process; delays in giving out items from the store; delivery of drugs with short expiry dates at the store; delays in release of funds by government; lack of enough inventory officers; lack of enough supplies; lack of good and big storage facilities; and uncooperative inventory staff.

The respondents aired out some of the following the solutions to the above-mentioned challenges: reduction of beauacratic tendencies by reducing the number of signatories; Employing more inventory staff more; Improving the quality and expanding the storage space; Timely release of funds by the government; Reduction of lead time; and enhancing the skills and professionalism of staff.

Table 6: Challenges faced in IM Processes

CHALLENGES	SA		A		N		D		SD		TOTAL		TOTAL %ge (SA & A)	RANKS
	F	%	F	%	F	%	F	%	F	%	F	%		
Late delivery by the suppliers	52	60	29	34	4	5			1	1	86	100	94	1
Entrance of unauthorized personnel in the stores who the store set-up	24	28	37	43	15	17	10	12			86	100	71	8
Inconsistent tracking of ordered goods and services	25	29	48	56	7	8	6	7			86	100	85	4
Lack of Transparency amongst the store staff	21	25	43	51	11	13	8	9	2	2	85	100	76	7
Poor inventory management process	27	31	45	52	7	8	7	8			86	99	83	6

Inadequate tools and equipment to use in inventory management like computer software	42	49	38	45	4	5	1	1				85	100	94	1
Manual documentation	50	58	30	35	3	4	1	1	2	2	86	100	93	3	
Lack of collaboration between the Procurement and Inventory department and other departments	30	35	42	49	7	8	6	7	1	1	86	100	84	5	

Source: Field Data, 2023

CHAPTER FIVE

DISCUSSIONS, CONCLUSION AND RECOMMENDATIONS

5.0 Introduction

This chapter includes: the summary of the study findings, the conclusions and appropriate recommendations suggested by the researcher.

5.1 Discussion of findings

5.2.1 The relationship between Inventory Turnover and service delivery in public hospitals.

The study findings showed that there was high level of satisfaction of patients in regard to health services as reported by 63% of the majority whereas 06% disagreed. More so, 65% of the respondents reported that most of the health services were not readily available at the hospital. It was also reported by 36% of the respondents that the quality of health services offered at the hospital were conducive whereas 30% said that they were average. This means that the general inventory systems used at kabale regional referral hospital are wanting which call for more support and streamlining of the procurement and supply chain unit of the entire hospital. The findings are in agreement with those Okello (2014) who found out that the services offered by public hospitals were still below the expectations and most of them still lacked essential drugs to administer to the patients. The findings further showed that there is a relationship between inventory turnover and service delivery with the Pearson $\chi^2 = 147.1286$ (P -value = 0.000). The findings concurred with Mbiriri (2018) who observed that there was a strong positive correlation between inventory management systems and service delivery in Kenya.

5.2.2 The Inventory Management techniques that are used Kabale Regional Referral Hospital.

Regarding the inventory management techniques used at Kabale Regional Referral Hospital, the findings showed that majority of the respondents 76% disagreed to the statement that Kabale Regional Referral Hospital uses just in time technique whereas 24% agreed. On the statement that the hospital inventory unit uses ABC inventory management 66% who were the majority agreed to the statement whereas 34% disagreed with it. The findings further showed that Kabale Regional Referral Hospital uses bulk shipment as reported by 78% and 22% disagreed with the statement.

The above study findings were in agreement with different authors as shown below meaning that the results were significant as supported by prior studies carried out. Onyango (2016) states that different humanitarian organizations adopt inventory management techniques to ensure efficient supply chain management and eventually achieve greater performance in terms of better service delivery to their targeted potential beneficiaries in Kenya. Mbiriri & Moronge, (2018) found out that JIT was one of the techniques adopted by Kenyan public hospitals to improve their connectivity with their suppliers. He noted that the technique was adopted by the hospitals to improve their performance. Njoroge (2016) contends that ABC Inventory Technique is one of the most popular inventory management techniques used in Kenyan public hospitals to aid service delivery. The most notable one is to reduce the frequency of lead time and also transportation costs (Mukuna, Khasakhala & Osoro, 2018). The company orders in bulk also enjoy discounts offered by the supplier in most cases.

5.2.3 The challenges faced in the Inventory Management process at Kabale Regional Referral Hospital.

The study results on the challenges faced in the inventory management process at Kabale Regional Referral Hospital showed that 94% who agreed to the assertion that there is late delivery by the suppliers, on the assertion that there is entrance of unauthorized personnel in the stores who the store set-up was supported by 71% and 85% of the respondents who agreed to the statement that there inconsistent tracking of ordered goods and services. The findings are in line with the comments of Kwansah (2019) who found out that the materials ordered by the hospital are not received on time as a result of poor coordination between suppliers and stores. The Findings Further Attest To Magenest (2022) findings that the challenges faced in inventory management include: inconsistent tracking of ordered goods and services; using bad vendors; lack of performance measurement parameters in place, lack of transparency amongst the staff among others.

Regarding the statement that there is lack of transparency amongst the store staff majority of the respondents 76% agreed to the statement where as 24% disagreed. It was further found out that there is poor inventory management process as supported by 83% whereas 17% disagreed to the statement.

Regarding whether there is inadequate tools and equipment to use in inventory management like computer software 94% of the respondents who were the majority agreed to the assertion whereas 06% the minority disagreed.

The study findings further showed that there is lack of collaboration between the procurement and inventory department and other departments as reported by 84% of the respondents who agreed and the least number of respondents 16% disagreed.

On the assertion whether there is manual documentation used at Kabale Regional Referral Hospital in inventory management, it was supported by the majority respondents totaling to 93% whereas those respondents who disagreed were only 07%. These findings concur with Njoroge (2016) who stated that the major factors that affected inventory management in Kenyan public hospitals were; failure to invest in modern infrastructure, un collaborative support from top management, insufficient funding, and unreliable suppliers.

5.3 Conclusions

The study revealed that there exists a significant relationship between inventory management and service delivery in government hospitals. It also revealed the major Inventory Management Techniques that were found out to be used at KRRH were Bulk shipment and ABC Inventory Management. The major challenges that KRRH was facing in IM processes in ascending order included: Late delivery by the suppliers; Inadequate tools and equipment to use in inventory management like computer software; Manual documentation; Inconsistent tracking of ordered goods and services; Lack of collaboration between the Procurement and Inventory department and other departments; Poor inventory management process; Lack of Transparency amongst the store staff; and Entrance of unauthorized personnel among others.

5.2 Recommendations

The researcher recommends the following basing on the study findings;

Efforts should be made by both the government through the Ministry of Health and development partners to improve the quality of services offered in different healthcare facilities such as recruitment of professional staff and enhancing the storage spaces.

The government should always ensure that funds are always released on time to facilitate the purchase of drugs and the different medical sundries and equipment.

5.3 Areas for further Research

The study was limited to public entity particularly at Kabale Regional Referral Hospital. This could have hindered some findings in general. Therefore, future studies should be conducted in other public and private sectors so as to come up with more finds.

REFERENCES

- Abbey, J. (2021). *Ultimate Lean Inventory Management Guide for Businesses*.
- Alliance, M. T. (2014). *Client Satisfaction with Services in UGANDA's Public Health Facilities*.
- Barhane, A. (2020). *On theory in operations management*.
- Bernard V, N. J. (1991). *Do Inventory Disclosures Predict Sales and Earnings? Journal of Accounting, Auditing and Finance*. Pp. 82-145.
- BigCommerce. (2022). <https://www.bigcommerce.com/blog/inventory-management/#inventory-management-techniques>.
- CHOOLOWE, K. (2020). *EFFECTS OF INVENTORY MANAGEMENT PRACTICES ON SERVICE DELIVERY AT ADULT HOSPITAL-THE CASE STUDY OF UNIVERSITY TEACHING HOSPITAL (UTH)*.
- CIPS. (2022). *What is Inventory Management?*
<https://www.cips.org/knowledge/procurement-topics-and-skills/operations-management/inventory-management/>.
- Cooper, D., & Schindler, P. (2014). *Business Research Methods*. New York: Mc Graw-Hill Education.
- EA Health. (2021). *Kabale Regional Referral Hospital*.
- Finance Management. (2022). *Inventory Management Techniques: Inventory Management Techniques*.
- Garry, R. (1997). *Non-financial drivers of customer profitability in personal retail firming*", *Journal of Targeting, Measurement & Analysis for Marketing*, Vol. 10 No.3, pp.233-48.
- Gay, L. (1981). *Educational Research Competencies for Analysis and Application*. L. R. Gray 2nd Edition Columbus:
- ICAEW. (2022). *Resource Based View of the Firm-*

- <https://www.icaew.com/technical/business/strategy-risk-and-innovation/strategy/resource-based-view-of-the-firm>.
- IGI Global. (2022a). <https://www.igi-global.com/dictionary/local-government-decentralisation-devolution-and-service-delivery-in-zimbabwe/48532>.
- IGI Global. (2022b). What is Resource-Based View (RBV)- <https://www.igi-global.com/dictionary/resource-based-view-rbv/25254>.
- Itasca IL. (2020). *Theory of Constraints (TOC)*.
- Karani, A. A., & Osoro, A. (2020). *Determinants Of Inventory Management Practices On Service Delivery In Trans Nzoia County Level Four County Hospital, Kenya*.
- Khan, J. A., Deng, S., & Muhammad, H. K. K. (2016). *An Empirical Analysis of Inventory Turnover Performance Within a Local Chinese Supermarket*.
- KRRH. (2022). *Our History*- <https://kabalerrh.go.ug/our-history/>.
- Kwansah, E. O.-A. (2019). *The investigator found out that the materials ordered are not received on time, unauthorized personnel are allowed into the stores, and store keys are left at the security gate upon closure of work. Based on the findings, the researcher proposed some reco.*
- Kyung, J. (2019). *Analysis of Inventory Turnover as a Performance Measure in Manufacturing Industry*.
- Lau, A., & Snell, R. (2006). *Structure and growth in small Hong Kong enterprises. International Journal of Entrepreneurial Behavior & research*.
- Magenest. (2022). *TOP 11 CHALLENGES IN INVENTORY MANAGEMENT: PROBLEMS AND SOLUTIONS*.
- Makori, J. K., & Muturi, W. (2020). *INFLUENCE OF INVENTORY MANAGEMENT PRACTICES ON PERFORMANCE OF PROCUREMENT FUNCTION IN HEALTH INSTITUTIONS IN KENYA. A SURVEY OF SELECTED PUBLIC HEALTH*

INSTITUTIONS IN WESTERN KENYA.

- Matthias, B. (2016). *Theoretical foundation: The resource-based view (RBV) of the firm.*
- MBIRIRI, E. (2018). *Strategic Journal of Business & Change Management.*
- Mbiriri, E., & Moronge, M. (2018). *Influence of Inventory Management Systems on Service Delivery in Public Hospitals In Nairobi City County, Kenya.*
- Mehmet, F., & Yunus, K. (2013). *The Relationship between Inventory and Financial Performance: An Analysis of a Sector.*
- Ministry of Health. (2020). *Annual Health Sector Performance Report - Financial Year 2019/20.*
- Mugenda, O., & Mugenda, A. (1999). *Research methods: Quantitive and qualitative approaches. Nairobi: African Center for Technology Studies.*
- Mukuna, Khasakhala, D., & Osoro, A. (2018). *Factors Affecting Inventory Management Practices On Service Delivery In County Government Hospitals In Kenya.*
- Nakabugo, Z. (2016). *How expired drugs end up in hospitals.*
- Ngechu, M. (2001). *Research Methods in Education. Nairobi. University of Nairobi press.*
- Njoroge, M. W. (2016). *Inventory Management Practices and Performance of Public Hospitals in Kenya.*
- NMS. (2021). *GOVERNMENT TO COLLECT AND DISPOSE OFF EXPIRED AND UNWANTED MEDICINES FROM HEALTH FACILITIES AROUND THE COUNTRY.*
- OKELLO, T. J. O. (2014). *INVENTORY MANAGEMENT AND SERVICE DELIVERY IN HEALTH UNITS IN SELECTED SUB~COUNTIES IN LIRA DISTRICT IN UGANDA.*
- Onen, C., & Hodgson, T. F. (2021). <https://opiniojuris.org/2021/08/17/the-poor-person-is-meant-to-die-ugandas-failing-health-system-in-the-context-of-covid-19/>.
- Onyango, S. M. (2016). *Inventory Management Practices and Service Delivery of Health Humanitarian Organizations in Kenya.*

Parliament of Uganda. (2021).

https://mobile.twitter.com/parliament_ug/status/1415667563837669376.

QuickBooks. (2022). *Inventory Management Techniques*.

Ramunė, Č., & Milita, V. (2012). *Lean Manufacturing: Theory And Practice*.

Schmenner, R. W. (2001). *Looking Ahead by Looking Back: Swift, Even Flow In The History Of Manufacturing*.

Susan, W. (2016). https://www.researchgate.net/figure/Structure-of-the-health-system-in-Uganda_fig1_303423939.

Tanoy. (2020). *What is inventory? Definition, Types & Examples-*

<https://www.zoho.com/inventory/guides/inventory-definition-meaning-types.html>.

USAID. (2015). *UGANDA'S PRIVATE HEALTH SECTOR: OPPORTUNITIES FOR GROWTH*.

Utami, H., & Alamanos, E. (2020). *Resource-Based Theory: A review*.

Vision New. (2016). *The true picture of NRM gov't performance in health sector-*

<https://www.newvision.co.ug/news/1414841/true-picture-nrm-gov-performance-health-sector>.

WHO. (2010). *Health service delivery*.

WHO. (2017). *PRIMARY HEALTH CARE SYSTEMS (PRIMASYS)- Case study from Uganda*

https://www.who.int/alliance-hpsr/projects/alliancehpsr_ugandaabridgedprimasys.pdf.

Wiersma, W. (1995). *Research Methods in Education: An Introduction*.

Yamane, T. (1967). *Statistics an introductory analysis (2nd edition)*. New York: Harper and Row.

APPENDICES

Appendix 1: Questionnaire

QUESTIONNAIRE FOR THE STUDY “INVENTORY MANAGEMENT AND SERVICE DELIVERY IN GOVERNMENT HOSPITALS. A CASE STUDY OF KABALE REGIONAL REFERRAL HOSPITAL (KRRH).

Dear respondent, I am MUHINDO PATIENCE, a graduate student of Kabale University, pursuing a Masters in Business Administration. I am conducting academic research as entitled above. You have been selected to participate in this study and I am kindly requesting you to spare a few minutes of your time to assist and provide your honest feedback to the questions below.

Please note that the responses given will be treated with utmost confidentiality and will only be used for academic purposes only. Anonymity of the respondent is also guaranteed.

Thank you in advance.

Please, answer the questions by putting a “tick” (✓) in the boxes provided and /or giving explanation where necessary.

SECTION A: DEMOGRAPHIC INFORMATION

This part seeks information about you. tick appropriately.

1. Gender of the respondent

A. Male ☐ B. Female ☐

2. Age of the respondent

A. 18- 27 years ☐ B. 28-37 years ☐ C. 38-47 years ☐ D. more than 48 years ☐

3. Marital status

A. Single ☐ B. Married ☐ C. Divorced/Separated ☐ D. Widowed ☐

4. Academic qualification

A. PHD ☐ B. Masters ☐ C. Graduate ☐ D. Diploma ☐ E. None of the above ☐

5. Which department do you work in?

A. Art Clinic ☐ B. GYN ☐ C. Maternity ☐ D. Surgical Ward ☐

E. OPD ☐ F. Procurement and Inventory ☐ G. Laboratory ☐ H. Administration ☐

I. Medical ward ☐

SECTION B: RELATIONSHIP BETWEEN INVENTORY TURNOVER AND SERVICE DELIVERY IN PUBLIC HOSPITALS

6. Is the available inventory in the hospital always optimally used?

A. YES ☐ B. NO ☐

7. How often is inventory available in the stores?

A. Daily ☐ B. Weekly ☐ C. Monthly ☐ D. Quarterly ☐

8. How long does it take to have a requisition to the store responded to?

A. One day ☐ B. week ☐ C. Month ☐

9. To what extent do you agree with the following statements. Use the scale; Strong agree

(SA), Agree (A), Neutral (N), Disagree (D) and Strongly Disagree (SD)

Narration	SA	A	N	D	SD
Drugs are readily available at the hospital					
We hardly experience stock outs from the suppliers					
We sometimes find expired drugs in the hospital stores					
The hospital has up to date inventory records					
We use automated (not manual) systems for record keeping					
The stores are large enough to accommodate all the inventory procured					

10. Rate the Patients' level of satisfaction in regards to the health services offered at the hospital.

A. High ☐ B. Moderate ☐ C. Low ☐

11. Are most of the health services readily available at the hospital?

A. YES ☐ B. NO ☐

12. Rate the quality of health services offered at the hospital.

A. Poor ☐ B. Average ☐ C. Good ☐ D. Excellent ☐

13. The finances are always available to purchase the required inventory?

A. YES ☐ B. NO ☐

SECTION C: INVENTORY MANAGEMENT TECHNIQUES USED IN PUBLIC HOSPITALS

14. Which of the following Inventory Management Techniques are used at Kabale Hospital?

Inventory Management Techniques	YES	NO
Just in Time (JIT)		
ABC Inventory Management		
Bulk Shipment		

15. Name any other Inventory Management Techniques used at Kabale Hospital?

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SECTION D: CHALLENGES FACED IN THE INVENTORY MANAGEMENT PROCESS

16. To what extent do you agree with the following challenges that affect Inventory management at Kabale Hospital. Use the scale; Strong agree (SA), Agree (A), Neutral (N), Disagree (D) and Strongly Disagree (SD)

Late delivery by the suppliers	SA	A	N	D	SD
Entrance of unauthorized personnel in the stores who the store set-up					
Inconsistent tracking of ordered goods and services					
Lack of Transparency amongst the store staff					
Poor inventory management process					
Inadequate tools and equipment to use in inventory management like computer software					
Manual documentation					
Lack of collaboration between the Procurement and Inventory department and other departments					

17. List any other challenges faced in Inventory Management at Kabale Hospital.

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18. What could be the solutions to some of the above listed challenges?

.....

Thank You Very Much!

Appendix 1:: Analysis Output

Is the available inventory in the hospital always optimally used?	Freq.	Percent
No	17	19.77
Yes	69	80.23
Total	86	100.00

How long does it take to have a requisition to the store responded to?	Freq.	Percent
Day	35	40.70
Week	46	53.49
Month	5	5.81
Total	86	100.00

Rate the Patients' level of satisfaction in regards to the health services offered at the hospital.	Freq.	Percent
Low	54	62.79
Moderate	27	31.40
High	5	5.81
Total	86	100.00

The finances are always available to purchase the required inventory?	Freq.	Percent
No	82	95.35

Yes	4	4.65
Total	86	100.00

Rate the quality of health services offered at the hospital	Freq.	Percent
Poor	30	34.88
Average	36	41.86
Good	19	22.09
Excellent	1	1.16
Total	86	100.00

Are most of the health services readily available at the hospital?	Freq.	Percent
No	56	65.12
Yes	30	34.88
Total	86	100.00

How often is inventory available in the stores?	Freq.	Percent
Daily	35	41.18
Weekly	43	50.59
Monthly	7	8.24
Total	85	100.00