INFORMATION SYSTEM MANAGED INVENTORY AND ORGANIZATIONAL PERFORMANCE. A CASE STUDY OF JOINT MEDICAL STORES IN UGANDA

BY

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DECLARATION

I, **Kasamba Alex Ofoyuru** hereby declare that this is my original work and has never been presented to any university or institution of higher learning for any academic award.

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APPROVAL

This dissertation titled, **"Information System Managed Inventory and Organizational Performance",** was carried under our supervision and is now ready for submission to the Graduate School of Kyambogo University

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DEDICATION

I dedicate this research report to my dear and beloved parents Mr. and Mrs.Otim (R.I.P)

May God bless you now and forever.

ACKNOWLEDGEMENTS

First and foremost, my sincere gratitude goes to my supervisors Mr. Samuel Alfred Wuma and Dr. Obanda Peter for their enthusiastic and professional guidance which helped me a lot to accomplish this research report successfully. May God give them more knowledge and strength now and forever.

Secondly, I am very grateful to all those who through their commitment have made my work a success especially the workers at the Joint Medical Stores in Uganda who were approached, filled the questionnaires and provided the necessary information concerning the research study.

My sincere thanks goes to my wife Roseline Acanda, my daughter Lorna Rita Kasamba, my son Moris Otim, all my brothers and sisters and to my coursemates especially those who we used to struggle with, doing course works and assignments for their great care, advice and continuous support for my academic struggles, that held me confident to the end of the course. I also thank my friends, brothers and sisters for their encouragement that enabled me to finish the course successfully.

GOD BLESS U ALL

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ACRONYMS

ARVs: Anti Retroviral Drugs

CRS: Catholic Relief Services

DRP: Distribution Requirement Planning

ERP: Enterprise resource planning

GF: Global Fund

JMS: Joint Medical Stores

MAU: Medical Access Uganda

MDP: Material Distribution Planning

MPS: Master Production Schedule

MRP: Material Requirement Planning

OAG: Office of the Auditor General

ABSTRACT

In Uganda to date, organizations like the Joint Medical Stores constantly strive to maintain optimum inventory level to be able to meet its requirement and avoid over or under inventory level that can impact the financial figures. The use of information systems in Inventory management is so fundamental since it enhances flexibility and provides competitive advantage due to the ability to respond rapidly to customer requirement. Information system managed inventory such as Enterprise Resource Planning (ERP), Material Distribution Planning (MDP) and Material Requirement Planning (MRP), may improve organizational performance in terms of cost management, efficiency, quality control and quick response.
With that effect, the researcher was motivated to carry out a research on information system managed inventory and organizational performance taking a case study of Joint Medical Stores in Uganda. However, there were also other objectives and these included the following; to examine the influence of Enterprise Resource Planning system on the performance of the Joint Medical Store; to establish the effect of Material Requirement Planning information system on the performance of the Joint Medical Store and to assess the influence of Distribution Requirement Planning information system on the performance of the Joint Medical Store.

The researcher used questionnaires and interviews to obtain data. Results from the questionnaires and interviews were used to draw frequency and percentage tables on the background of the respondents, peoples' attitudes, opinions, habits, education level among other issues in relation to information system managed inventory and organizational performance.

Results of the study showed that the information system also can lead to improved service levels due to better coordination or replenishment orders; Enterprise Resource Planning boosts the planning functions. The study further found out that there is a significant and positive relationship between information systems managed inventory and organizational performance.

The study recommends that, there should be improvement in the information system because it leads to improved service levels due to better coordination or replenishment orders.

CHAPTER ONE

INTRODUCTION

1.1 Background to the Study.

According to Stanley B. Gershwiny (2004), for many companies that operate inventory-carrying facilities, providing high product availability to customers at minimal operation costs is one of the key factors that determine the success of their businesses. For organizations especially where the competition is fierce and profit margins are thin, companies have automated the inventory management processes to adequately meet customer demand and reduce operational costs. For example, many retailers use an automatic replenishment system which tracks the number of products in the store and place an order to the supplier in a timely fashion with minimal human intervention. By doing so, companies depend on the accuracy of the computerized information system for critical decision making. Information regarding what products are, where and in what quantity must be provided accurately to effectively coordinate the movement of the goods. However, if the information provided by the computer system is incorrect, the ability to provide the product to the consumers at the minimal operation cost is compromised. For example, if the computer's record of stock quantity in the facility does not agree with the actual physical stock, orders may not be placed to the supplier in time, or the facility could be carrying unnecessary inventory. (Yun Kang and Stanley B. Gershwiny; 2004).

The term 'Information system' has been used in the past in a variety of connotations. It has been used to describe a multitude of electronic data processing equipment or devices, data collection systems, or even clerical arrangements. Information is the combination of human and computer-based capital resources which results in the collection, storage, retrieval, communication and use of data for the purpose of efficient management (planning, decision-making, reporting, and control) of operations in organizations.(N. C. Churchill, C. H. Kriebel and A. C. Stedry;1965).

The word 'Inventory' has been defined in many ways. Inventories are stockpiles of raw materials, supplies, components, work in progress, and finished goods that appear at numerous points throughout a firm's production and logistics channel. (Ballou; 2004).

Inventory is the stock of any item or resource used in an organization. An inventory system is the set of policies and controls that monitors levels of inventory and determines what levels to be maintained, when stock should be replenished, and how large orders should be. (Chase, Jacobs and Aquilano; 2004).

However, Lysons (2003) further explains inventory as something always dynamic. To him, in many organizations, it is the most important aspect in determining quality, cost and effective delivery function. Too much working capital tied up in inventory can cause problems of cash flow that leads to expensive borrowing and prevent desirable expenditure in other directions. In this study we integrate information systems in inventory management to assess its influence on organizational performance.

In Uganda to date, organizations like the Joint Medical Stores constantly strive to maintain optimum inventory level to be able to meet its requirements and avoid over or under inventory level that can impact the financial figures. The use of information systems in Inventory management is so fundamental since it enhances flexibility and provides competitive advantage due to the ability to respond rapidly to customer requirement. Information system managed inventory such as Enterprise Resource Planning (ERP), Material Distribution Planning (MDP) and Material Requirement Planning (MRP), may improve organizational performance in terms of cost management, efficiency, quality control and quick response.

Information managed systems play crucial roles, both at the organizational and departmental levels. At the organizational level, information systems should assist in specifying objectives and strategies of the organization. Information managed systems should also aid in developing and supporting systems and procedures to achieve them. At departmental level, information managed systems must ensure a smooth flow of information across departments and should guide organizations to adopt the most viable organization practices. At this level, information systems ensure seamless flow of information across the different departments, develop and maintain an enterprise-wide database. This database will eliminate the need of the isolated data islands that would have existed in each department and make the organization's data accessible across the departmental boundaries. This enterprise-wide data sharing has many benefits like automation of the procedures, availability of high quality

information for better decision making, faster response times among other benefits. (Alexis Leon; 2011).

The Joint Medical Store is a faith based Non Governmental Organization and a body corporate formed in 1979 by the Medical Bureau of the Roman Catholic Church (UCMB) and Protestant Churches (UPMB) to handle procurement and supply management of drugs and health supplies for the faith based health institutions within Uganda. It procures, stores, and distributes pharmaceutical products through the various health networks of the two churches and other faith based and community organizations throughout Uganda.

1.2 Statement of the Problem.

According to J.S chandan (2002), availability of drugs world over, is one of the best indicators for quality health services. In Uganda today, many government hospitals and lower health units run on supply of essential drugs more especially antiretroviral drugs (ARVs), HIV testing kits, drugs to treat opportunistic infections and several crucial diagnostic tools for HIV care, from the known suppliers like the Joint Medical Stores (JMS) and National Medical Stores. (Ministry of Health stock status report; 27 May, 2013).

In a recent Health survey by the Ministry of Health as of 1st May 2013, central stocks of a number of first- and second-line ARVs, pediatric ARV formulations and HIV test kits were out of stock in country's three government warehouses -National Medical Stores (NMS), Joint Medical Stores (JMS) and Medical Access Uganda Limited (MAUL). As of 2012, 62 percent of those needing HIV treatment in Uganda were on ARVs, up from 50 percent in 2010; that figure is expected to rise again in 2014Dicta Asiimwe; June 22 2013).

However, according to Auditor General Report on drugs under health credit facilities at Joint Medical Store, Anti Retroviral (ARV) medicines were found to be expired. (Office of the Auditor General (OAG); 2012/2013).

Additionally, to the Joint Medical Store Expiry Survey Report Journal (2012), Anti Retroviral (ARV) medicines under Global Fund, Medical Access Uganda, and Catholic Relief Services worth Ugx 11,285,126 were expired, indicating that there is still a big challenge and a possibility of poor information system management of inventory that leads to stock-out and creates unpleasant situation for the organization(s); like loss of image and increase in death

rates in hospitals among others. For these reasons therefore, the researcher aimed to assess information system managed inventory and organizational performance by the Joint Medical Store (JMS).

1.3 General Objective

To assess the influence of information system managed inventory on organizational performance of the Joint Medical Store.

1.4 Specific Objectives

i. To examine the influence of Enterprise Resource Planning system on the performance of the Joint Medical Store.

ii. To establish the effect of Material Requirement Planning information system on the performance of the Joint Medical Store.

iii. To assess the influence of Distribution Requirement Planning information system on the performance of the Joint Medical Store.

1.5 Research Questions

i. What is the influence of Enterprise Resource Planning system on the performance of the Joint Medical Store?

ii. What is the effect of Material Requirement Planning information system on the performance of the Joint Medical Store?

iii. What is the influence of Distribution Requirement Planning information system on the performance of the Joint Medical Store?

1.6 Scope of the Study

1.6.1 Content Scope

The study aimed to assess the influence of the information system managed inventory on the performance of the Joint Medical Store. Various respondents were involved in the study. These included the procurement officers, managers, the store keepers among other employees at Joint Medical Store.

1.6.2 Geographical Scope

The study was carried out at the Joint Medical Store which is located in Nsambya on plot 1828 Gogonya Road, next to Nsambya housing estate, Kampala district.

1.6.3 Time Scope

The study gathered the relevant information required within a period of 7 months starting from February – September. Additionally, the study used data ranging from 1990-2013. This time was long enough for getting the required information for the study.

1.7 Significance of the Study

i. The institution (JMS) may learn and get to know the best techniques of proper information system managed inventory control and management systems.

ii. The study identified and gave highlights on key challenges facing pharmaceutical organizations with particular emphasis to Joint Medical store and possible remedies were proposed to meet those challenges. This in turn may lead to improvement in service delivery in Uganda.

iii. Other researchers may also borrow a leaf from this study and elaborate more on how information system managed inventory management can contribute to organizational performance and improve service delivery and reduce costs.

1.8 Definition of Key Terms

1.8.1 Information System

Information system are primarily transactional systems that concentrate on the management and flow of low-level data items pertaining to basic business processes such as purchasing and order delivery. This data is often rolled-up and summarized into higher-level decision support systems to help firms understand what is happening in their organizations and how best to respond. In order to achieve seamless handling of this data, organizations must ensure that their business information systems are tightly integrated across the enterprise. (Kenneth C.; Laudon, Jane P.; 2009).

1.8.2 Organizational Performance

Organizational performance is an analysis of a company's performance as compared to goals and objectives. Within corporate organizations, there are three primary outcomes analyzed: financial performance, market performance and shareholder value performance (in some cases, production capacity performance may be analyzed: Shahrukhalid; 2011).

1.8.3 Service Delivery

Service delivery is the implementation of those services and making sure they reach those people and places they are intended to, (Collins Cobuild; 2003). Service delivery is something that the public needs, such as transport, communications facilities, hospitals, or energy supplies, which is provided in a planned and organized way by the government or an official body.

CHAPTER TWO

LITERATURE REVIEW

2.0 Introduction

This chapter presents the theoretical perspective containing the theory that anchored the study, the conceptual framework that shows how each of the independent variables relates with the dependent variable. These are then followed by the review of the available literature related to the study as studied by other scholars, and have been explained and studied both empirically and theoretically in the existing literature review on the influence of information system managed inventory on organizational performance.

2.1 Theoretical Framework

Information System

According to Kenneth C.; Laudon, Jane P. (2009), information system are primarily transactional systems that concentrate on the management and flow of low-level data items pertaining to basic business processes such as purchasing and order delivery. This data is often rolled-up and summarized into higher-level decision support systems to help firms understand what is happening in their organizations and how best to respond. In order to achieve seamless handling of this data, organizations must ensure that their business information systems are tightly integrated across the enterprise.

Inventory Management

Inventory management is defined as a stock of goods maintained for the purpose of future production or sales. (J.S. Chandan; 2007).

However, to Kotler (2000), inventory management refers to all the activities involved in developing and managing the inventory levels of raw materials, semi-finished materials (work-in-progress) and finished good so that adequate supplies are available and the costs of over or under stocks are low.

Enterprise Resource Planning (ERP)

Enterprise Resource Planning, sometimes known as ERP, is the unification of various resources in an organization or business into a single computer system that meets the demands of all of the various departments of that business or organization. (Alexis; 2010). The benefits to this include better interconnectivity and communication between departments and smoother start-to-finish operations.

Material Distribution Planning (MDP)

Material Distribution Planning refers to the planning and control of the functions supporting the complete cycle (flow) of materials, and the associated flow of information.

Material Requirement Planning (MRP)

Material requirements planning (MRP) is defined as a production planning and inventory control system used to manage manufacturing processes, (Volman, T, E, Berry, W.L., and Whybark, D.C.; 1992).

According to Volman, T, E, Berry, W.L., and Whybark, D.C. (2002), Material Requirements Planning is a computer-based production planning and inventory control system. Material Requirements Planning is concerned with both production scheduling and inventory control.

It is a material control system that attempts to keep adequate inventory levels to assure that required materials are available when needed. MRP is applicable in situations of multiple items with complex bills of materials, (Berry, W.L.; 1992).

2.2 Conceptual Framework

Figure 1: Conceptual frame work model on information system managed inventory and organizational performance.

The Information System Inventory Management concept is an integration of information systems and inventory management. It integrates information systems in inventory management. The framework below illustrates the relationship of the variables in this study.

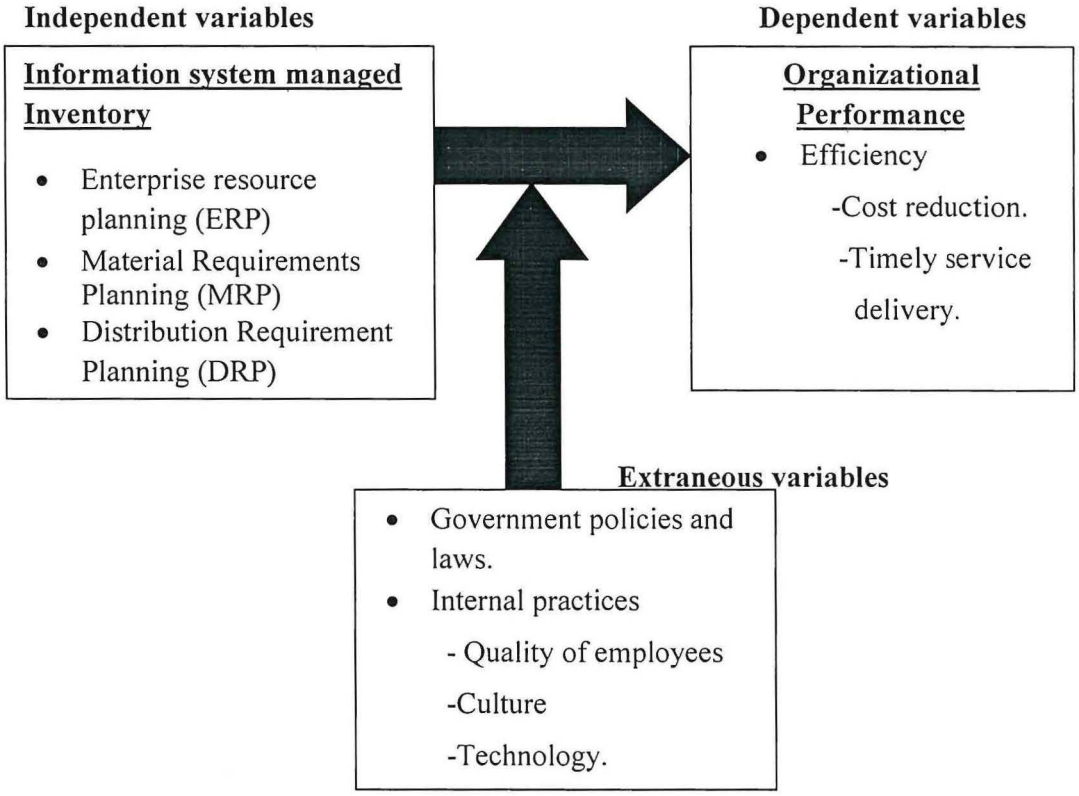

Figure 1: The Conceptual Framework

Source: Developed basing on Social Science Research (Amin, 2005). Pages 92-95.

Fig.1 above indicates that the independent variable (Information system managed inventory) directly influences the dependent variable (organizational performance); the extraneous variables moderate the relationship between information system managed inventory and organizational performance which could also have similar effect on the dependent variable if not controlled.

2.3 Review of Related Literature

This section reviews literature on information system managed inventory and organizational performance as studied by other scholars.

2.3.0 Information System Inventory Management and Organizational Performance

This section of study explains the components of inventory management used by organizations'. These include; The Enterprise Resource planning (ERP), Material Requirement Planning (MRP) & Distribution Requirement Planning (DRP). Thereafter the role/impact of information systems on inventory management is addressed.

2.3.1 Enterprise Resource Planning (ERP)

Enterprise Resource Planning (ERP) is the unification of various resources in an organization or business into a single computer system that meets the demands of all of the various departments of the organization, (Kenneth C.; Laudon, Jane P. (2009).

ERP is a mirror image of the major organizational processes of an organization, such as customer order fulfillment and manufacturing. Its success depends upon the reach of a circumscribed ERP system. (Kenneth Lyson; 2003). ERP systems' set of generic processes, produce dramatic improvements than they are capable of, only when used to connect parts of the organization and integrate its various processes seamlessly. For example, when a warehouse in Uganda enters a customer order, the data flows automatically to others in the organization who need to see it-to the finance department at the company headquarters in South Africa and to the manufacturing plant in china.

2.3.2 Advantages of Enterprise Resource Planning (ERP) System

Installing an ERP system has many advantages –both indirect and direct. The indirect benefits include, better corporate image, improved customer good will, customer satisfaction, among others. However, some of the direct advantages of the ERP system include;

Business integration

One of the most important advantages of the ERP system is the promotion of integration. The reason why ERP packages are considered to be integrated is the automatic data updation

(automatic data exchange among applications) that is possible among the related business components. Since conventional organizational information system were aimed at the optimization of independent business functions in business units, almost all were weak in terms of the communication and integration of information that transcended the different organizational functions. In the case of large companies in particular, the timing of system construction and directives differs from each product and department\function and sometimes, they are disconnected. For this reason, it has become an obstacle in the shift to new product and business classification. In the case of ERP packages, the data of related business functions is also automatically updated at the time a transaction occurs. For this reason, one is able to grasp organization details in real time, and carry out various types of management decisions on time, basing on that information. (Alexis Leon; 1999)

Flexibility

Different languages, currencies, accounting standards among others can be covered in one system. Functions that comprehensively manage multiple locations of the organization can be packaged and implemented automatically. To cope with organization's globalization and system unification, this flexibility is essential and one can say it has major advantages, not simply for development and maintenance, but also in terms of management. (Nachtmann, H., Waller, M.A., 2004).

Better analysis and planning capabilities

Enterprise Resource Planning boosts the planning functions. By enabling the comprehensive and unified management of related business and its data, it becomes possible to fully utilize many types of decision support systems and simulation functions. Furthermore, since it becomes flexible and in real time, the filling and analysis of data from a variety of dimensions, one is able to give the decision-makers the information they want; thus enabling them to make better and informed decisions. (Leon; 1999).

Use of latest technology

The ERP vendors were very quick to realize that in order to grow and to sustain growth, they had to embrace the latest developments in the field of information technology. Therefore, they quickly adapted their systems to take advantage of the latest technologies like open systems, client\server technology, internet, CALS (Computer Aided Acquisition and Logistics Support), electronic-commerce, among others. It is this quick adaptation to the

latest changes in information technology that makes flexible adaptations to changes in future business environments possible. It is this flexibility that makes the incorporation of latest technology possible during system customization, maintenance and expansion phase.

2.3.3 Challenges Faced by Enterprise Resource Planning System

Lack of quality employees

According to André de Waal (2009), organizations that lack good employees in terms of knowledge, skills, abilities and experience usually do not perform very well compared to their counterparts who employ quality workers. The organization can easily attain its aimed goals and meet set targets in the given period of time if knowledge, skills, abilities and experience of respective employees is put into consideration. This is so because such employees are diverse, complementary and effectively work together. They are flexible and resilient when it comes to achieving results. Thus, leading to organizational growth and development.

Culture

The culture of an organization may hinder performance of the Enterprise Resource Planning System. Culture pertains to the prevalent norms and values found in a system of the organization. It is the way the organization conducts business. (Hagberg and Heifetz; 2002). Culture 'drives' the organization and its actions. It is somewhat like an 'operating system' of the organization. It guides how employees think, act and feel about the organization. Therefore, if the Enterprise Resource Planning System is not properly guided and welcomed to suite the culture of the organization, it may not work as stipulated to be used by the organization.

Resistance from employees in Fear of unemployment

With the introduction of the Enterprise Resource Planning System, many procedures become automated. Therefore, the people who were doing those jobs become redundant. So, its quite natural to have resistance from the employees. Additionally, many employees find it difficult to accept new transformation systems. This usually happens when employees are not given proper training in advance.

2.3.4 Measures to Cope With the Challenges Faced by Enterprise Resource Planning System

Employee skilled personnel

For the Enterprise Resource Planning system to work successfully, there should be good people who know the organization, its objectives and activities properly. The employee(s) should be good and his or her package should be the one best suited for the organization's needs. The ERP consultants should be very good too. The implementation should be planned well and executed perfectly. The end user training should be done so that the people understand the system and the effect of their efforts on the overall success of the programme. (C. John Langley, Jr.; 2003).

Provide advance training to the employees

Many employees find it difficult to accept new transformation systems. This usually happens if employees are not given proper training in advance. Therefore, it is wise for the management of the organization to organize training for its employees so as to suite the new system and work in more challenging and stimulating environments. For this also, the employees have to be told, in advance as to what will happen and should be given ample time and training to make the transformation. Without support from the employees, even the best systems fail. So, it is very important that the management takes the necessary steps in advance, to alleviate the fears of and provide necessary training to their employees. (Alexis Leon; 1999).

2.4.1 Material Requirement Planning (MRP)

Material Requirements Planning or MRP is a computerized inventory management system that helps production managers plan and schedule the purchase of raw materials and component parts for manufacturing facilities. MRP systems are driven by outstanding orders or foretasted orders or a combination of the two in order to ensure adequate inventory of dependent demand items to meet production requirements. (David A. Wells, 2011).

Material Requirements Planning is a time phased priority-planning technique that calculates material requirements and schedules supply to meet demand across all products and parts in one or more plants. (Vassilis Moustakis; 2000).

Materials Requirement Planning is a computer-based system for managing inventory and production schedules. This approach to materials management applies to large job-shop situations in which many products are manufactured in periodic lots in several processing steps. It does not apply to continuos-flow-type manufacturing systems. (Bedworth & Bailey, 1997).

Manufacturing Resource Planning is a system in which the entire production environment is evaluated to allow master schedules to be adjusted and created based on feedback from current production/purchase conditions. (Bedworth & Bailey; 1997).
Materials Requirements Planning (MRP, or MRP-I) was launched in the mid-1960s and quickly became popular for providing a logical, easily understood method for determining the number of parts, components, and materials needed for the assembly of each end item in production. As computer power grew and demands for software applications increased, MRP systems evolved to consider other resources besides materials. Software modules were added to include functions such as scheduling, inventory control, and finance.

2.4.2 Types of Material Requirement planning (MRP)

Advanced MRP systems

These are recognized for their databases and interdepartmental linkages. Their structure provides a natural basis for MRP systems to become an enterprise integration tool. Enterprise integration is viewed as developing the availability and accessibility of information within an extended corporate system and using the information system to effectively coordinate both the decisions and actions of thousands of individuals (Enterprise Integration Laboratory, Univ. of Toronto, 2004).

Client/server architecture system

The cost of client/server systems is far higher than managers expected. The tools and technologies for client/server systems have not fully evolved, and the need for implementation planning and personnel training were often underestimated (Rifkin, 2004). Early adopters of client/server technology found that the relative ease of developing client/server applications allowed them to build many applications using a wide mix of tools without much thought to the long-term overall results (Rick Martin, 2005). Later adopters are being more cautious, explicitly addressing architectural issues and standardization early in the process.

2.4.3 Advantages of Material Requirement planning on the performance of organizations.

Inventory Levels

Material Requirement planning (MRP) systems allow inventory managers to reduce the level of component parts and raw materials inventory. An MRP system works backward from the production schedule to determine the exact amount of inventory necessary to meet production demand. Maintaining lower inventory levels reduces the amount of capital tied up in inventory and reduces inventory carrying costs. (Donohue, K., 2005).

Economical Ordering

Over time, an MRP system reveals the ideal lot sizes that should be purchased of each component item or raw material. By taking into account the production demand for the item, carrying costs, quantity price breaks and transportation costs, the most cost effective order amount can be determined with great accuracy. (Czintos; 2010).

Purchasing Planning

MRP shows managers what inventory will be needed to meet increased demand on finished products. With any increase in inventory requirements, comes a commensurate increase in warehousing requirements. Information about inventory requirements helps managers plan for future facilities expansions.

Production Planning

Production of finished goods is dependent on the availability of the raw materials and component parts. MRP can identify shortages in inventory items so managers can shift production assets to the manufacture of other items where the constituent parts are on hand.

Work Scheduling

MRP systems provide a clear picture of the inventory available for the production process. Managers can use this information to schedule work crews to meet the needs of the manufacturing process without over staffing the production line. (Croson, R., 2007).

Customer Service

Information provided by an MRP system can help customer service representatives to provide customers with accurate order delivery dates.

2.4.4 Challenges faced by the material requirement planning.

Many sources state that problems associated with MRP systems lie, to some degree, with organizational and behavioral factors (Turbide, 2008; Chase & Aquilano, 2010). Among the causes cited for MRP system failures include the following:

Lack of top management commitment

Part of the blame for the lack of top management commitment may be MRP's image. It sounds like a manufacturing system rather than a business plan. However, an MRP system is used to plan resources and develop schedules. Also, a well-functioning schedule can use the firm's assets effectively, thus increasing profits. MRP should be accepted by top management as a planning tool with specific reference to profit results" (Chase & Aquilano, 2008). Executives must be educated on the use of MRP as an integrated, strategic planning tool.

Failure to recognize the MRP system

Failure to recognize that MRP is only a software tool that needs to be used correctly to adapt the organization and its processes to exploit the system's capabilities is also a challenge of the MRP system. "...MRP proponents overdid themselves in selling the concept. MRP was presented and perceived as a complete and standalone system to run a firm, rather than as part of the total system" (Chase & Aquilano, 2005).

Insufficient user training and education

In nearly every study conducted and in many published cases, the lack of training or understanding is considered a major barrier to MRP implementation. DeLone notes that lack of understanding about computers is frequently cited as a reason for failure of small business endeavors (Raysman, 2011). In their study, Sum and Yang (2008) identified that the lack of MRP expertise, training, and education were major problems facing MRP implementers. There are several published books about user training for Management Information Systems. The need to adapt employees to their MRP systems definitely exists.

Lack of technical expertise

Not only is there a need to improve user training techniques and general understanding of MRP systems, there is also a definite lack of technical expertise to provide the leadership needed to implement the systems. Not only would the technical experts need to be familiar with the operational needs of daily production, the system integrators would also need to understand how the computer software system can be built to handle the production needs. Increasingly, the advanced MRP-type systems are seeking to integrate concepts of Just-In-Time (JIT) production into the computer applications system.

Sum and Yang (2009) found "Lack of company expertise in MRP" to be the major implementation obstacle, followed closely by "Lack of training/experience on MRP."

MRP requires a high degree of accuracy for operation

This often requires changing how the company operates and how files are updated. Traditionally, production management allowed for plenty of excess buffer stock to be stored on site. The extra inventory stores allowed for differences between the recorded inventory and actual inventory. One of the aims of the MRP system is to minimize inventory, thus the accuracy of the recorded levels becomes critical. Engineering drawings and bills of materials must also be kept up-to-date if the MRP system is to function correctly.

"Perhaps one of the biggest complaints by users is that MRP is too rigid. When MRP develops a schedule, it is quite difficult to veer away from the schedule if need arises" (Chase & Aquilano, 2005).

2.4.5 Measures to cope with the challenges faced by the material requirement planning system.

DeLone (2008) suggested that the use of external programming could compensate for the lack of technical expertise. However, in his study he found that the use of external programming is not associated with computer success in small companies. Rather, he suggests, success is more dependent on the ability of top management to direct and manage external computer expertise rather than the level of involvement of external computer experts.

2.5 Distribution Requirement Planning (DRP)

Distribution Requirement Planning refers to the planning and control of the functions supporting the complete cycle (flow) of materials, and the associated flow of information. (Laudon, K.,&Laudon, J.; 2010). Plans derived from the DRP information are the basis for managing the logistics system. Continually adjusts changes in the demand, sending inventories from central warehouse to distribution centers where they are needed.

The need for more detailed distribution planning led to the emergence of distribution requirements planning (DRP) during the 1970s. DRP is a widely used and potentially powerful technique for helping outbound logistics systems manage and minimize inbound inventories. This concept extended the time-phase order point found in material requirements planning (MRP) logic to the management of channel inventory. By the 1980s DRP had become a standard approach for planning and controlling distribution logistics activities and had evolved into distribution resource planning. The concept now embraces all business functions in the supply channel, not just inventory and logistics. (Ross, David Frederick; 2004).

Distribution Requirements Planning (DRP) is usually used with an MRP system, although most DRP models are more comprehensive than stand-alone MRP models and can schedule transportation. The underlying rationale for DRP is to more accurately fore-cast demand and then use that information to develop delivery schedules. This way, distribution firms can minimize inbound inventory by using MRP in conjunction with other schedules.

Distribution Requirement Planning entails managing the flow of materials between firms, warehouses, distribution centers. Distribution Requirement Planning helps manage the flow of materials. Just like MRP did in Manufacturing, DRP links firms in the supply chain by providing planning records that carry demand information from receiving points to supply points and viceversa. (Coyle, John J., Edward J. Bardi, and C. John Langley, Jr; 2003).

Additionally, DRP involves planning the supply chain from sales planning through delivery to the distribution centers, assuming there are sales orders or that sales forecasts are available. The primary aim of planning is to determine the quantities required on specific dates, including the lead times of the distribution lanes. The distribution network defines the normal supply method for execution. (Kenneth C.; Laudon, Jane P. (2009).

2.5.2 Benefits of the Distribution Requirement Planning system on the performance of organizations.

Increase in the efficiency of time, place and delivery utility

The central focus of the Distribution Requirement Planning system is to increase the efficiency of time, place, and delivery utility. (Damanpour, F., 2002). When demand and product availability are immediate, the producer can perform the exchange and delivery functions itself. However, as the number of producers grows and the geographical dispersion of the customer base expands, the need for both internal and external intermediaries who can facilitate the flow of products, services, and information via a distribution process increases.

Decrease overall channel complexity

Distribution management also can decrease overall channel complexity through sorting and assistance in routinization. Sorting is the group of activities associated with transforming products acquired from manufacturers into the assortments and quantities demanded in the marketplace. Routinization refers to the policies and procedures providing common goals, channel arrangements, expectations, and mechanisms to facilitate efficient transactions. (David F. Ross; 2012).

Selling and promoting

This function is very important to manufacturers. One strategy involves the use of distribution channels to carry out the responsibilities of product deployment. In addition to being marketing experts in their industry, distribution firms usually have direct-selling organizations and a detailed knowledge of their customers and their expectations. The manufacturer utilizing this distributor can then tap into these resources. Also, because of the scale of the distributing firm's operations and its specialized skill in channel management, it can significantly improve the time, place, and possession utilities by housing inventory closer to the market. These advantages mean that, the manufacturer can reach many small, distant customers at a relatively low cost, thus allowing the manufacturer to focus its expenditures on product development and its core production processes. (Dorling, K., Scott, J., & Deakins, E., 2005).

Buying and building product assortments

This is an extremely important function for retailers. Most retailers prefer to deal with few suppliers providing a wide assortment of products that fit their merchandizing strategy rather than many with limited product lines. This, of course, saves on purchasing, transportation, and merchandizing costs. (Kennth Lyson; 2003). Distribution firms have the ability to bring together related products from multiple manufacturers and assemble the right combination of these products in quantities that meet the retailer's requirements in a cost-efficient manner.

Bulk breaking

This is one of the fundamental functions of distribution. Manufacturers normally produce large quantities of a limited number of products. However, retailers normally require smaller quantities of multiple products. When the distribution function handles this requirement it keeps the manufacturer from having to break bulk and re-package its product to fit individual requirements. (J.S chandan 2002). Lean manufacturing and JIT techniques are continuously seeking ways to reduce lot sizes, so this function enhances that goal.

Value-added processing

Postponement specifies that products should be kept at the highest possible level in the pipeline in large, generic quantities that can be customized into their final form as close as possible to the actual final sale. The distributor can facilitate this process by performing sorting, labeling, blending, kitting, packaging, and light final assembly at one or more points within the supply channel. This significantly reduces end-product obsolescence and minimizes the risk inherent with carrying finished goods inventory. Additionally, the distribution channel also can provide information regarding product, marketplace issues, and competitors' activities in a relatively short time. (Kennth Lyson; 2003).

Transportation

The movement of goods from the manufacturer to the retailer is a critical function of distribution. Delivery encompasses those activities that are necessary to ensure that the right product is available to the customer at the right time and right place. This frequently means that a structure of central, branch, and field warehouses, geographically situated in the appropriate locations, are needed to achieve optimum customer service. Transportation's goal

is to ensure that goods are positioned properly in the channel in a quick, cost-effective, and consistent manner. (Kizza Christopher Packer; 2001).

Warehousing

Warehousing exists to provide access to sufficient stock in order to satisfy anticipated customer requirements, and to act as a buffer against supply and demand uncertainties. Since demand is often located far from the source (manufacturer), warehousing can provide a wide range of marketplaces that manufacturers, functioning independently, could not penetrate. (Laudon &Laudon;2010).

2.5.3 Challenges faced by the Distribution Requirement Planning system on the performance of organizations.

Low Activity / Low Storage Requirements

This combination represents the simple, smaller warehouse operation. Rarely are automation or sophisticated storage and picking mediums or devices justified for these smaller operations. Laudon, Kenneth C.;Jane P. (2009). In most instances, floor storage, stacked pallets, simple pallet racks and/or conventional shelving are utilized within the facility, along with manual handling.

Low Activity / High Storage Requirements

This combination typically calls for high bay, multi-level, high-density storage, and a random location strategy. Order picking can be manual or semi-manual.

High Activity / Low Storage Requirements

This combination generally suggests a very condensed forward picking area supported by simple overstock storage. The high pick activity level often justifies automating the order picking system and the use of automated material handling systems. (Jane P.; 2009).

High Activity / High Storage Requirements

This combination is characteristic of a typical large distribution center. The high pick activity and high storage requirements often justify the use of exceedingly automated order picking systems, heavily automated material handling and sortation systems and high-density storage.

2.5.4 Measure to cope with the Challenges faced by the Distribution Requirement planning system.

Define goals and objectives

These should be closely aligned with the overall strategy for the new facility. They can be defined as minimizing warehousing operating costs, maximizing picking productivity, or simply providing the best customer service. They can also be defined more specifically, such as maximizing cube utilization, providing maximum flexibility in the final layout to accommodate future expansion or changes in business, or maximizing efficiency and productivity with a minimal amount of resources. (Craig Bertorello; 2008).

Document the process

Review the existing or proposed methodology and process, and conduct personal interviews with the staff dedicated to all major functional areas within the process. Recent changes in the economy may have caused some downsizing and movement of personnel to work areas they may not be totally familiar with, so be sure to interview enough people familiar with each functional area. (Chandan;2002). If those interviewed can't identify areas of opportunity for improvement in their department or area, you should look to interview more from that department or functional area as there is always room for improvement.

Collect information and data

Collect any and all information specific to the new facility. Since it is best to work from inside the facility when considering new construction, do not let any building constraints restrict the design. Ross, David Frederick(2004), When considering existing space for the new facility, make sure the information includes accurate drawings showing column sizes and locations, dock and personnel doors and locations, ceiling height restrictions, and ceiling girder/joist construction. It is also important to collect all relevant product information

pertaining to the number of stock keeping units (SKUs) to be stored and picked within the facility, along with their dimensional measurements, weights, order history, and velocity data.

Create a detailed project plan

This plan should identify all the steps required to create the warehouse or distribution center layout, including the overall goals and objectives, and the results of the information and data analysis used in developing the plan. The project plan should contain the major tasks to be undertaken, the resources needed to achieve each task, and how much time should be allotted to accomplish the tasks successfully. (David Frederick; 2004).

The project plan should include start and end dates for all tasks, as well as availability of resources. Once the plan has been developed, it should be reviewed and checked to be sure the timeline is realistic and attainable, as the available occupancy date of a new facility will dictate equipment delivery and installation.

Implementation

The implementation phase of the project is when the "rubber meets the road." It is during this phase that the layout is transformed from concept to reality. All resources within the new facility need to work together to ensure the project plan's goals are met. Since there is a set order in which components of the system should be installed, delivery of all products is carefully coordinated so as to arrive at the time when it is needed. (Pant, S., Hsu, C., 1995).

Like a race car which is tuned to perform its best at each individual race track, this phase is when the system gets tuned for peak performance. Timing for the sortation systems and merges are set to maximize throughput. The pitch to be used for the carton and pallet flow racks is adjusted in order to meet the user's satisfaction.

The time from establishing system goals to completion can in some cases be over a year and, on occasion, changes are requested during the implementation phase in order to meet the most current objectives. It is important to remember that all of these changes or deviations from the original plan must be well documented so that expectations for all stakeholders are managed properly.

Post project review

Once the project has been completed and inventory is moving smoothly in and out of the facility, a closeout meeting should be scheduled. This session will include a discussion with the implementation team as to whether the final layout was implemented as originally designed and approved, and to confirm that any changes were appropriately documented. This step is critical for future project planning. (Lucey, Terry; 2005).

A well material handling system design and well-planned warehouse or distribution center offers multiple advantages in the fight to remain competitive and successful. By taking the necessary steps to see the project through from start to finish, the result will be a facility that operates efficiently, uses space effectively, maintains cost control, and in the end achieves its ultimate goal of meeting expectations.

2.6 Summary

There are various information managed inventory systems used by organizations to enhance performance. According to the literature above, there are basically three main information managed inventory systems and these include; i) Enterprise Resource Planning (ERP) system which refers to the unification of various resources in an organization or business into a single computer system that meets the demands of all of the various departments of that business or organization. This system enables better interconnectivity and communication between departments and smoother start-to-finish operations. ii) Material Distribution Planning (MDP)system which refers to the planning and control of the functions supporting the complete cycle (flow) of materials, and the associated flow of information. iii) Material Requirement Planning (MRP) system which is a computer-based production planning and inventory control system concerned with both production scheduling and inventory control. It is a material control system that attempts to keep adequate inventory levels to assure that required materials are available when needed.

CHAPTER THREE

METHODOLOGY

3.0 Introduction

This chapter presents the methods that were applied in data collection. They included research design, data type and sources, area and population of the study, sample size and selection, data collection instruments, data analysis and presentation and the limitations to the study.

3.1 Research Design

In this study, the researcher used a case study survey, which involved collecting people's attitudes, perceptions and opinions on information system managed inventory and performance of the Joint Medical Store. The researcher used both quantitative and qualitative design of investigation. The quantitative design involved close-ended and open-ended questions while the qualitative design involved the use of in-depth interviews. The research design was built on questionnaires and interview guides. The collected data was then analyzed in correspondence with the study objectives.

3.2 Area of the Study

The study was carried out at Joint Medical Store which is located in Nsambya on plot 1828 Gogonya Road, next to Nsambya housing estate, Kampala district.

3.3 Target Population

The population of the study was made up of the procurement officers, managers, the store keepers among other employees at Joint Medical Store. The study used a total of 30 respondents out of 45 people as chosen through purposive and simple random sampling.

3.4 Sample Size and Sampling Technique

In the study, five (5) top management staffs were purposively selected as key informants from the Joint Medical Store and these included three (3) managers from the various departments of the organization and two (2) respondents from the accounts department of the Joint Medical Store. These were purposively selected because they were deemed to be adequately knowledgeable about the influence of information system managed inventory on organizational performance at the Joint Medical Store. Additionally, 25 respondents were randomly selected from the various employees of the Joint Medical Store including the procurement officer, store keepers among others. Therefore, the study used a total of 30 respondents.

Table1: Sample size and sampling strategy

Category of respondents	**Population**	**Sample size**	**Sampling Technique**
Top Management staff of the Joint Medical Store (JMS)	10	5	Purposive sampling
Other staff members of the Joint Medical Store (JMS)	35	25	Simple random sampling
Total	**45**	**30**	

Source: Sample size based on Martin E. Amin (2005; pg 236-238).

Selecting a sample is a very important step in conducting a research study, particularly for quantitative research. The researcher must determine the size of the sample to provide sufficient data to answer the research problem. Regardless of what sampling approach is used, all sampling approaches aim at serving the purpose of generalisability of findings and reduction of costs and time. (Martin E. Amin; 2005).

3.5 Sampling Technique and procedure

Amin (2005) asserts that a sample needs to be carefully selected if there is to be confidence that the findings from the sample are representative of those found in the rest of the category under investigation. Bearing these facts in mind, sampling was done carefully so as to get good representation from the research.

The researcher utilized both probabilistic and non-probabilistic sampling technique to sample for both qualitative and quantitative data in order to come out with a comprehensive report. For qualitative data, purposive sampling was used to select the management staff of the Joint Medical Store who included the heads from the various departments of the Joint Medical Store (JMS). Simple random sampling method was used to select the other staff members of the Joint Medical Store.

3.6 Data Sources

The study used both quantitative and qualitative data. The researcher used both primary and secondary sources of data. Primary source of data refers to the information got from the field through the use of the various data collection methods like questionnaires, interview guides and open group discussions while secondary data refers to the information got from books and other documents related to the research topic.

The secondary source of data was obtained from organization's annual reports, text books and research reports relevant to the topic under analysis.

The purpose of using secondary data is to compare the secondary data available with the responses from the primary data which was gathered in order to derive at meaningful and objective interpretation of information system managed inventory and performance of the Joint Medical Store.

3.7 Data Collection Instruments

In order to arrive at satisfactory results, various data collection instruments were employed as discussed below.

Questionnaires

A questionnaire is a set of questions in a particular theme of the study (Kothari; 2004). This method was used where respondents preferred anonymity and in circumstances where respondents needed to consult the necessary sources of information before they would commit their responses to the researcher. Questionnaires were designed with a wide range of questions related to the tropic of research. Some of the questions were split into several ones so as to make research more exhaustive.

Interview

An interview is an oral questionnaire where the investigator gathers data through direct verbal interaction with participants, for example, the procurement officers, managers, store keepers among other participants. Instead of written responses, the subject gives the needed information verbally in a face-to-face relationship where ideas are exchanged. Martin E. Amin, (2005). Amin further explained that, interviews require physical proximity of two or more persons and generally require that all the normal channels of communication be open to them. As a research technique, the interview is a conversation carried out with the definite purpose of obtaining certain information by means of the spoken word.

For this study, personal interviews were also carried out and clarity questions were asked so as to obtain clear, necessary and first hand information. In this method of data collection, an interview guide was used. The researcher kept to the scope of the study as questions were put forward and responses were noted down. The researcher used the interview guide for direction and guidance on the questions asked when conducting the interview.

3.8 Measurement of Variables

According to Amin (2005), measurement of variables involves assigning numbers to objects, events or characteristics. Nominal and ordinal scales were used in the questionnaires as a way of assigning numbers to define the variables. The researcher used the nominal scale as labels to categories demographic features consisting of age, gender, educational background and duration spent working with the organization. Mugerwa and Mugenda (1999), maintains that nominal scales are only useful in the process of identification but do not allow comparison of variables.

3.9 Reliability and Validity of Instruments

The questionnaire was initially pre-tested on respondents who are not part of the main research but have experience in information system and inventory management. The respondents were requested to critique the questionnaire and their input was incorporated in the questionnaire.

3.9.1 Reliability

For this research study, the Cronbach's coefficient alpha (α) approach was used to measure reliability so as to eliminate errors. To Amin (2005), this is a general form of the KR_{20} that can be used when items are not scored dichotomously, for instance, both multiple-choice tests and easy tests include items that have possible answers, each of which is given a different weight in this case therefore, Alpha is the appropriate method for computing reliability.

$$\alpha = \frac{k}{K-1}\left[1 - \frac{\sum\sigma^2_k}{\sigma^2}\right]$$

Where: $\sum\sigma^2_k$ is the sum of the variances of the K parts (usually items) of the test

σ is the standard deviation of the test.

When the parts are individual items, $\alpha = KR_{20}$.

$\sum\sigma^2_k = 4^2+2^2+2^2+3^2+3^2$

$= 16 +4+4+9+9$

$= 42$

$$\alpha = \frac{5}{5-1}\left[1 - \frac{42}{121}\right]$$

$= 0.816$

Therefore, since α is 0.816, it implies that there is positive correlation and thus the instrument is reliable to collect data.

3.9.2 Validity

Amin (2005) explains that experts in the field of study were consulted about the content of the questionnaire to establish and remove ambiguous and irrelevant questions. Thereafter, the questions were subjected to a content validity test which was computed using the following formula;

$$CVI = \frac{K}{N}$$

Where CVI = Content Validity Index

K = Total Number of items rated as relevant

N = Total number of items in the questionnaire

Using the above formula, the content validity index for the questioner was calculated as showed below.

$$CVI = \frac{13}{15}$$

$$CVI = 0.86$$

Therefore, since the average index is above 0.7, then the instrument (questionnaire) was valid and reliable enough to collect data.

3.10 Data collection procedure

After presenting and approval of the proposal by the university supervisors, the researcher got an introduction letter from Kyambogo University to help him in the field when collecting information from respondents.

The questionnaires were pretested onto selected target population to ensure validity and reliability of the research instruments.

After the pretest, the researcher distributed the questionnaires and held interviews with the sampled management executives of the Joint Medical Store among other workers at the organization.

The participants were assured that the study was purely for academic purposes and that their responses were to be held with a lot of confidentiality and thus would have no negative effects on their positions at work.

3.11 Data Presentation and Analysis

After collecting the data and information from the respondents through use of questionnaires and interviews, data was analyzed by use of qualitative and quantitative methods of analysis involving drawing tables based on the objectives of the study. The contents of the responses generated were read through, analyzed in categories and themes. This enabled the respondents' views to be marked out for purposes of delivering meanings. Upon these analyses, the findings of the study were drawn. Through coding statements, answers were translated in numbers which facilitated easy reduction of data analysis and storage. Descriptive statistics, tables and charts were used. This is because it enables the researcher to meaningful describing of distribution scores or measurements.

3.12 Limitations to the Study

Some respondents showed a negative attitude towards the researcher when he wanted responses from them. However, the researcher convinced the respondents that the study was purely for academic purposes only.

CHAPTER FOUR

PRESENTENTATION, ANALYSIS AND INTERPRETATION OF FINDINGS

4.0 Introduction

This chapter presents and analyses the findings obtained by the researcher through analyzing the data, testing hypotheses in order to achieve the stated objectives given in chapter one. A total of 30 questionnaires were distributed to the respondents on various aspects of the study. The participants were carefully selected putting in mind the objectives of the study in order to come up with a balanced mix of ideas. However, out of the 30 selected respondents, 6 respondents did not respond on the basis of confidentiality of information, lack of interest/corporation and clearly not seeing how they would benefit from the study. Data were analyzed using Statistical Package for Social Scientist (SPSS) version 17 whose outcome and findings were as follows;

4.1 Bio data

Table 2 showing the sex of respondents

Sex	Number of respondents	Percentage (%)
Male	11	45.8
Female	13	54.2
Total	**24**	**100**

Source: Primary data 2013.

The findings about the sex category of respondents showed that, out of the 24 participants involved in the study, majority of the respondents involved that is; 54.2 percent were female while 45.8 percent were male.

Table 3 sowing the age category of the respondents

Age category (years)	Frequency	Percentage (%)
25-30	4	16.7
31-35	9	37.5
36-40	7	29.2
Above 40	3	12.5
Missing	1	4.2
Total	**24**	**100**

Source: Primary data 2013.

The results of the study presented on Table 3 above show that majority of respondents (37.5%) were aged 31-35 years, 29.2 percent aged 36-40 years, 16.7 percent falling in the age bracket 25-30 years, 12.5 percent were above 40 years while one person did not respond.

Table 4 showing the highest education qualifications attained by the respondents

Highest Education Qualification Attained	Frequency	Percentage (%)
Diploma	1	4.2
Degree	18	75
Master's degree	4	16.7
Missing	1	4.2
Total	**24**	**100**

Source: Primary data 2013.

The education qualification level represents the highest level of educational attainment by the respondents. The majority of the respondents involved in the study that is; 75 percent were degree holders. This was followed by 16.7 percent who were in possession of master's degree and 4.2 percent reported to have attained a diploma while 4.2 percent remained unanswered.

4.2 The influence of enterprise resource planning system on the performance of the Joint Medical Store.

The basis of this section in the study was to discover the influence of enterprise resource planning system on the performance of the Joint Medical Store. The results are analyzed and discussed as presented on Table 5 below;

Table 5 showing the influences of enterprise resource planning system on the performance of the Joint Medical Store

Response	A	SA	D	SD
Enterprise resource planning system leads to improvement in the performance level of the organization's supply chain network.	9 37.5%	15 62.5%		
Enterprise resource planning system promotes business integration.	10 41.7%	13 54.2%	1 4.2%	
Enterprise resource planning leads to elimination of communication barriers.	12 50.0%	6 25.0%	6 25.0%	
Enterprise resource planning enhances better analysis and planning capabilities.	10 43.5%	13 56.5%		
Enterprise resource planning enables use of the latest technology.	9 37.5%	12 50.0%	3 12.5%	
Enterprise resource planning enables flexibility in the organization and this leads to development and maintenance of JMS in terms of management.	12 50.0%	11 45.8%	1 4.2%	
Enterprise resource planning system can lead to unemployment because the people who were doing those jobs become redundant with the introduction of the automated system.	9 37.5%		11 45.8%	4 16.7%

Source: Primary data 2013.

According to the field research findings, 62.5 percent of the respondents strongly agreed that Enterprise Resource Planning system leads to improvement in the performance level of the organisation's supply chain network, 56.5 percent also strongly agreed that Enterprise resource planning enhances better analysis and planning capabilities of the Joint Medical Store. Results also showed that 54.2 percent strongly agreed that Enterprise resource planning system promotes business integration, 50 percent strongly agreed that Enterprise resource planning enables use of the latest technology while 50 percent agreed that Enterprise resource planning leads to elimination of communication barriers as well as flexibility in the organization and this leads to development and maintenance of JMS in terms of management. And 45.8 percent disagreed that Enterprise resource planning system can lead to unemployment because the people who were doing those jobs become redundant with the introduction of the automated system.

According to Leon; 1999, Enterprise Resource Planning boosts the planning functions. By enabling the comprehensive and unified management of related business and its data, it becomes possible to fully utilize many types of decision support systems and simulation functions. Furthermore, since it becomes possible to carry out, flexibility and in real time, the filling and analysis of data from a variety of dimensions, one is able to give the decision-makers the information they want; thus enabling them to make better and informed decisions.

4.3 The effects of Material Requirement planning information system on the performance of the Joint Medical Store

Table 6 showing the effects of Material Requirement planning information system on the performance of the Joint Medical Store

Response	A	SA	D	SD
The material requirement planning system helps managers to reduce the level of component parts and material inventory.	8 40.0%	7 35.0%	5 25.0%	
The material requirement planning system reveals the ideal lot sizes that should be purchased of each component item or raw material.	11 52.4%	6 28.6%	4 19.0%	
The material requirement planning system clearly shows managers what inventory will be needed to meet increased demand on finished products.	8 38.1%	12 57.1%	1 4.8%	
The system helps managers to identify shortages in inventory items and thus managers can shift production assets to the manufacture of other items where the constituent parts are on hand.	7 33.3%	12 57.1%	2 9.5%	

Source: primary data 2013.

According to the field research finding, 57.1 percent strongly agreed that the material requirement planning system clearly shows managers what inventory will be needed to meet increased demand on finished products, and also to identify shortages in inventory items, thus managers can shift production assets to the manufacture of other items where the constituent parts are on hand. Results also showed that 52.4 percent agreed that the material requirement planning system reveals the ideal lot sizes that should be purchased of each component item or raw material, and also 40.0 percent agreed that the material requirement planning system helps managers to reduce the level of component parts and material inventory.

However, Vassilis Moustakis; 2000 strongly agreed that Material Requirements Planning is a time phased priority-planning technique that calculates material requirements and schedules supply to meet demand across all products and parts in one or more plants.

4.4 The influence of Distribution Requirement planning information systems on the performance of the Joint Medical Store

Table 7 showing the influence of Distribution Requirement planning information systems on the performance of the Joint Medical Store?

Response	A	SA	D	SD
The distribution requirement planning system leads to an increase in the efficiency of time, place and delivery utility by the organization	12 54.5%	9 40.9%	1 4.5%	
The distribution requirement planning system can help to decrease overall channel complexity in the organisation through sorting and assistance in routinization.	18 81.8%	4 18.2%		
The distribution requirement planning system enhances selling and promotion in the organisation and thus the organisation can reach many small, distant customers at a relatively low cost, thus allowing the organisation to focus its expenditures on product development and its core production processes.	13 59.1%	6 27.3%	3 13.6 %	
Trough the distribution requirement planning system, the organization has the ability to bring together related products from multiple manufacturers and assemble the right combination of these products in quantities that meet the retailer's requirements in a cost-efficient	14	7	1	

manner.	63.6%	31.8%	4.5%	
The distribution requirement planning system enhances bulk breaking.	15 71.4%	4 19.0%	2 9.5%	

Source: Primary data 2013.

According to the field research finding, 81.8 percent of the respondents agreed that the distribution requirement planning system can help to decrease overall channel complexity in the organisation through sorting and assistance in routinization, 71.4 percent also agreed that distribution requirement planning system enhances bulk breaking. Results also showed that 63.6 percent of the respondents accepted that the organization has the ability to bring together related products from multiple manufacturers and assemble the right combination of these products in quantities that meet the retailer's requirements in a cost-efficient manner, 59.1 percent agreed that the distribution requirement planning system enhances selling and promotion in the organisation and thus the organisation can reach many small, distant customers at a relatively low cost, thus allowing the organisation to focus its expenditures on product development and its core production processes and 54.5 percent agreed that distribution requirement planning system leads to an increase in the efficiency of time, place and delivery utility by the organisation.

In contrast David F. Ross; 2012, revealed that distribution management also can decrease overall channel complexity through sorting and assistance in routinization. Sorting is the group of activities associated with transforming products acquired from manufacturers into the assortments and quantities demanded in the marketplace.

4.5 The influence of information system managed inventory on the performance of the joint medical store.

Table 8 showing the influence of information system managed inventory on the performance of the joint medical store.

Response	A	SA	D	SD
The information managed inventory system enhances reduced costs due to better resource utilization for production and transportation	12 50.0%	10 41.7%	2 8.3%	
The system can lead to improved service levels due to better coordination or replenishment orders.	5 20.8%	18 75.0%	1 4.2%	
The information system managed inventory can reduce lead time and increase inventory turns.	11 45.8%	11 45.8%	2 8.3%	

Source: Primary data 2013.

The field research findings revealed that 75.0 percent of the respondents strongly agreed that the system can lead to improved service levels due to better coordination or replenishment orders, 50.0 percent agreed that the information managed inventory system enhances reduced costs due to better resource utilization for production and transportation and 45.8 percent agreed that the information system managed inventory can reduce lead time and increase inventory turns.

4.6 The relationship between Enterprise Resource Planning (ERP), Material Requirements Planning (MRP) and Distribution Requirement Planning (DRP)

This section of the research was intended to find whether there is any relationship between Enterprise Resource Planning (ERP), Material Requirements Planning (MRP) and Distribution Requirement Planning (DRP). The findings are presented on table 9 as showed below;

Table 9 showing whether there is any relationship between Enterprise Resource Planning (ERP), Material Requirements Planning (MRP) and Distribution Requirement Planning (DRP)?

Response	A	SA	D	SD
Is there any relationship between Enterprise Resource Planning (ERP), Material Requirements Planning (MRP) and Distribution Requirement Planning (DRP)?	24 100%			

Source: Primary data

According to the findings of the study presented on Table 9 above, results show that all the respondents, that is, 100 percent were of the view that there is a positive relationship between Enterprise Resource Planning (ERP), Material Requirements Planning (MRP) and Distribution Requirement Planning (DRP) in the Joint Medical Store.

For example, Material Distribution Planning enables organizations to plan and control the functions supporting the complete cycle (flow) of materials, and the associated flow of information and through Enterprise Resource Planning (ERP), the Joint Medical Store can realize better interconnectivity and communication among departments and this smoothens the start-to-finish operations while Material Requirements Planning (MRP) enhances production planning and inventory control system used to manage manufacturing processes by the organization. This improves and enhances effective performance of the Joint Medical Store.

However, in an interview with some of the respondents, results revealed that Material Requirement Planning greatly affects the performance of organizations. This is followed by Enterprise Resource Planning and then Material Distribution Planning comes last.

4.7 A multiple linear regression model showing the relationship between Enterprise Resource Planning (ERP), Material Requirements Planning (MRP) and Distribution Requirement Planning (DRP)

The researcher used a multiple linear regression model with Performance of Joint Medical Stores as the dependent variable and Enterprise Resource Planning (ERP), Material Requirements Planning (MRP) and Distribution Requirement Planning (DRP) as the independent variables.

The model output was reviewed a bit more carefully. The "adjusted R-squared" is intended to "control for" overestimates of the population R-squared resulting from small samples, high collinearity or small subject/variable ratios.

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.731[a]	.534	.447	4.6930

a. Predictors: (Constant), Enterprise Resource Planning systems, Material requirement planning, Distribution requirement planning

The results presented in the model summary with the R-squared value of 0.534 means that approximately 53.4 percent of the variance of Performance of Joint Medical Stores is accounted for by the three independent variables Enterprise Resource Planning (ERP), Material Requirements Planning (MRP) and Distribution Requirement Planning (DRP).

ANOVA[b]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	404.607	3	134.869	6.124	.006[a]
	Residual	352.393	16	22.025		
	Total	757.000	19			

a. Predictors: (Constant), Enterprise Resource Planning systems, Material requirement planning, Distribution requirement planning

b. Dependent Variable: Performanve of Joint Medical Stores

The results presented in the ANOVA table below showed that the F-test is statistically significant (p = 0.006), at 5 percent level of significance, which means that the model is statistically significant. The model is, therefore, useful in predicting the three independent variables. How well the model works is already stated in the model summary above.

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	70.172	10.864		6.459	.000
	Enterprise Resource Planning systems	.363	.190	.999	19.053	.033
	Material requirement planning	7.159	3.276	.655	2.185	.044
	Distribution requirement planning	5.859	3.566	.638	2.643	.021

a. Dependent Variable: Performanve of Joint Medical Stores

$$\mathbf{Y = 70.172 + 0.363X_1 + 7.159X_2 + 5.859X_3}$$

Where:

Y Performance of Joint Medical Store

X_1 Enterprise Resource Planning System

X_2 Material Requirement Planning System

X_3 Distribution Requirement Planning System

From the model above, the next step is to focus on the three predictors, whether they are significant and if so, the direction of the relationship. Results showed that each of the independent variables contributes to the model.

Enterprise Resource Planning System is significant (p=0.033) at 5 percent level of significance and the coefficient is positive which would indicate that for a one unit increase (improvement) in the Enterprise Resource Planning System, we would expect a 0.363 unit increase in the performance of the Joint Medical Store, other variables held constant.

Material Requirement Planning System is significant (p=0.044) at 5 percent level of significance and the coefficient is positive which would indicate that for a one unit increase

(improvement) in the Material Requirement Planning System, we would expect a 7.159 unit increase in the performance of the Joint Medical Store, other variables held constant.

The study further shows that Distribution Requirement Planning System is significant (p=0.021) at 5 percent level of significance and the coefficient is positive which would indicate that for a one unit increase (improvement) in the Distribution Requirement Planning System, we would expect a 5.859 unit increase in the performance of the Joint Medical Store, other variables held constant.

CHAPTER FIVE

DISCUSSION, SUMMARY, CONCLUSION AND RECOMMENDATIONS OF THE STUDY

5.0 Introduction

This chapter presents the discussion of findings so as to clearly come out with the influence of information system managed inventory and organizational performance of the Joint Medical Store.

5.1 Discussion of study findings

This section of study presents the discussions of study findings.

5.1.1 The influence of enterprise resource planning system on the performance of the Joint Medical Store.

According to the findings of the study, majority of the respondents revealed that Enterprise Resource Planning system leads to improvement in the performance level of the organization's supply chain network and this boosts the planning functions. This is in agreement with Alexis Leon (1999) who is of the view that, establishment of proper information managed inventory systems like the enterprise resource planning system leads to improved performance of organizations.

In an interview with the managing director of the Joint Medical Store, findings revealed that, "*For organizations to enhance performance, there should be good and cooperate management of the organisation's activities and service. This can be achieved through transparent operation and flow of information among organisation members.*" This makes it possible to fully utilize many types of decision support systems and simulation functions. Furthermore, since it becomes possible to carry out flexibility and in real time, the filling and analysis of data from a variety of dimensions, one is able to give the decision-makers the information they want; thus enabling them to make better and informed decisions.

Additionally, just like Nachtmann, H., Waller, M.A., (2004), the study found out Enterprise Resource Planning enhances flexibility in the organization and this enhances performance of

the Joint Medical Store. Findings revealed that through the Enterprise Resource Planning system, different languages, currencies, accounting standards among others can be covered in one system. Functions that comprehensively manage multiple locations of the organization can be packaged and implemented automatically. To cope with organization's globalization and system unification, this flexibility is essential and one can say it has major advantages, not simply for development and maintenance, but also in terms of management.

5.1.2 The effects of Material Requirement Planning information system on the performance of the Joint Medical Store.

Results from study were in correspondence with Donohue, K., (2005) and findings revealed that Material Requirement planning system clearly shows managers the inventory needed to meet increased demand on finished products. Through this, managers can reduce the level of component parts and raw materials inventory. Findings also revealed that the Material Requirement planning system can be used to determine the exact amount of inventory necessary to meet production demand. Maintaining lower inventory levels reduces the amount of capital tied up in inventory and reduces inventory carrying costs.

The study also found out that Material Requirement Planning system helps to determine the production of goods. This is so because finished goods depend on the availability of the raw materials and component parts. This is in agreement with Chase & Aquilano (2010) who also explained that for production to take place, there should be raw-materials and or labour to enhance production of goods. Therefore, the MRP systems can be used by managers to identify shortages in inventory items and thus shift production assets to the manufacture of other items where the constituent parts are on hand.

5.1.3 The influence of Distribution Requirement Planning (DRP) system on the performance of the Joint Medical Store.

The findings of the study showed that the Distribution Requirement Planning system leads to an increase in the efficiency of time, place and delivery utility by the organization. This is in line with Damanpour (2002). To him, when demand and product availability are immediate, the producer can perform the exchange and delivery functions itself. However, as the number of producers grows and the geographical dispersion of the customer base expands, the need

for both internal and external intermediaries who can facilitate the flow of products, services, and information via a distribution process increases.

Additionally, in an interview with some of the respondents, results of the study revealed that the central focus of the Distribution Requirement Planning system is to increase the efficiency of time, place, and delivery utility. When demand and product availability are immediate, the producer can perform the exchange and delivery functions itself.

The study further found out that Distribution Requirement Planning system enhances bulk breaking. To, J.S chandan (2002), this is one of the fundamental functions of distribution. Manufacturers normally produce large quantities of a limited number of products. However, retailers normally require smaller quantities of multiple products. So, when the distribution function handles this requirement, it keeps the manufacturer from having to break bulk and repackage its product to fit individual requirements.

5.2 Summary of findings

The study aimed at examining the influence of information system managed inventory on organizational performance of the Joint Medical Store. Specifically the study was aimed at examining the influence of Enterprise Resource Planning system on the performance of the Joint Medical Store, the effect of Material Requirement Planning information system and the influence of Distribution Requirement Planning information system on the performance of the Joint Medical Store.

Out of the 30 respondents hoped to use, 6 respondents did not respond on the basis of confidentiality of information, lack of interest/corporation and clearly not seeing how they would benefit from the study.

According to study findings, 62.5 percent of the respondents strongly agreed that Enterprise resource planning system leads to improvement in the performance level of the organisation's supply chain network and 45.8 percent disagreed that Enterprise resource planning system can lead to unemployment because the people who were doing those jobs become redundant with the introduction of the automated system. 57.1 percent strongly agreed that the material requirement planning system clearly shows managers what inventory will be needed to meet increased demand on finished products, and also to identify shortages in inventory items and thus managers can shift production assets to the manufacture of other items where the

constituent parts are on hand. 81.8 percent of the respondents agreed that the distribution requirement planning system can help to decrease overall channel complexity in the organisation through sorting and assistance in routinization and 75.0 percent of the respondents strongly agreed that the system can lead to improved service levels due to better coordination or replenishment orders.

5.3 Conclusions

The study drew the following conclusions;

Enterprise Resource Planning boosts the planning functions. By enabling the comprehensive and unified management of related business and its data, it becomes possible to fully utilize many types of decision support systems and simulation functions. Furthermore, since it becomes possible to carry out, flexibility and in real time.

Distribution management can also decrease the overall channel complexity through sorting and assistance in routinization. Sorting is the group of activities associated with transforming products acquired from manufacturers into the assortments and quantities demanded in the marketplace.

The information system also can lead to improved service levels due to better coordination or replenishment orders.

5.4 Recommendations

There should be improvement in the information system because it leads to improved service levels due to better coordination or replenishment orders.

For Enterprise Resource Planning system, the study recommends that organizations should adopt and appreciate new information technology equipments and software so as to enjoy the benefits of the Enterprise Resource Planning system like improved organisation performance, improved customer good will and customer satisfaction, among others.

For the Distribution Requirement Planning information system, the study recommends that organizations should recruit employees conversant with distribution so as to enhance supply of goods and services which will satisfy the market demand.

For Material Requirement Planning information system, organizations should establish proper sources of raw materials to enable production of good products and meet the market demand at minimum possible costs.

5.5 Suggestions for further study.

Further research and attention should be carried out on the new information technology system as a measure that can improve the entire supply chain performance level of organizations.

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APPENDICES

QUESTIONNAIRE

APPENDIX I: QUESTIONNAIRE FOR THE MANAGEMENT STAFF OF THE JOINT MEDICAL STORE.

Dear sir / madam, I am **KASAMBA ALEX OFOYURU**, a student of Kyambogo University carrying out a research on information system managed inventory and performance of the Joint Medial Store. You are kindly requested to fill in this questionnaire so as to help the researcher in accomplishment of the study. The information / responses you will give are purely for academic purposes and will be treated with a lot of confidentiality. So, please feel free to provide any necessary information. Your cooperation shall be highly appreciated. Thank you!

SECTION A: INTRODUCTION QUESTIONS

Please put a tick (✓) to the most appropriate answer and where applicable write answers and comments in the space provided. **NOTE:** "A" Stands for Agree, "SA"-Strongly Agree, "D"-Disagree and "SD"-Strongly Disagree.

BIO-DATA.

1. Name (optional) .....

2. Sex

   i) Male ☐

   ii) Female ☐

3. Age category

   i) 25-30 ☐

   ii) 31-35 ☐

   iii) 36-40 ☐

   iv) Above 40 ☐

4. Position holding

i) Manager ☐

ii) Procurement officer ☐

iii) Accountant ☐

iv) Others ☐

If others, please specify

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5. What qualification do you hold?

i) Diploma ☐

ii) Degree holder ☐

iii) Master's degree ☐

iv) Others ☐

If others, please specify

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6. Time spent in the organization.

i) 1-3 years ☐

ii) 4-5 years ☐

iii) Above 5 years ☐

SECTION B: INFLUENCE OF ENTERPRISE RESOURCE PLANNING (ERP) SYSTEM ON THE PERFORMANCE OF THE JOINT MEDICAL STORE.

NOTE: "A" Stands for Agree, "SA"-Strongly Agree, "D"-Disagree and "SD"-Strongly Disagree

To what extent do you agree with the following statements related to the influence of Enterprise Resource Planning system on the performance of the Joint Medical Store?

Response	**A**	**SA**	**D**	**SD**
a) It leads to improvement in the performance level of supply chain network				
b) It promotes business integration				
c) It leads to elimination of communication barriers				
d) It enhances better analysis and planning capabilities				
e) It enables the use of latest technology				
f) It enhances flexibility				
g) It leads to unemployment				

SECTION C: EFFECT OF MATERIAL REQUIREMENT PLANNING (MRP) SYSTEM ON THE PERFORMANCE OF THE JOINT MEDICAL STORE.

NOTE: "A" Stands for Agree, "SA"-Strongly Agree, "D"-Disagree and "SD"-Strongly Disagree.

To what extent do you agree with the following statements related to the effect of Material Requirement Planning system on the performance of the Joint Medical Store?

Response	**A**	**SA**	**D**	**SD**
a) It helps managers to reduce the level of component parts and raw materials inventory.				
b) MRP system reveals the ideal lot sizes that should be purchased of each component item or raw material.				
c) The MRP system shows managers what inventory will be needed to meet increased demand on finished products.				
d) It enhances Production Planning.				
e) Helps managers to identify shortages in inventory items and thus managers can shift production assets to the manufacture of other items where the constituent parts are on hand.				

SECTION D: INFLUENCE OF DISTRIBUTION REQUIREMENT PLANNING (DRP) SYSTEM ON THE PERFORMANCE OF THE JOINT MEDICAL STORE.

NOTE: "A" Stands for Agree, "SA"-Strongly Agree, "D"-Disagree and "SD"-Strongly Disagree.

To what extent do you agree with the following statements related to the influence of Distribution Requirement Planning (DRP) system on the performance of the Joint Medical Store?

Response	**A**	**SA**	**D**	**SD**
a) It leads to an increase in the efficiency of time, place and delivery utility.				
b) It decreases overall channel complexity.				
c) It enhances selling and promotions.				
d) Buying and building product assortments				
e) It facilitates Value-added processing.				
f) It enhances Bulk breaking.				

SECTION E: INFLUENCE OF INFORMATION SYSTEM MANAGED INVENTORY ON THE PERFORMANCE OF THE JOINT MEDICAL STORE.

NOTE: "A" Stands for Agree, "SA"-Strongly Agree, "D"-Disagree and "SD"-Strongly Disagree.

To what extent do you agree with the following statements related to the influence of information system managed inventory on the performance of the Joint Medical Store?

Response	**A**	**SA**	**D**	**SD**
a) Reduced costs due to better resource utilization for production and transportation.				
b) Improved Service levels due to better coordination or replenishment orders.				
c) Reduced lead time and increased inventory turns.				

SECTION F: Is there any relationship between Enterprise Resource Planning (ERP), Material Requirements Planning (MRP) and Distribution Requirement Planning (DRP)?

NOTE: "A" Stands for Agree, "SA"-Strongly Agree, "D"-Disagree and "SD"-Strongly Disagree.

Variable	**A**	**SA**	**D**	**SD**
Is there any relationship between Enterprise Resource Planning (ERP), Material Requirements Planning (MRP) and Distribution Requirement Planning (DRP)?				

Thank you very much for participating in answering this questionnaire.

APPENDIX II: QUESTIONNAIRE FOR THE STAFF MEMBERS OF THE JOINT MEDICAL STORE.

Dear sir / madam, I am **KASAMBA ALEX OFOYURU**, a student of Kyambogo University carrying out a research on the influence of information system managed inventory and performance of the Joint Medical Store. You are kindly requested to fill in this questionnaire so as to help the researcher in accomplishment of the study. The information / responses you will give are purely for academic purposes and will be treated with a lot of confidentiality. So, please feel free to provide any necessary information. Your cooperation shall be highly appreciated. Thank you!

SECTION A: INTRODUCTION QUESTIONS

Please put a tick (✓) to the most appropriate answer and where applicable write answers and comments in the space provided.

BIO-DATA.

1. Name (optional) .....

2. Sex

   i) Male ☐

   ii) Female ☐

3. Age category

   i) 25-30 ☐

   ii) 31-35 ☐

   iii) 36-40 ☐

   iv) Above 40 ☐

4. Position holding

i) Store keeper ☐

ii) Procurement officer ☐

iii) Accountant ☐

iv) Others ☐

If others, please specify

---

5. What qualification do you hold?

i) Diploma ☐

ii) Degree holder ☐

iii) Master's degree ☐

iv) Others ☐

If others, please specify

---

6. Time spent in the organization.

i) 1-3 years ☐

ii) 4-5 years ☐

iii) Above 5 years ☐

SECTION B: INFLUENCE OF ENTERPRISE RESOURCE PLANNING (ERP) SYSTEM ON THE PERFORMANCE OF THE JOINT MEDICAL STORE.

NOTE: "A" Stands for Agree, "SA"-Strongly Agree, "D"-Disagree and "SD"-Strongly Disagree.

To what extent do you agree with the following statements related to the influence of Enterprise Resource Planning system on the performance of the Joint Medical Store?

Response	**A**	**SA**	**D**	**SD**
a) Improvement in the performance level of supply chain network				
b) Promotion of business integration				
c) Elimination of communication barriers				
d) Enhances better analysis and planning capabilities				
e) Enables use of latest technology				
f) Enhances flexibility				
g) Leads to unemployment				

SECTION C: EFFECT OF MATERIAL REQUIREMENT PLANNING (MRP) SYSTEM ON THE PERFORMANCE OF THE JOINT MEDICAL STORE.

NOTE: "A" Stands for Agree, "SA"-Strongly Agree, "D"-Disagree and "SD"-Strongly Disagree.

To what extent do you agree with the following statements related to the effect of Material Requirement Planning system on the performance of the Joint Medical Store?

Response	**A**	**SA**	**D**	**SD**
a) It helps managers to reduce the level of component parts and raw materials inventory.				
b) MRP system reveals the ideal lot sizes that should be purchased of each component item or raw material.				
c) The MRP system shows managers what inventory will be needed to meet increased demand on finished products.				
d) It enhances Production Planning.				
e) Helps managers to identify shortages in inventory items and thus managers can shift production assets to the manufacture of other items where the constituent parts are on hand.				

SECTION D: INFLUENCE OF DISTRIBUTION REQUIREMENT PLANNING (DRP) SYSTEM ON THE PERFORMANCE OF THE JOINT MEDICAL STORE.

NOTE: "A" Stands for Agree, "SA"-Strongly Agree, "D"-Disagree and "SD"-Strongly Disagree.

To what extent do you agree with the following statements related to the influence of Distribution Requirement Planning (DRP) system on the performance of the Joint Medical Store?

Response	**A**	**SA**	**D**	**SD**
a) Increase in the efficiency of time, place and delivery utility.				
b) Decrease overall channel complexity.				
c) Selling and promoting.				
d) Buying and building product assortments				
e) It facilitates Value-added processing.				
f) It enhances Bulk breaking.				

SECTION E: INFLUENCE OF INFORMATION SYSTEM MANAGED INVENTORY ON THE PERFORMANCE OF THE JOINT MEDICAL STORE.

NOTE: "A" Stands for Agree, "SA"-Strongly Agree, "D"-Disagree and "SD"-Strongly Disagree.

To what extent do you agree with the following statements related to the influence of information system managed inventory on the performance of the Joint Medical Store?

Response	**A**	**SA**	**D**	**SD**
a) Reduced costs due to better resource utilization for production and transportation.				
b) Improved Service levels due to better coordination or replenishment orders.				
c) Reduced lead time and increased inventory turns.				

SECTION F: Is there any relationship between Enterprise Resource Planning (ERP), Material Requirements Planning (MRP) and Distribution Requirement Planning (DRP)?

NOTE: "A" Stands for Agree, "SA"-Strongly Agree, "D"-Disagree and "SD"-Strongly Disagree.

Variable	**A**	**SA**	**D**	**SD**
Is there any relationship between Enterprise Resource Planning (ERP), Material Requirements Planning (MRP) and Distribution Requirement Planning (DRP)?				

Thank you very much for participating in answering this questionnaire.

APPENDIX III: INTERVIEW GUIDE

1. In your own view, what is the influence of information system managed inventory on the performance of the Joint Medical Stores?

2. In your own understanding, what is the influence of Enterprise Resource Planning Information System on the performance of the Joint Medical Store?

3. In your own view, what is the influence of Material Distribution Planning information system on the performance of the Joint Medical Store?

4. In your own understanding, what is the influence of material Resource planning on the performance of the Joint Medical Store?

5. Of the three independent variables that is; Enterprise Resource Planning (ERP), Material Requirements Planning (MRP) and Distribution Requirement Planning (DRP), which one affects organizational performance more?

Thank you very much for participating in answering this interview guide.