

**THE EFFECT OF INVENTORY MANAGEMENT ON ORGANISATION'S
PERFORMANCE**

A CASE OF MUKONO TOWN COUNCIL

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**A RESEARCH REPORT SUBMITTED TO THE COLLEGE OF ECONOMICS AND
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DECLARATION

I **Nangobi Moreen** here by declare that this is my original work and has never been presented to any other educational institution for the award of any degree or certificate.

Signature 

DATE..... 24TH/04/2013

APPROVAL

I Henry Barasa Ochieno approve that this research proposal entitled ***THE EFFECT OF INVENTORY MANAGEMENT ON ORGANIZATIONS PERFORMANCE*** case study of Mukono Town council has been done and submitted under my supervision to the college of Economics and management Sciences for the award of Bachelors degree in Supplies and Procurement Management of Kampala International University.

Signed: 

HENRY OCHIENO BARASA
(SUPERVISOR)

Date: 

DEDICATION

This research report is dedicated to my supervisor Mr. Henry Barasa, my beloved people Mr. Richard Musota and Mrs. Nankya Rebecca, Mrs. Mpatogera Magret, uncle Johnson, Mrs. Kabikabi Betrice, untie stella, Mbago Ronald, my sister Lyness, best friend Nduhura sam, kisubi joel, Allan, victor, Asaba, kimuli, Jackie, jannet, musota Dan and all those who cared for your endless moral support and encouragement, love, guidance, confidence in my studies and through compilation of this work.

May the Lord God Bless you all.

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ACRYONS

LIFO- Last in First Out

FIFO- First in First Out

EOQ- Economic Order Quantity

JIT- Just in Time

TC- Total Cost

OC – Ordering cost

CC- Carrying cost

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ABSTRACT

This study examines the effect of inventory management on organizations performance in Mukono Town Council. The study was guided by three objectives which included establishing the impact of inventory management on organizations performance, finding out the challenges involved in inventory management on organizations performance and suggesting ways of minimizing challenges involved in inventory management on organizations performance. The covered Mukono Town Council.

A cross section survey design was used to gather both qualitative and quantitative data on the effect of inventory management on organizations performance in mukono Town council. The study examined options across a spectrum of stake holders with regard to the effect of inventory management on organization performance. The respondents were subjected to a one on one interview with the researcher in order to gather data on the topic.

The study population comprised of managers, Procurement officers, inventory store managers and final users in Mukono town council.

The studies key findings included: about the effect of inventory management on organizations performance study findings revealed that inventory management led to lead time management, quality assurance and effectiveness, cost effectiveness and ensures performance of the organization.

About the challenges involved in inventory management on organizations performance, respondents reported that they are faced with problems of power black outs, security, inventory management being expensive, risks of fire out breaks, poor specifications. Other challenges included limited expertise, unrealistic suppliers as well as safety and pilferage.

When respondents were asked to suggest ways through which the challenges involved in inventory management on organizations performance could be addressed, they suggested use of training or professionalism, tendering, paying on time, giving incentives to workers, supplier development, ensuring buyer-supplier relationships.

The study drew some recommendations which included organizations appreciating the role of inventory management in ensuring organization performance due to its positive effects. The researcher recommended that organizations should ensure proper inventory management in order to minimize the mentioned challenges.

CHAPTER ONE

INTRODUCTION

1.0 Introduction

This chapter presented the topic under study, the background, and statement of the problem, objectives, research questions, scope and the significance of the study.

1.1 Background

It's the logical today to relate organizational performance with the way it handles or controls its inventory especially not to rule out the fact of selling and distribution companies dealing in finished goods and services take keen concern and interest in managing their inventory.

According to Ballau (2000), inventory is assets that is included for sale, are in a process of being produced for sale or are to be used in producing goods. For many public entities, inventory represents a large if not the largest portion of assets and such makes up an important part of the balance sheet. It is therefore crucial for investors who are analyzing stocks to set inventory levels and understand how inventory is valued. The following equation expresses how a company's inventory is determined:

Opening Inventory + net purchase – Cost of Goods Sold = Closing Inventory.

This means that one takes what the company has in the beginning adds what has been purchased subtracts what has been sold and the results is what remains.

The concept of inventory management entails control and other aspects such as procuring of the right quantity from the right supplier at the right price. So its management has to a greater extent contributed to better performance and profitability of many business organizations.

Inventory control and planning directly affect both the value of assets used in business organizations and the quality of service output to customers (Baily,1987).the way these assets are managed can account for the difference between success and failure and that is a sized asset to all trading organizations.

Inventory has been defined as all tangible assets, material assets of a company expect fixed assets, it comprises of any fixed products or merchandize ready for sale, any parts and materials to be incorporated into production or carrying out the business (Lyson, 2006).

Stock control calls for human judgment , experience and expertise which aims to meet demand economically. There is a further indication that unless stock is controlled or kept to an acceptable minimum level that is economic order quantity production would be dismantled since there would be insufficient inventory to keep production continuous. Customers would be disappointed and lost since their demand would not be fulfilled by the organization through delivering finished inventory to them (Tersine, 1994).

Lack of stock in many organizations will lead to delays in the distribution of materials to areas where they are required and this will result to poor expediting to work and as a result the company will end up with little output, For example when they delay to reach the production department, there will be less production that will lead to un reliability that in the long run leads to poor performance. Inventory will help an organization reduce costs and speed the work right from the time of ordering materials to the centres of distributions.

Inventories are stocked sometimes to meet unforeseen circumstances or an uncertainty which would require an organization to have stocked some kind of inventory. Some kind of inventory for such occurrences in form of buffer stock. Space must be provided to house it, people employed and equipment put in place to handle this inventory. Donald (2003), says that the main reason for holding stock is to give a buffer between variable and an uncertainty supply and supply.

Inventories are subjected to deterioration, theft, shrinkage, loss, damage and may be suspended or become surplus to requirements. The biggest cost element is usually the inputted cost of money invested in stock.

In this study, inventory management is the activity of determining the range and quantities of materials to be stocked in an organization and on the other hand, inventory is defined as stock of input waiting to be used or stock held to be used (Lysons, 2000).

Performance refers to results that can be achieved through a given action. It is attached to quality according to the perception of the customer that means excellence or the extent to which a product or service achieves customer satisfaction.

The factors that affect organizational performance are; successful innovativeness, organizational climate that encourage trust, participativeness and entrepreneurial behaviors, Organizations with relatively flexible, externally oriented corporate cultures perform better. Even when a national culture tends to be more insular.

The best performing firm in all five countries have similar corporate cultures. Organizations are not similar in terms of organizational culture. All organizations in our sample see themselves as mixtures of four types of organizational cultures, market, adhocracy, hierarchy and clan.

Many parliamentarians on the PAC (Public Accounts Committee) have accused many public entities of poor inventory management as evidenced in the Daily Monitor Tuesday March 4th 2011 that a number of drugs are disappearing and some are increasingly becoming expired at the National Medical Stores. This brings the idea of the researcher that poor stores management, no use of LIFO, FIFO and other inventory management techniques.

Juliet Sebutinde (2000), recommended sacking of all officials in the police of Uganda procurement unit due to mismanagement of inventory and turn over implying that many organizations inventory control practices should be held to many public sector organizations and are faced with the problem of inventory management.

These entities are responsible to ensure that inventory needed is available for efficiency and effective service delivery. This means that inventory or supplies must be kept at an average to serve all these internal and external customers. These organizations being private and public entities, inventory management may be on permissiveness attitudes that is all stores are faced with pilferage, poor accountability, obsolescence, stock outs and sometimes overstocking which are indicators of poor stock or inventory management.

Inventory control represents 85% of all production costs and the other organizations like services represent 15% (Appleby, 1994). This is therefore obvious that by effective inventory control, marketed reduction in overall costs is possible. Inventory controls measures such as use of economic order quantity, fixed order level, JIT. Materials requirement planning, inventory costing methods like FIFO, LIFO help in managing stock.

In this study, performance is to carry out an activity or complete an action successfully. As a result, inventory control in organizations have called for more efforts and attention in order to stock goods or materials when necessary so as to avoid unnecessary expenses and meet the objectives of the organization plus the demand of the customers through provision of stock.

1.2 PROBLEM STATEMENT

Inventory in organizations face a number of problems that affect the organizations performance. This has caused the need of total control over stock, there is always lack of enough storage space

in the inventory management, handling equipments, deterioration of stock, high storage costs, few and un skilled personnel employed in the management of stock.

Lack of stock control in the organization has led to delays in the distribution of materials to areas where they are required and this has resulted to poor delivery of work and as result the institution ends up with little output and hence less service that has led to unreliability that in the long run leads to poor performance. This has led the researcher to the need to investigate the solutions for the mentioned problems in order to obtain the level of stock to improve on organizations performance of service delivery.

1.3 RESEARCH PURPOSE

The major purpose of the study was aimed at examining how inventory management affects the organizational performance in Mukono town council.

1.4 RESEARCH OBJECTIVES

- To examine the impact of inventory management and organizations performance in Mukono Town Council.
- To examine the problems involved in inventory management and organizations performance in Mukono Town Council.
- To suggest ways of minimizing challenges involved in inventory management and organizations performance.

1.5 RESEARCH QUESTIONS

- i. What is the impact of inventory management and organizations performance?
- ii. What are the challenges involved in inventory management and organizations performance?
- iii. How can the challenges involved in inventory management and organizations performance be addressed?

1.6 SCOPE OF THE STUDY

The scope covered area of subject, geographical, time and the content.

1.6.1 SUBJECT SCOPE

The research examined inventory monitoring and management as the independent variable and performance of the organization and its key drivers of customer satisfaction as the dependent variable.

1.6.2 GEOGRAPHICAL SCOPE

The study covered Mukono Town Council which is located in Mukono district Uganda.

1.6.3 CONTENT SCOPE

The study was aimed at examining the effect of inventory management and organizations performance in Mukono Town Council. It examined the advantages of inventory management, challenges of inventory management and how they can be addressed to improve the performance.

1.6.4 TIME SCOPE

The study took place from November 2012 to April 2013.

1.7 SIGNIFICANCE OF THE STUDY

- I. The study provided information to policy makers, academicians, researchers to the society.
- II. The study increased the researcher's knowledge in inventory management and organizations performance.
- III. The study improved the organizations service delivery which might experience new and improved services from the organizations.

1.8 CONCEPTUAL FRAMEWORK

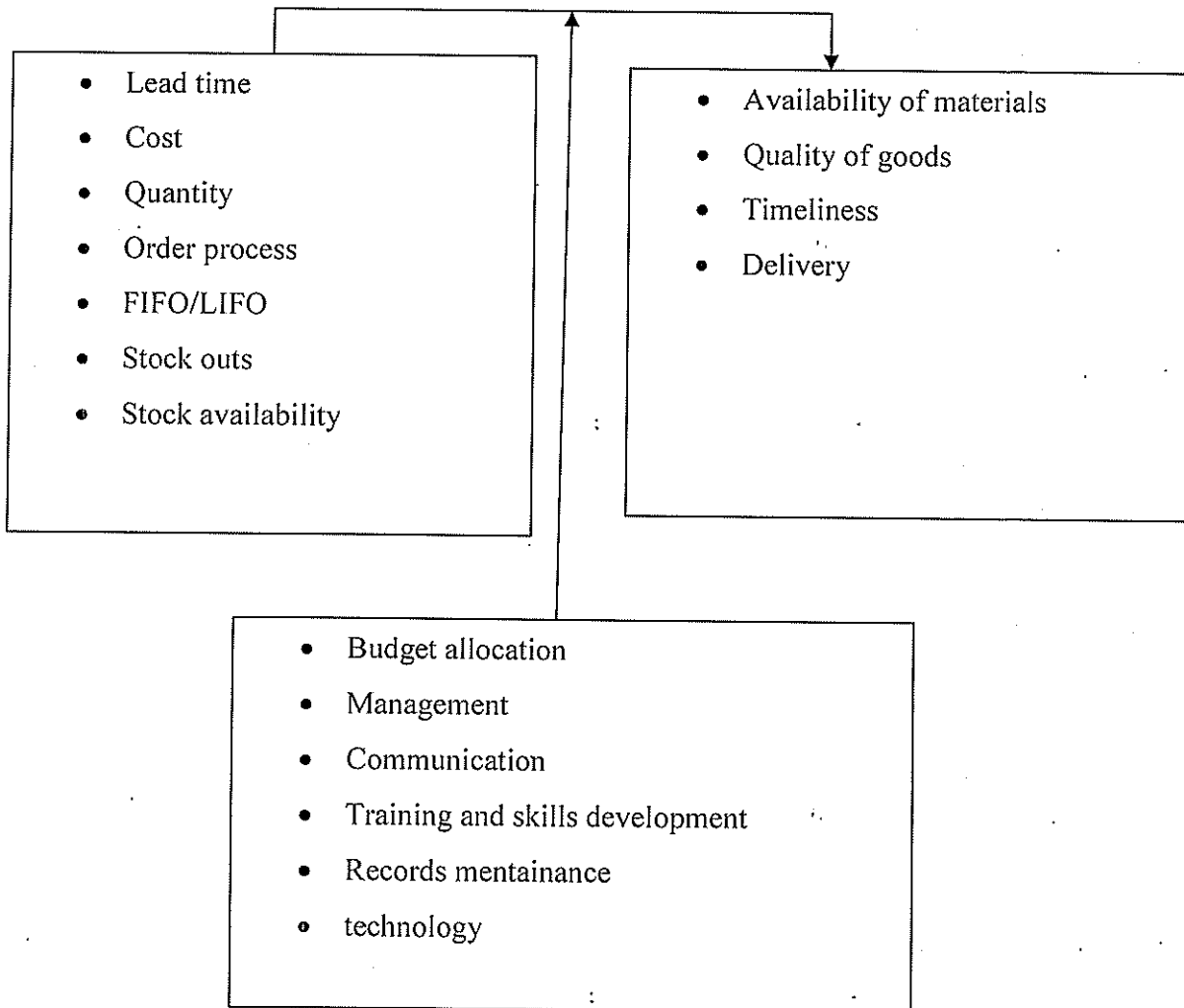
Inventory management

(Independent variable)

(Intervening variables)

Organization
Performance

(Dependent variables)



CHAPTER TWO

LITERATURE REVIEW

2.0 INTRODUCTION

This chapter presented the existing literature about inventory management and performance. However, the literature was categorized and bound by the objectives of this research, which was achieved using the inventory management factors highlighted in this study. The problem the researcher identified is not a new one therefore the researcher will look at various authors to bring out the very aspects of inventory management and their effect on the performance of organizations

2.1 Inventory management techniques

With reference to small business management series NO.41, small scale business administration (1980), effective inventory management plays a crucial role in the smooth and effective running of an organization. Reducing excess inventories and investing in the right inventories leads to better customer service, better inventory turnover and more profits. There are fundamental tools and techniques needed to analyze and control inventory from cost cutting techniques to day today management to the latest developments in handling inventory.

These techniques are used to ensure that the right amount of stock is ordered at the right time to minimize costs associated with management of stock and maximize profits (Pandey, 2003). Ballau (2000) adds that inventory is a major source of costs and it has a huge impact on customer responsiveness thus a need for development of techniques concerned with analysis and modeling of inventory systems under different operating parameters.

2.3 Economic order quantity (EOQ)

Kakuru (2000), EOQ is the most used approach to attaining the goals of inventory management. He says the model answers the questions how much to order at a given time. Pandey (1998), argues that the EOQ is the level of stock that minimizes the total of ordering and carrying costs while Lyons (2003) says that it is the optimum ordering quantity for an item of stock that minimizes costs.

The model makes the following assumptions:

1. The rate of usage of the product for the planning period is known certainty and constant.

2. That the inventories are periodically over the period and that such replenishment is instantaneous and there is no lead time between the ordering and the receipt of inventories in the business.
3. Ordering costs per order are known with certainty and fixed.
4. Carrying costs per unit of inventory are known with certainty and fixed.

Since receipt of stock is instantaneous at the end of the month the depleted stock will be immediately replenished or restocked. The business will have ample stock during the month which is replenished without delay at the end of the month. This results from seesaw graphical situation with periodical usage Q and average inventory during the period of $Q/2$, the EOQ considers costs of maintaining this inventory. The level seeks to determine the level of Q that minimizes the total inventory costs (TC).

Total ordering costs fall as order size increases while carrying costs increases.

Mathematically,

Ordering costs = OC

Carrying costs = CC

Total ordering costs = number of orders X ordering costs per ordering

Number of orders = $\frac{\text{total demand (TD)}}{Q}$

Q (Number of units in each period)

Hence $\frac{\text{total ordering costs} = (TC) OC}{Q}$

Total carrying costs are given by the costs of keeping each term of inventory (CC) into average inventory kept.

Total carrying costs = $(Q/2) CC$

Therefore total inventory costs = total carrying costs + total ordering costs

$TC = (Q/2) CC + (TD/Q) OC \dots \dots \dots OC$

EOQ is determined by:

$EOQ = \frac{TD (Q/2) CC + (TD/Q) CC}{CC}$

$EOQ = \frac{2OCTD}{CC}$

Where, EOQ- Economic order quantity

OC – Ordering costs per order

CC- Carrying costs per unit

TD – Total demand or usage

Eileman (2000), the model may not be useful during inflationary or devaluation situation. He asserted that during such a period, a firm may hold inventory in excess of reorder level suggested by the model and that during devaluation imported items will be held since after the local currency devaluation imported items will cost more in local currency thus increasing the firm's profits.

Holstein (1998) argues that incase of an error in reorder point, the firm will face a serious difficulty. He went on to say that the time phased as an alternative to EOQ model. The alternative requires manufacturing economic lots by linking control of inventory to finished goods.

The EOQ while every practical for a computerized inventory system collecting point of sale data, is not practical for manual systems handling numerous different items. Other techniques include:

2.3 ABC Analysis

According to Arsham (2005), this technique is useful since it is to keep the same degree of control on all items. He suggested that the degree should be put on items with high value as compared to low value items. He went ahead and classified inventory into 3 items by assigning initials according to priority where:

“A items” are high value items and are normally under the tightest control and their reviewing is done more frequently.

“B items” fall in between A and C items and requires reasonable attention of management.

“C items” represent relatively least valued items and would be under simple control. He further adds that items under the ABC classification should be grouped according to annual sales volume and those that are most important ones to control for effective inventory management.

The ABC model has been criticized by different scholars but according to Curl (1992), the model is limited by the fact:

It is based on monetary price and ignores other parameters such as lead time and usage rate.

It assumes that high value items are always few but this is not true because if high value items are highly demanded, large quantities of these items will be held in stock.

2.4 Just in time (JIT)

Many suppliers are beginning to offer “Just in time” (JIT), inventory and delivery programs as they manage to get their own inventory situation under tighter control. This situation can be a boom to you, the distributor providing that you have a full understanding of the implications of these opportunities. Additionally, the suppliers will often want a slight price increase (and hence a lower gross margin to you) in return for this better service making the need to capitalize on the new program that much more critical. This model requires that there is no inventory of purchased goods awaiting inspection, manufacturing or moving from one department to another.

Lucy (1994), for this approach aims at producing the required items of high quality at the time they are required. The approach seeks to match the usage of materials with the delivery of materials so that they can be kept at near zero levels.

Tersine (1994), for this approach to work, there must be the following:

- That suppliers will deliver on time.
- The lead time should be equal to the process time.
- Confidence that suppliers will deliver material 100% quality so that there will be no objections, returns and consequent production delays.

<http://www.mirrorservice.org> is a reliable guide to operational performance of a farm business in any one period. These writers go to explain that net profit is measured as “the difference between the output and input of value during a given period” or the surplus of financial benefits over financial costs. Emphasizing the difference between the profit and cash or otherwise arising from productive activity of the business during that period and would be in agreement with the following accountants definition which applies to a wider economy. Net profit is the residual value arrived at after deducting all money costs (from total sales revenue).

2.5 To find out the relationship between inventory control and performance of the organization

The performance of an organization is influenced by several factors among them being inventory management. The inventory management process begins from management of purchases of raw materials which are under production to finished goods that are sold.

Lee and Brain (2001), says that as the most significant financial assets of retailers, inventory has a major impact on most performance measures as a result, retailers would find expanding their measurements beyond profit to be evaluating their business.

2.6 Inventory management

This is an attempt to balance inventory needs and requirements with the need to minimize costs resulting from obtaining and holding of inventory. There are several schools of thought that view inventory and its functions differently. These will be addressed later but first we present a foundation to facilitate the readers understanding of inventory and its functions (Lysons, 2003).

Inventory is a quantity or store of goods that is held for some purpose or use (the term may also be used as a verb meaning to take inventory or to count all goods held in inventory). Inventory may be kept "in house" meaning on the premises or nearby for immediate use or it may be held in a distant ware house or distribution center for future use. With exception of the firms utilizing just in time method, more often than not, the term inventory implies a stored quantity of goods that exceeds what is needed for the firm to function at the current time (fore example within the next four hours) (Lucey, 2005).

Inventory between successive dependent operations also serves to decouple the dependency of operations. A machine or work center is often dependent upon the previous operation to provide it with parts to work on. If work cease at a work center, then all subsequent centers will shut down for lack of work. If the supply of work in progress inventory is kept between each work center, then each machine can maintain its operations for a limited time until operations resume at the original center.

2.7 Lead time

Lead time is the time that elapses between the placing of an order (either a purchase or a production order issued to the shop or the factory floor) and actually receiving the goods ordered. If a supplier, an external firm or an internal department or plant can not supply the required goods or services on demand, then the client firm must keep an inventory of the needed goods. The longer the lead time, the larger the quantity of goods the firm must carry in inventory.

According to Lysons (2006), JIT approach highlights the importance of supplier-buyer relationship concept which is aimed at reducing and controlling stocks, work in progress as well as finished goods within the ware houses of an organization and in transit, pipeline inventory.

JIT or Japanese method of integrated philosophy by team approach is applied not only to the various components of inventory but also in most of the day to today activities (Gopalakrishnan, 2007).

Taichi Ohno applied this concept at Toyota manufacturing company and it is also known as Toyota production system. In this system, the customers pull their requirements from the shop floor as against the conventional method of pushing the product to the market.

This is a part of workaholic culture of Japanese to make their products internationally competitive by integrating the JIT cost with the total quality system at the shop floor level.

In JIT system, the advanced stage of production draws the right amount of inventory from the proceeding stage to sustain the activity of an organization to be effective.

In this process, the production activity is planned upon the actual demand rather than a predetermined schedule since the cycle time for production for various models is given only to the final assembly point of mixed production line. This process is repeated at each stage right down to raw materials or up to sub contracted items.

This system enables the market place to pull the necessary items from the plant as against the conventional system of pushing the product to the market hence this system is likely to be operated by most companies in future as competition develops.

JIT manufacturing firm such as Nissan in Smyrna, Tennessee can maintain extremely low levels of inventory. Nissan takes delivery on truck seats as many as 18 times per day. However, steel mills may have a lead time of up to three months. That means that the firm that uses steel produced at the mill must place orders at least three months in advance of their need. In order to keep their operations running in the meantime, an on hand inventory of three months steel requirements would be necessary (Kuchel, 2001).

The ability to deliver the right product to the right place at the right time is the core of your business. Inventory is one of the largest investments a company makes ensuring that you have enough of the right product in inventory while avoiding stock outs and over stocking is a daily challenge. You are responsible for reducing investment in inventory and increasing inventory turns. Accomplish this with Macola ES's inventory management (I/M) module, the core of your distribution system (Lavint, 2000).

2.8 Organizational performance

Performance can be defined as the result of everything else, therefore top performance requires everything else to go on smoothly.

Organizational performance is reflection on the satisfaction of various groups of the organizations stakeholders. Optimal organizational performance is the result of all organization

systems, processes and labour in alignment with the strategic intended with the current environment and utilizing resources in an optimal way.

Also organizational performance according to Umit (2004) referred is to as the ability and retain the appropriate mix and quality of stakeholders.

2.8.1 Inventory performance measures

Lysons (2006) argues that a number of key performance indicators have been devised to measure the extent to which an undertaking has the right quantity of inventory in the right place at the right time. So the most useful are the following:

- ❖ Lead times that are the length taken to obtain or supply a requirement from the time a need is ascertained to time the need is satisfied.
- ❖ Service levels that is the actual service level attained in a given period which can be ascertained from the formula:

Number of times the item is provided on demand

Number of times the item has been demanded

- ❖ Rate of stock turn. This indicates the number of times that a stock item has been sold and replaced in a given period and is calculated by the formula:

Sales

Average inventory (at selling price)

- ❖ Stock outs in a given period. This can be expressed as a percentage of total stock population during a given period.
- ❖ Stock over. This is the opposite of stock turn and indicates the number of days the current stock of a stock keeping unit will last if sales or usage continues at the anticipated rate. As an historic figure, it can be calculated by dividing the rate of stock turn into the yearly number of working days to give the average days cover. This can be illustrated as:

Days stock coverage = current quantity in stock

Anticipated future daily rate of usage or sales

The ratio can be used to evaluate the effect of longer lead times or the danger of imminent stock outs.

2.9 Performance indicators

Unit (2004) argues that there are no single measure of performance that suits all organizations nor standard programs to improve performance because the obstacles and opportunities differ.

He also argues that the performance of an organization is determined on the extent to which the strategic plan was done, followed and achieved, the extent to which stakeholder groups are satisfied and the extent to which resources have been divided between current and future needs.

2.10 Performance enhancement

The organizations top managers need to monitor performance for its own development purposes, testing development initiatives against outcomes. Unit (2004) argues that business performs better if they are managed through formalized, balanced and integrated performance measures. Organizational culture and management style seems to be interdependent enhancement systems.

2.11 To determine the challenges faced with inventory control

Inventory is money but if not at all like money in the bank (Lysons, 2006). It is money on which you pay interest instead of earning interest fore example after a year Rs 100 in a bank may fetch you Rs 105 but after a year on the shelf, Rs 100 of inventory will naturally be worth less than Rs 100. Besides, it will cost Rs.16 or more as carrying costs (Baily,2008). Inventory not only ties up capital but also cost a good deal to carry over hence the concept “inventory carrying costs” which are hidden costs in the sense that there exists no specific accounted for. This can be divided into 3 components:

1. Capital costs
2. Costs of storage/handling
3. Costs of deterioration and obsolescence and other kinds of losses (Lysons, 2003).

2.12 Capital costs

Generally capital costs represent interest charges, if borrowed. But if there are certain firms who do not borrow money hence they are not required to pay interest (Baily,2004). But even if they are not to pay interest, it can not be denied that a capital cost is associated with stocks lying in store. Capital costs may appropriately be called the opportunity cost of capital which are incurred in withdrawing funds from productive activities for the purpose of investing them in inventories. It is calculated on the basis of the return on capital for example if 20%. This is taken into account while computing the inventory carrying costs. It is therefore essential that we should take into

consideration the opportunity cost of capital while calculating the inventory carrying cost and not the market rate of interest. The operation cost of inventory (storage and preservation) will also be included for the purpose of calculation of inventory costs.

2.13 Costs of storage/handling

This comes under the operational costs. It is used to be the most obvious inventory carrying cost. It includes the whole expenditure incurred in connection with store keeping function. Store costs varies widely with the type, materials stored, types of storage facilities available and other allied factors. Usually, the range of this cost is between 5% and 10% of the value of the materials stored per year.

2.14 Costs of deterioration, Obsolescence and other kind of losses

This is the cost which sometimes forms the major part of inventory carrying costs. It can be neither be avoided nor overlooked. Not only this but an estimate may even go wrong and hence forecasts may prove incorrect. This is why overstocking is said to be the greatest ill of a stores department. Obsolescence is one of the price that must be paid for industrial and technical progress. The total cost on account of deterioration. Obsolescence has a range of 10% to 20%. The larger the accumulation of inventory, the greater is the risk of wastage and obsolescence. This is the maxim which helps in reducing the inventory carrying cost so far as this component is concerned.

It is evident from the above that the total inventory carrying costs may be between 20% to 40% of the value of inventory. The lesser is the inventory carrying costs, the greater will be the profit earning capacity.

2.15 Stock out costs

Stock out simply means the non availability of stocks, the consequences of which are serious and may result in a break down of production operation or delaying the operation. In both the cases, the loss to the production department is inevitable. This loss may be multi sided ie the loss of machine and man power, loss of service to customers, the loss of good will, the loss of lagging behind in competition, the loss through losing profit and incurring losses. On the other hand, the stock out will increase the inventory carrying costs as well. Besides, there are certain losses which are intangible but when taken into account may form a major part of the stock out costs.

As the stock out differs from one organization to another and can not be easily estimated, it is not possible to fit the range of stock out cost.

Safety stock helps in keeping down the stock out cost but at the same time because of the presence of safety stock, inventory carrying cost is increased. This factor ca not be overlooked while taking a decision on the extent of safety stock.

In conclusion, inventory management has a positive correlation to organizational performance though it is single handedly influenced performance of the firm. Inventory management is crucial for the success of any organization and therefore management should handle it with care for the effective performance.

CHAPTER THREE

METHODOLOGY

3.0 INTRODUCTION

This chapter explained the procedures and methods of investigation to be used by the researcher in carrying out this study.

The chapter provided the background on which the findings were based. It covered the Research design, study population, sample of the study and sample selection techniques, source of data, data collection methods, data quality control, measurement of variables data processing and data analysis

3.1 RESEARCH DESIGN

The research design was quantitative in nature that is to say descriptive and analytical so as to describe the distribution of the variables in the study population. The researcher chose this type of design because the study required depth investigations.

3.2 STUDY AREA

The research was conducted in Mukono town council.

3.3 STUDY POPULATION

The study targeted the managers, Procurement Officers, Store managers, employees and final users.

3.4 SAMPLE SIZE

The study sample comprised of 29 respondents from the selected organizations as illustrated in the table below:

Table 3.I: Showing the Sample Size and Composition

Respondents	Number
Managers	4
Procurement Officers	4
Store managers	6
Final user	10
Employees	5
Total	29

Source: Primary data

3.5 SAMPLING METHOD

Simple random sampling and Judgmental sampling were the sampling techniques employed by the researcher in conducting the study. This was because this study required some respondents to have knowledge about aspects of inventory management and performance for it to be fully effective.

3.6 SOURCES OF DATA

Both primary and secondary data were used in this research. Primary data was collected directly from the respondents of the entity by the use of questionnaires which included open-ended questions in order to obtain detailed information from the respondents. Also, secondary data was obtained by going through submitted performance reports and documents possessed by the procurement and other department organization in the areas of study.

3.7 DATA COLLECTION METHODS

In order to get accurate and useful information, the self administered questionnaire technique was used with open and closed ended questions to allow respondents to give their own views without being influenced or led by their fellow employees or researcher.

In addition, the researcher used the **observation, interview and documentary review** techniques to get first hand information.

3.8 RELIABILITY AND VALIDITY OF RESEARCH INSTRUMENT

There was a pilot test of instruments which was intended to assess the appropriateness of the instruments

3.9 PROCEDURE OF DATA COLLECTION

The researcher chose an appropriate topic and suitable supervisor of the research and present them to the head of research for approval. This was followed by drafting of a proposal together with the questionnaires which were submitted to supervisor for approval. A letter of introduction will be obtained from the department and then presented to the relevant persons of the organizations in which the research was conducted. Upon acceptance by management, the researcher distributed questionnaires to the respondents to be collected after three days for analysis.

3.10 DATA QUALITY CONTROL

The sample was determined to attain a good representation of the whole while maintaining a manageable number of respondents to achieve highly reliable and relevant data

3.11 DATA ANALYSIS AND PRESENTATION

After data collection from the field, it was checked to ensure completeness and accuracy. The data was then be analyzed and presented in form of tables, graphs and percentages to enable the researcher attach meaning and get a clear interpretation of the findings.

3.12 Limitations to the Study

The researcher faced the following problems:

- Financial constraints: Since the researcher was to finance himself in carrying out this study, he faced financial constraints. However, he had to solicit for funds from the friends to ensure that the research is done and completed in time.
- Time constraints: Since there were many academic activities to accomplish at the university, the researcher faced time constraint problems. However, the researcher utilized all his time maximally well in order to meet the deadline for handing in the report.

CHAPTER FOUR

PRESENTATION, INTERPRETATION AND ANALYSIS OF FINDINGS

4.0 INTRODUCTION

This chapter comprises of the findings that were gathered by the researcher from the respondents in relation to the topic (The Impact of inventory management and organizational performance).

The data is presented and interpreted in view of the objectives mentioned in chapter one of this research. The interpretation also seeks to answer the research questions that were raised in chapter one.

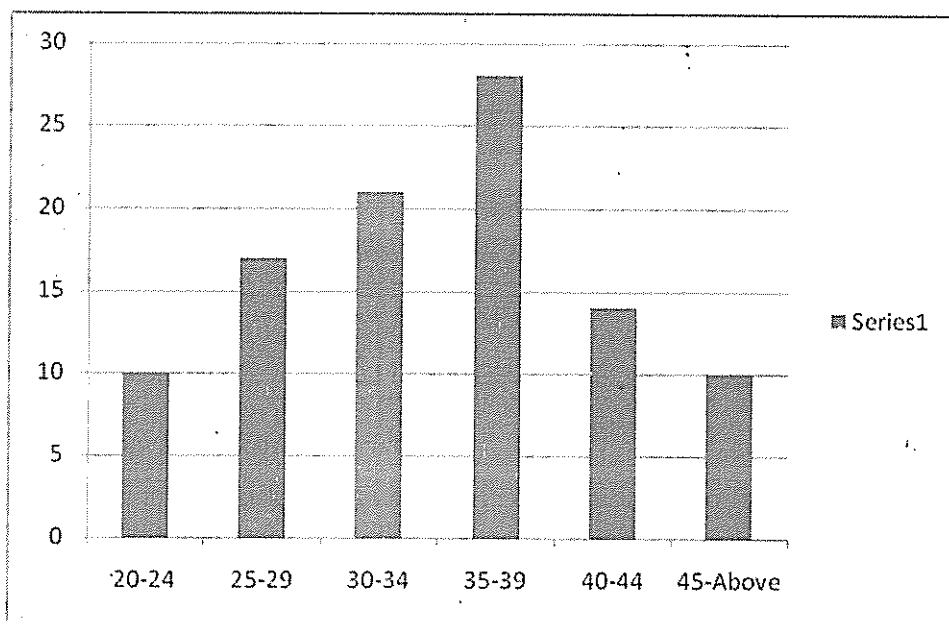
Presentation and interpretation of data in this chapter has been done with the aid of quantitative and qualitative methods for example the use of tables, graphs, percentages and personal analysis and interpretation presented in essay form.

Questionnaires were provided to 29 respondents who filled them to the best of their knowledge.

4.1 Demographic characteristics

Respondents were asked to give their age as presented in figure 1.

1.1.1.2 Figure 1: The bar graph showing age distribution of the respondents



From the table 1 above, most of the respondents were in the age bracket of 35 – 39 years. This could be that the study mostly was carried out among the middle aged class who were the direct clients to the organizations that were contacted for the study. In the age brackets of 20 – 24, there were 3 or 10% respondents and same number in the 45 and above 3 or 10%. These could have been the senior staff in the different organizations that were contacted. The organizations selected employed staff of youthful ages due to their fresh minds in doing business. This could be as a result of the policies set by the organizations selected as it was mentioned by some of the respondents who preferred anonymity.

Respondents were asked to state their gender and the information thereof is presented in table 2.

1.1.1.3 Table (1) showing respondents categorization

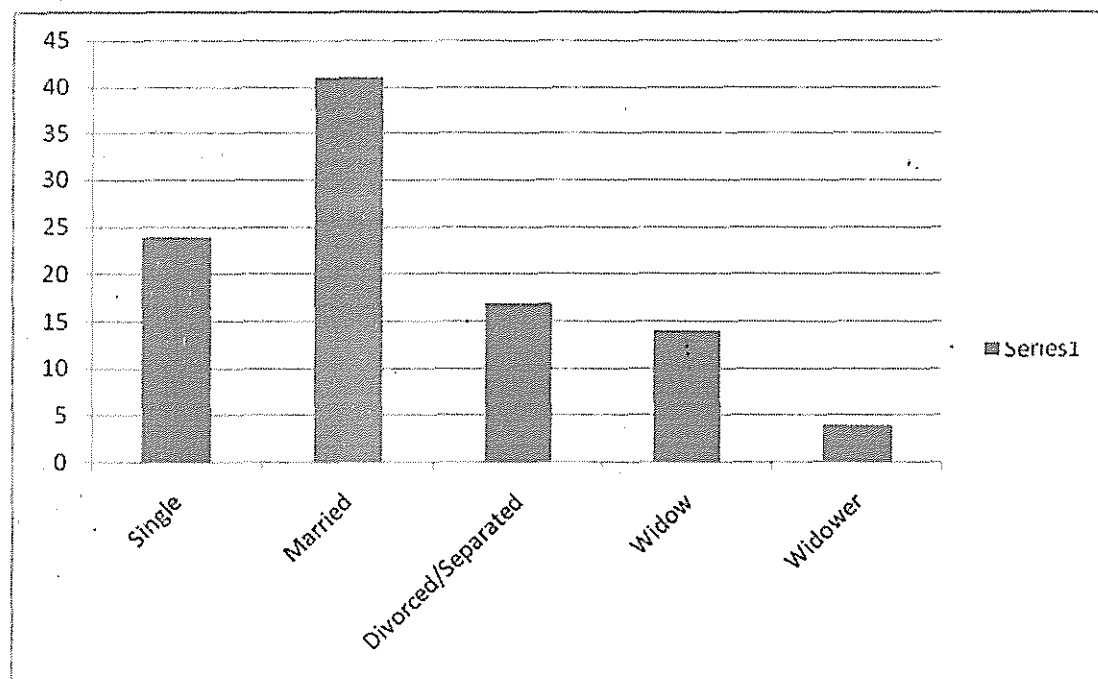
Gender	Frequency	Percentage
Male	17	59
Female	12	41
Total	29	100

Source: primary data

From the above table, there were 17 or 59% male respondents and 12 or 41% female respondents. This finding shows that there was some kind of gender balance in the distribution of respondents since there was no difference between the number of female and male respondents.

Also, the respondents were kindly asked their marital status and their responses are summarized in figure ii below.

1.1.1.4 Figure 2: Bar graph showing respondents marital status



Source: Primary source

From the above information, 12 or 41% of the respondents reported that they are married and this was directly observed from the age distribution report whereby majority of the respondents were in the age bracket of 35-39. A slightly average number that is 7 or 24% of the respondents contacted reported that they are single while 5 or 17% of the respondents reported that they are divorced/separated while a very small number that 4 or 14% reported that they widows and a smaller number that 1 or 3% reported that she was a widower.

The respondents were also asked their levels of education and the data thereof is presented in table ii.

1.1.1.5 Table (ii) Showing respondents' level of education

QUALIFICATION	FREQUENCY	PERCENTAGE
certificate	5	17
Diploma	10	34
Degree	11	39
Masters	3	10
Phd	0	0
Total	29	100

Source: primary data

From the above table it is seen that that the majority of the staff of the four selected organizations are degree and diploma holders representing 39% and 34% respectively followed by certificate holders at 17% and PHD holders were found in any of the selected organizations. This implies that the respondents from Jobiah, Collin hotels, Bishop West primary School and Sombe super market are educated and therefore the information obtained from them can be relied upon for the purpose of this study.

1.1.1.5 Table (iii) showing respondents' departments

Department	FREQUENCY	PERCENTAGE
Procurement	7	24
Finance	3	10
Stores	6	21
Others (final users)	13	45
Total	29	100

Source: Primary data

When the respondents were asked to state their departments were they belonged, 13 or 45% reported that they are final users of the organizations products, goods and services. In other words, they could have customers to the hotels or super market and or staff of the education institution that were selected for the interview. The study also involved 7 or 24% of the

respondents from the procurement section, 3 or 10% came from the finance department and 6 or 21% from the stores department. Therefore basing on the representation of the different departments during the study, one can assert that the findings of this study are reliable since it collected and gathered views and ideas from all the spheres of the organizations that deal with inventory management.

4.2 The impact of inventory management and organizations performance

Respondents were asked to state the types of inventory management they had in their respective organizations and the information thereof is presented in table iii.

1.1.1.6 Table (iii) showing types of inventory management

Types of inventory	FREQUENCY	PERCENTAGE
Raw materials	3	10
Finished goods	6	21
Work in progress	6	21
Assemblies	3	10
Dead stock	8	28
Others (Buffer stocking)	3	10
Total	29	100

Source: Primary data

Study findings showed that most of the organizations had dead stocks in their stores. This was represented by a score of 8 or 28%. Dead stock included items like furniture, utensils, shelves, expired goods. Other kinds of inventories kept included raw materials with 10%, finished goods which represented 21%, assemblies 10% and others like buffer stocks 10%.

The respondents were further asked to state what methods of inventory controls were being used by the respective organizations and the information obtained is thereof presented below in table iv.

1.1.1.7 Table (iv) showing methods inventory control

Method	FREQUENCY	PERCENTAGE
Economic Order quantity	8	27
Reorder level	4	14
Minimum level point	4	14
Maximum level point	13	45
Total	29	100

Source: Primary data

Respondents when asked to show the methods of inventory control used by their organizations, 13 or 45% reported that they used maximum level point while an equal number of 4 or 14% reported that they used reorder level point and minimum level point while 8 or 27% showed that they use economic order quantity. It appears that in every organization that was contacted, there existed some methods of inventory management and thus ensuring better performance of the different organizations.

Respondents were asked to state the effects of inventory management and organizations performances and the information thereof is presented in table v.

1.1.1.8 Table (v) showing the impact of inventory management and organizations performance

Effect	FREQUENCY	PERCENTAGE
Cost effectiveness	5	17
Lead time management	8	28
Efficiency	6	21
Quality assurance	7	24
Customer service	3	10
Total	29	100

Source: Primary data

When the respondents were asked to give their views on the effects of inventory management and organizations performance, most of the respondents that is 8 or 28% said there is lead time management surely and this has ensured better performance since there is limited time wasted between the time of ordering for the goods and the time when the goods are delivered. 7 or 24% of the respondents reported that quality assurance has lead to better delivery of goods and services while 5 or 17% of the respondents reported that cost effectiveness have an impact on inventory management and organizations performance. 3 or 10% of the respondents reported that customer service also has an impact on inventory management and organizations performance. Respondents were also asked to quantify the challenges faced while using the different types of inventory control and the information thereof is presented in table vi.

1.1.1.9 Table (vi) showing quantified challenges faced while using the different types of inventory management control

Responses	FREQUENCY	PERCENTAGE
Very high	12	41
High	6	21
Few	9	31
Very few	2	7
Total	29	100

Source: Primary data

The respondents when asked to quantify the challenges faced while using the different types of inventory control, 12 or 41% responded that they are faced with very many challenges due to limited expertise, insecurity problems, 9 or 31% responded that few challenges are faced, 6 or 21% reported that high and a smaller percentage 7% of respondents reported very few.

4.3 Challenges involved in inventory management and organizations performance

Respondents were further asked to state the challenges involved in inventory management and organizations performance and the information thereof is presented in table vii.

1.1.1.10 Table (vii) showing challenges involved in inventory management and organizations performance

Challenges	FREQUENCY	PERCENTAGE
Expensive	4	14
Limited expertise	6	21
Security problems	3	10
Poor specification	5	17
Unreliable suppliers	2	7
Fire out breaks	3	10
Power blackouts	2	7
Safety and pilferage	4	14
Total	29	100

Source: Primary Data

Most of the respondents reported that they are faced with the challenge of limited expertise (6 Or 21%) and that compromised their standards of inventory management. An equal number of 5 or 17% reported that they are faced with the challenge of poor specification. This is due to limited expertise from the users.

Equivalent numbers reported that they do face the problems of security problems, fire outbreaks. This could be as a result of inventory management being so expensive in terms of good ware housing, security, and constant power supply and so forth. A similar number of 4 or 14% reported that they are faced with the challenges of safety and pilferage and inventory being so expensive in terms of handling, security and so forth.

A similar number but smaller sample (2 or 7%) said that inventory management is faced with the challenges of unreliable suppliers and power blackouts. The problem of un realistic suppliers was reported to be as a result of organizations not paying on time their suppliers hence causing the problem of long lead times.

Respondents were asked to quantify the challenges faced while using the different inventory control methods and the information thereof is presented in table viii.

1.1.1.11 Table (viii) showing quantity of challenges faced while using inventory control methods.

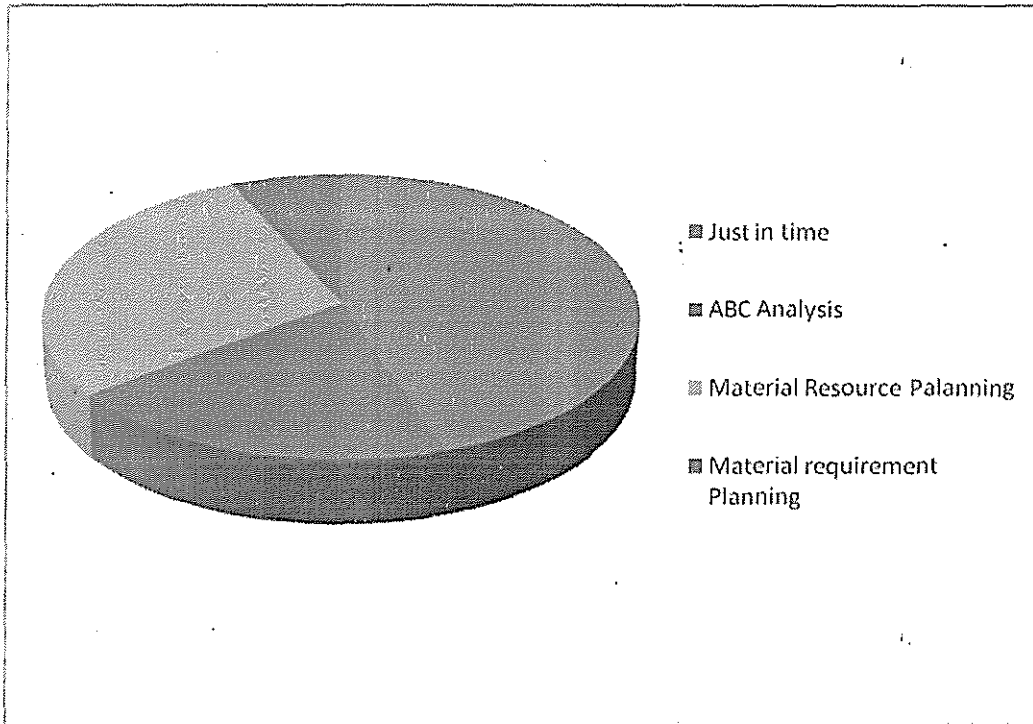
Responses	FREQUENCY	PERCENTAGE
Very many	12	41
Many	6	21
Few	9	31
Very few	2	7
Total	29	100

Source: Primary Data

From the above information in the table, 12 or 41% of the respondents reported that they are faced with very many challenges of inventory control, 9 or 31% of the respondents reported few challenges are faced while using the inventory control methods. Slightly average number 9 or 31% showed that many challenges are faced while using the inventory control methods and a very small number of 2 or 7% reported that very challenges are faced.

Respondents were asked to state the inventory management techniques used in their organizations and the information thereof is presented in figure iii.

1.1.1.12: Figure (iii) Pie chart showing inventory management techniques



Source: Primary Data

Most of the respondents that is 14 or 48% said that their organizations used just in time technique to control inventory. It appears that most of the organizations provided on time services to their clients. Also JIT technique is cost effective when materials are ready as it appeared that material resource planning was also among the best used techniques with the score of 7 or 31%. ABC analysis technique was reported with 6 or 21% of the respondents indicating its slightly used while very few respondents 2 or 7% reported that materials requirement planning is the least used technique. They gave the reasons as being too expensive and require high rates of experience.

4.4 Suggestions for addressing challenges involved in inventory management and organizations performance

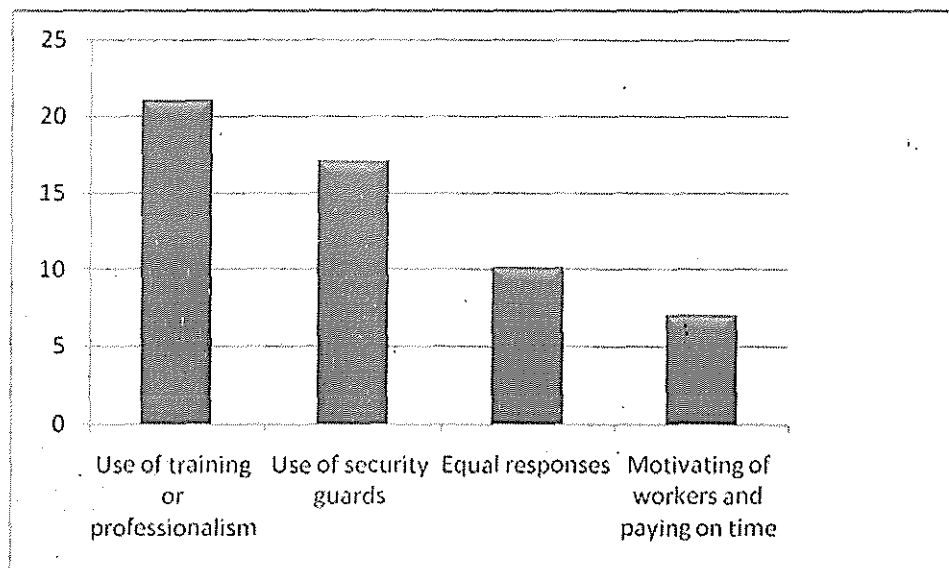
Respondents were asked to suggest the ways through which the challenges involved in inventory management and organizations performance and the information thereof is presented in table 12.

1.1.1.13 showing suggestions to the challenges of inventory management and organizations performance

Suggestions	FREQUENCY	PERCENTAGE
Training	6	21
Security guards	5	17
Use of CCT cameras	4	14
Buyer-supplier relationships	3	10
Tendering	3	10
Paying on time	2	7
Supplier development	3	10
Motivation of workers	2	7
Planning	1	3
Total	29	100

Source: Primary Data

1.1.1.14 Figure (iv) A COLUMN CHART SHOWING SUGGESTIONS TO THE CHALLENGES OF INVENTORY MANAGEMENT



Source: Primary Data

From the chart above, most of the respondents (6 or 21%) suggested that use of training or professionalism would be a good solution to curb down the challenges involved in inventory management. Others 5 or 17% suggested that use of security guards would solve the challenge of security problems. Equal responses of 3 or 10% gave solutions of supplier developments, buyer-supplier relationships and through tendering as ways of curbing down some of the challenges of inventory management and performance. Supplier development as it was suggested by some of the respondents would be through capital financing and technical knowhow. 2 or 7% of the respondents reported that motivating of workers and paying on time especially on the side of suppliers would solve the challenges of long lead times while a small number responded that planning would be another way of solving some of the problems associated with inventory management and performance.

CHAPTER FIVE

DISCUSSION, SUMMARY, CONCLUSION, RECOMMENDATIONS AND SUGGESTIONS

5.0 INTRODUCTION

The study was carried out with the view to assess the impact of inventory management and organizations performance in Mukono town council.

This chapter is concerned with discussion, summary, conclusion, recommendations and suggestions about the findings that were gathered from the case study.

SUMMARY OF THE FINDINGS

5.1 Personal data

Respondents were asked to state their marital status and most of them were male respondents however, there was a significant minority of the female respondents. This finding showed that there was some kind of gender balance in the distribution of respondents since there was no very big gap between the number of female and male respondents.

Respondents were again asked to give their age distribution and it found out that most of the respondents were in the age bracket of 35-39 years. This could be that the study mostly was carried out among the middle aged who were the direct clients to the organizations that were contacted for the study. There were a few respondents from the age brackets of 20-24 and 45 above. This could have been due to the experience wanted in the age above 45 and 20-24 looked to be the interns. It should be noted that there were no samples in the age brackets of 50 and plus. This could have been obvious since most people at this age are always retired so there is little wonders that the score in this section was very low.

Respondents were also asked to state the departments they work with and it was found out that most of them reported that they were final users of the organizations that were contacted for the interview. In other words, they could have been customers to the hotels or supermarket and the staff of the education institution that were interviewed. The study also involved a few but significant number of respondents coming from the departments of procurement, finance and stores. Therefore basing on the representation of the different departments during the study; one

can assert that the findings are reliable since it collected views from all spheres of the organizations that deal with inventory management.

5.2 The impact of inventory management and organizations performance

Respondents were asked to state the type of inventory management they had in their respective organizations and the study findings revealed that most of the organizations had dead stock 28% in their stores. Dead stock included things like furniture, text books, utensils, shelves. These were needed since they kept the organization in business and they needed to be kept well. Other kinds of inventories kept included assemblies, buffer stocking, work in progress and raw materials and finished goods.

The respondents were further asked to state what methods of inventory control were being used by their organizations and the information thereof revealed that most of the organizations used maximum level point 45% while an equal number of respondents responded that they use reorder level point and minimum level point that is 14% and 26% responded that they use economic order point. It appeared that in every organization that was contacted, there existed some methods of inventory management and thus ensuring better performance of the different organizations.

Respondents were asked to state effects of inventory management and organizations performance and most of them said that inventory management has lead to lead time management and this effect has ensured better performance since limited time wasted between the time of ordering the goods and the time the goods are delivered. An equal number of respondents reported that good inventory control led to quality assurance and effectiveness of the organization hence better delivery of services and goods to the community. A significant number reported that good inventory management led to cost effectiveness. A small but relatively significant number reported that inventory management ensured performance of the organizations.

Respondents were also asked to quantify the challenges they face while using the different types of inventory control and most of them said very high while a relatively big number said high and small number said few while a very small percentage indicated very few or not at all.

5.3 Challenges involved in the inventory management and organizations performance

Respondents were further asked to state the challenges involved in inventory management and organizations performance and most of the respondents reported that they are faced with a

problem of power blackouts that compromised their standards of inventory management. An equal number but significant reported that they are faced with a challenge of security problems, inventory management being very expensive. This could easily be understood since inventory management needs good ware housing, security, constant power supply and so forth hence inventory management being so expensive. Almost equal number also reported that they are faced with risks of fire outbreaks or poor specification. One would imagine that poor specifications could have been caused by un professionalism in the procurement section while fire outbreaks could be due to human error that are experienced in the daily administration of the organizations or negligence. Another equal percentage of respondents reported that they are faced with a problem of limited expertise and un realistic suppliers who could make organizations compromise their performance level. Also, unrealistic supply of goods and or services as a result of organizations not paying on time their suppliers hence causing problems of lead time issues. Still on the same, a small number said that they are faced with challenges of safety and pilferage.

Respondents were further asked to quantify the challenges faced while using the different inventory control methods and most of them reported that they are faced with very many challenges of inventory control, a sizeable number said that they are experience many challenges while a small number faced a few and a significant number although small challenges of inventory control.

Respondents were also asked to state the inventory management techniques used in their organizations and most of the respondents said that their organizations used JIT technique to control inventory. It appeared that most organizations provided on time services to their clients. This score was in the same with material resource planning. This could have been obvious since JIT technique to be effective, there must be materials ready. ABC technique had a significant score too and material requirement planning had a small score.

5.4 Suggestions for addressing challenges involved in inventory management and organizations performance

Respondents were asked to suggest ways through which the challenges involved in inventory management and organizations performance and most respondents suggested that the use of training or professionalism would be a good solution to curb the challenges involved in inventory management. Another substantive equal percentage reported that tendering, paying on time and

motivating workers in terms of money would minimize the challenges of inventory management while another equal but small number of respondents suggested that organizations should develop their suppliers in terms of capital and technical knowhow as well as ensuring buyer-supplier relationships. These had a small but significant score.

5.5 Conclusions

About the effects of inventory management and organizations performance, study findings revealed that inventory management led to lead time management, quality assurance and effectiveness, cost effectiveness and ensured performance of the organization. This made the researcher conclude that the organizations that were contacted appreciated the role of inventory management in ensuring performance.

About the challenges involved in inventory management and organizations performance, respondents reported that they are faced with problems of power blackouts, security, inventory management being very expensive, risks of fire outbreaks, and poor specifications. Other challenges involved in inventory management included limited expertise, unrealistic suppliers as well as safety and pilferage challenges. This made the researcher conclude that although inventory management ensured performance, it has its own challenges.

When the respondents were asked to suggest the ways through which the challenges involved in inventory management and organization performance could be addressed, they (respondents) suggested that the use of training or professionalism, tendering, paying on time and motivating workers, supplier development in terms of capital and technical knowhow as well as ensuring buyer-supplier relationships could ensure proper management of inventories. This made the researcher to make a conclusion that although inventory management has a number of challenges, there are various ways that can be followed to mitigate the challenges involved in inventory management.

5.6 RECOMMENDATIONS

About the effects of inventory management and organizations performance, the study findings revealed that inventory management has led to lead time management, quality assurance and effectiveness, cost effectiveness and ensured performance of organizations. This made the researcher recommend that organization performance should appreciate the role of inventory management in ensuring organization performance due to its positive effects.

On the challenges involved in inventory management and organizations performance, respondents reported that they are faced with problems of power blackouts, security, inventory management being very expensive, risks of fire outbreaks, and poor specifications. Other challenges involved in inventory management included limited expertise, unrealistic suppliers as well as safety and pilferage challenges. This made the researcher recommend that organizations should ensure proper inventory management in order to minimize the above mentioned problems.

When the respondents were asked to suggest the ways through which the challenges involved in inventory management and organization performance could be addressed, they (respondents) suggested that the use of training or professionalism, tendering, paying on time and motivating workers, supplier development in terms of capital and technical knowhow as well as ensuring buyer-supplier relationships could ensure proper management of inventories. This made the researcher recommend that the managers of the organizations contacted should be sensitized on the various ways through which inventory management should be administered with very minimal challenges.

Lastly, the researcher recommends that replica studies on the subject of the role of inventory management in ensuring organization performance be conducted on a wider scope in order to make findings of this study substantive. This is because the study was conducted in only Mukono town council and only four organizations were contacted for the study.

5.7 AREAS FOR FURTHER RESEARCH

1. How to manage a ware house
2. Automation of the inventory management systems, that is to say electronic bars.
3. Training of stores or ware house management staff.

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APPENDICES
APPENDIX A
QUESTIONNAIRE

I am Nangobi Moreen, a student of Kampala International University conducting a study on the Effect of inventory management and organizations performance in Mukono Town Council. This is a requirement for the award of Bachelors degree in Supplies and Procurement management and it is entirely for academic purposes and information obtained will be kept confidential.

You have been selected and hereby requested to participate in this study by filling in the spaces provides OR putting a tick mark in the option box on the right hand side of the option of your choice.

Thank you very much.

Part A

Please answer/ rate/ indicate/ tick appropriately your response with respect to the importance of the statements below.

Section A: Bio-data of respondents

1. Age

20	-	24	<input type="checkbox"/>
25	-	29	<input type="checkbox"/>
30	-	34	<input type="checkbox"/>
35	-	39	<input type="checkbox"/>
40	-	44	<input type="checkbox"/>
45	above		<input type="checkbox"/>

3. GENDER

Male ☐

Female ☐

4. MARITAL STATUS

Married	<input type="checkbox"/>
Single	<input type="checkbox"/>
Divorce / separated	<input type="checkbox"/>
Widower	<input type="checkbox"/>

Widow

☐

Others specify

5. Level of Education

Certificate

☐

Diploma

☐

Degree

☐

Masters

☐

PhD

☐

Others (specify)

6. Position held in the organization

Manager

☐

Procurement Officer

☐

Store Manager

☐

Final user

☐

Employee

☐

7. What department do you work with?

Procurement

☐

Stores

☐

Finance

☐

Others (specify)

☐

Part B

Inventory management

8. What are the types of inventory held in your organization?

Raw materials

☐

Finished goods

☐

Work in progress

☐

Assemblies

☐

Dead stock

Others (specify)

8. What inventory control methods are used?

Economic order Quantity

Reorder level point

Minimum level point

Maximum level point

Other specify

.....
.....

9. What Challenges are faced while using the above methods?

Time wasting

Expensive

High stock outs

Obsolesces

Others (specify)
.....

10. What are the inventory management techniques used in your organization?

Just in time (JIT)

ABC analysis

Material resource planning (MRP)

Material requirement planning (MRP)

Others (specify)
.....

Part C

11. What are the effects of inventory management on organizations performance?

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12. What are the challenges involved in inventory management?

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13. How can the challenges involved in inventory management be addressed?

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Thanks a lot for your cooperation.

APPENDIX II
ESTIMATED RESEARCH BUDGET

This is the estimate cost and expenses that the research expects to meet during the course of Research study.

Items	QTY	UNIT COST	AMOUNT
Stationery			
Ream of rule paper	2	12,000	24,000=
Pens	5	1,000	1,000=
Pencils	5	200	1,000=
Box files	1	4,500	4,500=
Note books	4	1,000	4,000=
Transport	Lump sum	Lump sum	90,000=
Preparing questionnaires interview guide			20,000=
Editing data, printing and binding		100,000	100,000=
Airtime		50,000	20,000=
Umbrella	1	5,000	5,000
Motivation and refreshment			60,000=
Miscellaneous		50,000	50,000=
TOTAL			389,500=

APPENDIX III
TIME FRAME

ACTIVITIES	DURATION (months)					
	NOV 2012	DEC 2012	JAN 2013	FEB 2013	MARCH 2013	APRIL 2013
A Pilot study						
Study analysis						
proposal design						
proposal development						
Submission of proposal for approval						
Final report writing and submission						