CHAPTER ONE

INTRODUCTION

1.1 BACKGROUND OF THE STUDY

Inventories occupy the most strategic position in structure of working capital of most business enterprises. It constitutes the largest component of current asset in most business enterprises. In the sphere of working capital, the efficient control and management of inventory has paired the most serious problem to the health institutions. The turnover of working capital is largely governed by the turnover of inventory, that is the rate of working capital is largely governed by the amount of inventory which is largely provided by the government. It is therefore quite natural that inventory which helps to maximize profit occupies the most significant place among current and profit assets.

The American usage of the word 'inventory' is synonymous with the British use of the word 'stock', this synonym is evident in the definitions of inventory and stock by the Oxford Dictionary. The Oxford English Dictionary defined inventory as follows:

1. A list, catalogue, detailed account
2. A lot or stock of goods, etc which are or may be made the subject of an inventory.

3. The aggregate of goods and some specified kind of goods which a trader has on hand as provision for the possible future requirement of customers.

The American Institute of Certified Public Accountants (AICPA) defined inventory thus, the term inventory in used to designate the aggregate of those terms tangible personal property which are held for sale in the ordinary course of business, in the process of production for such sale or currently consumed in the production of goods and services to be available for sale.

According to the Nigerian Accounting Standard Boards (NASB) stock includes those finished goods and livestock waiting sale, work-in-program, raw materials and supplies to be consumed in the production of goods and rendering of services.

Many understand the word inventory as a stock of goods, but the generally accepted meaning of the word ‘goods’ in the accounting language is the stock of finished goods only. In a manufacturing organization, however, in addition to the stock of finished goods, there will be stock of partly finished goods; there will be stock of partly finished goods, raw materials and stores. The collective name of these entire items is ‘inventory’.

Inventory management is aimed at maintaining a minimum investment in operations to maximize profitable operations. To maintain a large stock of investment to ensure a smooth and efficient operation of the firm.

The effect of inventory management on government health institutions like UNTH Enugu cannot be over emphasized; this is because asset of many institutions represents considerable percentage of the total invested capital. The control, accounting and management of an efficient inventory management system is of a special interest to both management, suppliers and other users of accounting information.

Therefore, poor inventory management leads to expiration of drugs, loss of quality sequel to poor storage system with resultant reduction in efficacy of the drug. This might even lead to death of some patients. There may be stock out and lot more effect of poor inventory control and management.

Inventory control is concerned with the acquisition, control, handling and use of inventories so as to ensure the availability of inventory whenever needed, providing adequate provision for contingencies, deriving maximum economy and minimizing wastages and losses.

Hence, inventory control refers to a system, which ensures the supply of required quantity and quality of inventory at the required time. Inventory control can make or break a company. This explains the usual saying that inventories are the grave yard of business.

The aim of a sound inventory control system is to ensure the best balance between two much and too little. Too much inventory carries financial rises and too little reacts adversely on continuity of sequence.

In health institutions such as UNTH Enugu, inventory control is more than just procurement and usage. The proper controls and processes can save millions in health care cost by enabling health institutions to efficiently order and store just the right amount of supplies needed for patient care while tackling cost, tier pricing and patient charges associated with supplies.

Inventory management and control helps facilities identify, control and manage their inventories by keeping accurate records of all inflow, outflow and movement of inventory (drugs) in a user friendly environment. The proper tracking data allows for accuracy in patient charges and on audit trail to identify cist charges.

The intention of this research work therefore aimed at studying the management and control of inventories (drugs) in government health institutions with special reference to University of Nigeria Teaching Hospital, Enugu.

1.2 STATEMENT OF THE PROBLEM

A large proportion of the government health institutions are faced with similar problems. These problems hinder the growth and development of institutions in this country. The problems include

1. Unsatisfied clients/patients arising from poor qualify drugs.
2. High rate of obsolescence, wastages and theft of drugs.
3. Poor quality of inventory control leading to out of stock of essential drugs in the hospital.

1.3 OBJECTIVES OF THE STUDY

1. To ensure an effective and efficient management and control of inventory (drugs) in government health institution leading to effective service delivery.
2. To reduce obsolescence and wastages of drugs.
3. To reduce out of stock syndrome prevalent in government hospitals.

1.4 RESEARCH QUESTIONS

1. To what extent has effective management and control of inventory aid in effective and efficient service delivery of hospitals?
2. How far do effective inventory management reduce obsolescence and wastages of drugs experienced in hospitals?
3. To what extent do good inventory management help in reducing out of stock syndrome prevalent in government hospitals?

1.5 FORMULATION OF HYPOTHESES

Ho: proper management and control of inventory does not have a significant effect on effective and efficient service delivery of hospitals.

Hi: Proper management and control of inventory has a significant effect on effective and efficient service delivery on hospitals.

Ho: Proper management and control of inventory does not reduce obsolescence and wastages experienced in hospitals.

Hi: Proper management and control of inventory reduce obsolescence and wastages experienced in hospitals.

Ho: There is no relationship between inventory control and stock out experienced n hospitals.

Hi: There is relationship between inventory control and stock out experienced n hospitals.

1.6 SIGNIFICANCE OF THE STUDY

The significance of the study is mainly attributed to the need for measuring result of inventory operations for a particular period such as month of year. This study will point out the importance of inventory control and management in government health institutions.

This study will also create an opportunity for existing and prospective employers and employees to benefit from the use of modern inventory control and management techniques that will be recommended. To students, it will improve their theoretical and practical knowledge of inventory management and control in government health institutions.

1.7 SCOPE OF THE STUDY

The management and control of inventories cover physical control, accounting control and management policies and procedures relating to inventory. This study is based on government health institutions but due to time, the school system and financial constraints, this research has selected a sample from eth population of health instructions.

The study sample selected for this study is University of Nigeria Teaching Hospital (UNTH) in Enugu, and the study shall cover their ordering method, procurement method, storage and issue of drugs including the cold chain system and the inventory management and control techniques that aid in the achievement of the organizational goal.

1.8 LIMITATION OF THE STUDY

The absence of any previous empirical study on the management and control of inventories drugs in the program of UNTH is a significant limitation to this study.

These absences of an existing body of study on this area in the institution posses a special problem of the absence of previous reference or primary data from the scratch through questionnaire administration and designed to supplement available secondary data. However, financial constraints are expected to present a very serious limitation to the study since it would limit the researcher's data material and the presentation of existing evidence.

1.9 DEFINITION OF OPERATIONAL TERMS

Inventory – Stock of materials or product. In this, inventory refers to drugs.

Inventory Management – The official system designed by the management of a company to monitor control and manage the stock of inventories and assets under its possession.

Inventory Control – Supervision of the supply and storage and accessibility of items in order to incur on adequate supply without excessive supply.

Cold Chain System – A popular term for continuous maintenance of low temperature required for biological example vaccines from the time of manufacture to shipping, warehouse and storing before administration.

1.10 HISTORY OF UNTH

The UNTH Ituku Ozalla, Enugu, has come a long way. The hospital began in the 20th century as a standard hospital for Africans built by the colonial administrators. It later metamorphosed into a general hospital on attainment of Nigeria's independence in 1960.

However, at the end of the Nigerian civil war in 1970, the then government of east central state transformed it into a specialist hospital with effect from July 1, 1970.

At this time, the hospital has a total of 50 doctors, 10 wards and 300 beds and a chest bay of 60 beds. There are also 350 nurses working in the hospital. Today, the situation has changed drastically. The bed capacity of the hospital in the permanent is over 500 beds and the number of its personnel both professional and non professional has increased tremendously.

By decree number of 23 of 1974, the Federal Ministry Government took over the hospital, but left the management in the hands of the council of the University of Nigeria Nsukka. The University of Nigeria Teaching Hospital became independent in July 1976 with the appointment of autonomous management board.

The physical constraints of the old site of the hospital mad eit impossible for needed expansion to be implemented. It was also appreciated that the old site was

developed and used as a general hospital, and therefore, could not longer cope with the challenges of a teaching hospital.

Consequently, the approval of the then Federal Ministry Government for the construction of a new complex for the teaching hospital was ought and it came as welcome relief. Today, this site, which is the permanent site of the UNTH at Ituku Ozalla is permanent and gully functional. It is located 21 kilometers from Enugu capital city along Enugu, Port-Harcourt Express way.

All services rendered at the old site has now been moved into the permanent site with effect from 8the January, 2007. The hospital covers an area of about 200, acres while the entre parcel of land about 306 hectares (747acres).

There is now a room for expansion and this is hoped to assist in solving the accommodation needs of the hospital once and for all.

The new hospital complex is also better equipped under the Federal Government assisted by VAMED engineering equipment programme which has elevated it and some other teaching hospitals in the country to an international standard.

The UNTH has broad objectives of services, teaching and research. The hospital tries to achieve these through provision of in-patient and out-patient services to its clients through her highly trained staffs, provision of adequate clinical materials for service and training as well as equipment of research, provision of teaching

facilities for training her students and other persons in the health delivery team and conduct and promotion of research in all matters pertaining to health.

Altogether, there are 41 main departments in the hospital with three outpost. They are:

- Comprehensive Health Centers at Obukpa near Nsukka Enugu State
- Abagana in Njikoka Local Government Area of Anambra State.
- Isuochi in Abia State.

There are 9 training school/programmes in the hospital they have school of nursing, midwifery, medical laboratory science, nurse anesthetists, community health, post ophthalmic nursing, pre-operative nursing, cardiothoracic nursing and medical records. These schools operate currently at the old site but plans are already on the ground to provide structure for them in the new site as soon as possible.

CHAPTER TWO

REVIEW OF RELATED LITERATURE

INTRODUCTION

This chapter gives a systematic review of the basic theoretical and empirical literature on management and control of inventory. The following definitions will help to understand what management and control of inventory is all about.

2.1 THE NATURE AND SCOPE OF INVENTORIES

Inventory is the total amount of goods and materials contained in a store at any given time. Store owner need to know the precise number of items on their shelves and storage areas in order to place order or control losses.

Inventory is often the largest item in the current assets category and must be accurately counted and valued at the end of each accounting period to determine a company's profit or loss. Organizations whose inventory items have a large until cost generally keep a day to day record of changes in inventory (called perpetual inventory method) to ensure accurate and on-going control. Organization with inventory items of small unit cost generally updates their inventory records at the end of an accounting period or when financial statements are prepared (called periodic inventory method).

The value of an inventory depends on the valuation method used, such as first in, first out (FIFO) method, or last in, first out (LIFO) method. GAAP required that inventory should be valued on the basis of either its cost price or its current market price whichever is lower of the two to prevent overstating of assets and earning due to sharp increase in the inventory's value in inflationary periods. This optimum level of inventory of an organization is determined by inventory analysis called also stock in trade or just stock.

In a business accounting context, the word inventory is commonly used in American English to describe the goods and materials that a business holds for the ultimate purpose of resale. In the rest of the English speaking world stock is more commonly used, although the word inventory is recognized as a synonym. In British English, the word inventory is more commonly thought of as a list compiled for some formal purpose, such as the details of an estate going to probate or the contents of a house let furnished.

In American English, the word stock is commonly used to describe the capital invested in a business, while in British English; the word share is more widely used in the same context. In both British and American English, stock is the collective noun for one hundred shares as shares were usually traded in stocks on stock exchanges.

Here, factory managers need to know how many units of their products, that are available for customer orders. Most businesses rely on an inventory count to provide answers. The word inventory can refer to both the total amount of goods and the act of counting them.

Many companies take an inventory of their supplies on a regular basis in order to avoid running out of items. Others like the government health institutions take an inventory to ensure the number of items counted physically. Shortages or averages after an inventory can indicate a problem with theft (called shrinkage in retail circles)or inaccurate accounting practices.

Companies take an inventory every quarter in order to generate numbers for financial reports and tax records, likewise, government health institutions. Ideally, most health institutions want to have just enough inventories to meet current order. Having too many drug products languishing in a warehouse can make an institution look less appealing to investors and potential customers.

2.2 REASONS FOR KEEPING STOCK OR INVENTORIES

There are four basic reasons for keeping an inventory.

1. Time: The four lags presents in the supply chair, from supplier to user at every stage, requires that you maintain certain amounts of inventory to use in this lead time. However, in practice, inventory is to be maintained for

consumption during variation in lead time. Lead time itself can be addressed by or during that many days in advance.

2. Uncertainty: Inventories are maintained as buffers to meet uncertainties in demand, supply and movements of goods.
3. Economies of Scale: Ideal condition of one unit at a time at a place where a user needs it, when he needs it principle tends is incur lots of costs in terms of logistics. So bulk buying, movement and storing brings in economies of scale, to inventory.
4. Appreciation in Value: In some situations, some stock gains the required value when it is kept for some timeto allow it reach the desired standard for consumption or for production.

2.3 MOTIVES FOR HOLDING INVENTORIES

There is cost (carrying cost) associated with holding inventory such costs include cost of financing, storage space, breakages, obsolescence, deterioration, insurance, etc. there are motives for holding inventory and these motives are often traded off. According to David and Miller (2001), they are

1. Transaction motives: The institution may be required to hold the inventory in order to facilitate the smooth and uninterrupted procurement operations. It may not be possible for the institution to procure the drugs whenever

necessary. There maybea time lag between the demand for the drugs and its supply. Hence, it is needed to hold the inventory.

2. Precaution Motives: In addition, to the requirement to hold the inventory for routine transaction, the health institution may like to hold them to guard against risk of unpredictable changes in demand and supply forces. For instance, the supply of drugs may get delayed due to factors like strike, transport, disruption, lengthy processes involved in importation of drugs etc. hence, health institution should maintain sufficient level of inventory to take care of such situations. Similarly, the demand for finished goods may suddenly increase due to season and if the health institution is unable to supply them, it may mean loss of customers; hence, the institution will like to maintain sufficient supply of drugs.
3. Speculative Motives: The institution may like to purchase and stock the inventory in the quantity which is more than needed for procurement purposes. This may be with the intention to get advantage in term of quality discounts connected with bulk purchasing or anticipating price.

According to D. Victor, whether a business is in retailing or manufacturing, there are several reasons for holding inventory. There are several reasons for purchases, order and carriage inwards, an institution might want to minimize its order costs and utilize storage space efficiently, if there are good reasons for doing so.

These reasons include,

1. To meet expected demand

   The health institution must ensure that it has adequate supplies to meet expected demand for its drugs. However, when a high demand and rapid turnover is made, having stock in storage ensures that the visitation can comfortably meet anticipated demand.

2. To guard against shortages

   Holding inventory can act as insurance against future shortages in the supply of drugs can affect the procurement processes of the health institutions or its ability to meet demand. Holding inventories allows a degree of continuity for the activities of an institution.

3. To benefit from discount

   Suppliers often trade discount for bulk purchases, once those purchases are above a certain amount, health institution can reduce the unit cost and ordering cost (delivery, import duties) by purchasing a large amount of goods or drugs to hold in stock.

4. To facilitate the procurement process

   Stock can allow the procurement process to flow smoothly and help the health institution to respond quickly and effectively to contingencies.

5. In times of high inflation/supply shortages

Holding vast supplies of inventories can be a deliberate strategy in response to usual or difficult economic circumstance. In times of high inflation, an institution might not wish to purchase stock at increasingly higher prices. Once the visitation determined that it is feasible to hold additional inventory beyond the usual levels, this is a very sensible strategy.

Gaither identified the following reasons for holding of inventory as

1. Physically impossible and economic infeasible to instantaneously supply of inventory when demanded.
2. Allows favorable unit prices through volume buying.
3. Allows reducing of incoming unit freight out through large shipments.
4. Allows more efficient material handling through large loads.

2.4 TYPES OF INVENTORIES

Vohra (2008), clarified inventories according to the purpose for which they are held. He stated that inventories may be held for a variety of purpose. There are five types of inventories that an organization or institution can use for serving these purposes. They include;

1. Movement Inventories

   This is also known as transit or pipeline inventories. This involves the transfer of substantial amount of resources the transfer of drugs from manufacturing industry to the required hospital.

2. Buffer Inventories

   These are held so as to protect against uncertainties of demand and supply. Buffer inventory, also called buffer stock or safety stock, is a cushion of supply in excess of forecast demand. There is used to reduce the incidence or severity of stock out situation in sales and thus, provide better customer service. It's also used in production or other inventory situations to ensure unexpected demands can be met with some degree of certainty.

3. Anticipatory inventories

   These are held for the reason that a future demand for the product is anticipated. Neil Kekemuller (2007) defined anticipatory inventories as excess level of product, kept on hand to deal with uncertainty in customer demand. Fluctuation is buying activity, seasonal demand variation and general in certainty about sales forecasts contribute to the importance of maintaining adequate levels of anticipation inventory in Resale Company.

4. Decoupling inventories

A stock retained to make the independent control of two successive operations possible. Inventory accumulated between two inter dependent operations as a buffer against breakdowns or uneven in machine production rates, thus, reducing the need for output syndronization. Decoupling inventory is also called intermediate stock.

5. Cycle inventories

   An inventory system where counts are performed continuously, often eliminating the need for annual overall inventory. Cycle inventory is a method of keeping track of inventory by performing inventory counts constantly, or on a frequent or regular basis, instead of once per year or once per quarter. A business using the cycle inventory method might count different items at different rates, based on the level of turn over or demand for that particular item.

2.5 INVENTORY MANAGEMENT

Inventory management is all about knowing what is on hand, where it is in use and how much finished product results. Barcodes Inc defines inventory management as the process of efficiently overseeing the constant flow of units into and out of an existing inventory. The process usually involved controlling the transfer in units in order to prevent the inventory from becoming too high or dwindling to levels that could put the operation of the government health institutions into jeopardy.

Due to the large size of inventories that government health institution maintains, a large considerable amount of fund is required to be committed to them. There necessitated the efficient management of inventories by most government health institutions.

In any business or organization, all functions are interlinked and connected to each other and are often over lapping. Inventory management is a very important function that determined the health of the supply chain as well as the impacts the financial wealth of the balancesheet. Every organization constantly strives to be able to meet its requirement and avoid over or under inventory that can impact the financial figures.

Inventory is always dynamic. Inventory management requires constant and careful evaluation of external and internal factors and control through planning and review. Most of the organizations have a separate department or job function called inventory planners who continuously monitor, control and review inventory and interface with production, procurement and finance departments.

2.5.1 IMPORTANCE OF INVENTORY MANAGEMENT

Inventory management has always been important; it has become more important over the past several decades. As the needs of companied increase, they must in turn increase demands on their suppliers. In order for suppliers to have the goods

their customers need, it is necessary for them to maintain excellent and accurate inventory management. The customer do not care of you have to manually count you inventory or have access to an automated system. The only thing that is of concern to customers is the ability of your company to have supplies on hand to take care of their needs in a reasonable amount of time.

Heizer and Render stated that the importance of inventory management is

1. The institution has to maintain adequate inventory for smooth production and selling activities.
2. It has to minimize the investment in inventory to enhance firm's profitability.
3. It helps in maintaining a tradeoffbetween carrying cost, and ordering costs which results into minimizing the total cost of inventory.
4. Inventory management facilitates maintaining adequate inventory for smooth sales operations.
5. Inventory management avoids the stock-out problem that a firm otherwise would face in the lack of proper inventory management.
6. Inventory management suggests the proper inventory control system to be applied by a firm to avoid losses, damages and misuses.

2.5.2 OBJECTIVES OF INVENTORY MANAGEMENT

The main objectives of inventory management as stated by Wikipedia is to maintain inventory at appropriate level to avoid excessive or shortage in inventory because both the cases are undesirable for business. Other objectives include

1. To ensure that the supply of inventory will remain continuous so that the demand of the customers are duly met.
2. To minimize carrying cost of inventory.
3. To reduce the losses of theft, obsolescence and wastages etc
4. To minimize inventory ordering costs.
5. To make arrangement for sale of slow moving items

2.5.3 INVENTORY MANAGEMENT METHOD

Inventory management takes into account other function such as purchasing, production and marketing. It techniques aim at balancing out conflicting goals. Inventory management method consists of model that forecast the demand, purchase orders and continual monitoring of the re-order points. This model is the economic order quantity that is used to calculate the optimal quantity that can be purchased or produced minimize the cost of both the carrying inventory and the processing of purchase orders.

Economic order quantity is essentially an accounting formula that determines the point at which the combination of order costs and inventory carrying cost are the least. The result is the most cost effective quantity to order.

Economic order quantity model is the method that provides the organization with an order quantity. This order quantity figure is where the record holding costs and ordering costs are minimized. By using this model, the organization can minimize the cost associated with the ordering and inventory holding. In 1913, Ford W. Hams developed this formula whereas R.H. Wilson is given credit for the application and in depth analysis on this model.

Formula for economic order quantity

$$Q = \sqrt{\frac{2DS}{H}}$$

Where Q = optimal order quantity

D = units of annual demand

S = cost incurred to place a single order

H = carrying cost per unit.

The formula is derived from the following cost function

Total cost = Purchase cots + ordering cost + holding cost

2.5.4 LIMITATIONS OF ECONOMIC ORDER QUANTITY MODEL

It is necessary for the applications of economic order quantity that the demands remain constant throughout the year. It is also necessary that the inventory be delivered in full when the inventory levels reach zero.

2.5.5 UNDERLYING ASSUMPTION OF ECONOMIC ORDER QUANTITY MODEL

Following the underlying assumption for the economic order quantity model, without these assumptions the EOQ model cannot work to its optimal potential.

1. The cost of the ordering remain constant
2. The demand rate for the year is known and evenly spread throughout the year.
3. The lead time is not fluctuating (lead time is the latency time; it makes a process to initiate and complete).
4. No cash or settlement discounts are available and the purchase price is constant for every item.
5. The optimal plan is calculated for only one product.
6. There is no delay in the replenishment of the stock and the order is delivered in the quantity that was added (ie in whole batch).

The underlying assumptions are the key to the economic order quantity model, and there assumptions help the organization to understand the shortcomings they are incurring in the application of this model.

2.5.6 REASONS FOR APPLYING ECONOMIC ORDER QUANTITY

When having repetitive purchasing or planning on an item, economic order quantity is to be considered. Some obvious example using economic order quantity would be purchase-to-stock and make-to-stock repetitive by maintenance, repair and operating (MRP). Inventory is also a good application for economic order quantity.

2.5.7 DETERMINANT OF INVENTORY MANAGEMENT

Inventory management is concerned with minimizing the total cost of inventory. Three major factors in inventory management decision making are:

a) Ordering cost
b) Storage cost (cost of carrying inventory)
c) Stock-out cost (cost of lost sales due to inventory shortages)
    i. Cost of loss, pilferage, shrinkage and obsolescence etc
    ii. Cost of logistics
    iii. Sales discounts, volume discount and other related costs.

a) ORDERING COST

Cost of procurement and in bound logistics costs form a part of ordering cost. Ordering cost varies based on two factors:

- Cost of ordering excess
- Cost of ordering less

Both these factors move in opposite direction to each other. Ordering excess quantity will result in increase of replenishment cost and ordering cost. These two above costs together are called total stocking cot.

The functional analysis and cost implication form the basis of determining the inventory procurement decision by answering the two basic fundamental questions

1. How much to order
2. When to order

How much to order is determined by arriving at the economic order quantity (EOQ).

According to Pandey, the term ordering cost is used to determine inventory supply and entire cost of acquiring the inventory. They include requisitioning, inspecting, and storage, receiving, ordering, extra transportation cost, salaries paid ot those engaged in preparing purchase order and wages of those engaged in receiving and

inspecting the materials. The total ordering cost for a period is a function of the number of orders during a given period.

b) CARRYING COST

Inventory storage and maintenance involve various types of cost namely

- Inventory storage cost
- Cost of capital

Inventory carrying involves inventory storage and management either using a house facility or external warehouse owned and managed by a third party vendor. In both cases, inventory management involves extensive use of building, inventory handling, equipment, IT software application and hardware coupled managed by operators and management staff resources.

Inventory storage cost include cost of building rental and facility maintenance and related cost, cost of inventory handling equipment, IT hardware and application including cost of purchase and management while cost of capital involves cost of purchase and management while cost of capital involves cost of interest on working capital, taxes on inventory paid and other cost associated with legal liabilities.

Ramamoothy (2001) has noted that carrying costs are cost incurred for maintaining a given level of inventory. They include storage, tax, insurance, deterioration, obsolescence. Storage cost comprises of cost of stock of storage space, stores handling cost incurred in re-ordering and providing special facilities such as fencing, lines, racks, shelves etc.

c) STOCKOUTCOST

Out of Stock (OOS) is also referred to as stock out cost, it is an event that causes inventory to be exhausted, while out of stock can occur along the entire supply chain, the most visible kind are retail out of stock in the fast moving consumer inventory. Apparently, 70 – 90% stock outs are caused by defective shelf replenishment practice, as opposed to the 10 – 30% resulting from the upstream supply chain such as a shortage in supply from the supplier.

2.5.8 METHODS OF DETERMINING ECONOMIC ORDER QUANTITY

There are three alternative methods to determine the economic order quantity namely;

- Algebraic method
- Tabular method
- Graphical method

ALGEBRAIC METHOD

Two components of inventory cost that are considered are computing the EOQ are ordering cost and storage cost. With decrease in the size of purchase, the ordering cost increases and storage cost decreases. On the other hand, with increase in size of purchase, the ordering cost decreases and storage cost increases. EOQ deals with striking a balance between these two factors. The following algebraic formula is used to compute EOQ

EOQ = $\sqrt{\frac{2DS}{H}}$

Where D = annual consumption of the inventory

S = ordering cots or cost incurred to place a single order

H = annual storage cost per unit

The above formula has been derived as below. At EOQ, total ordering cost = total storage cost

(ie number of order x ordering cost per order) = (Average units stored x annual storage cots per unit)

$\frac{D}{EOQ}$x s = $\frac{EOQ}{2}$ x H

Cross multiplying, we would have

$(EOQ)^2 = \frac{2DS}{H}$

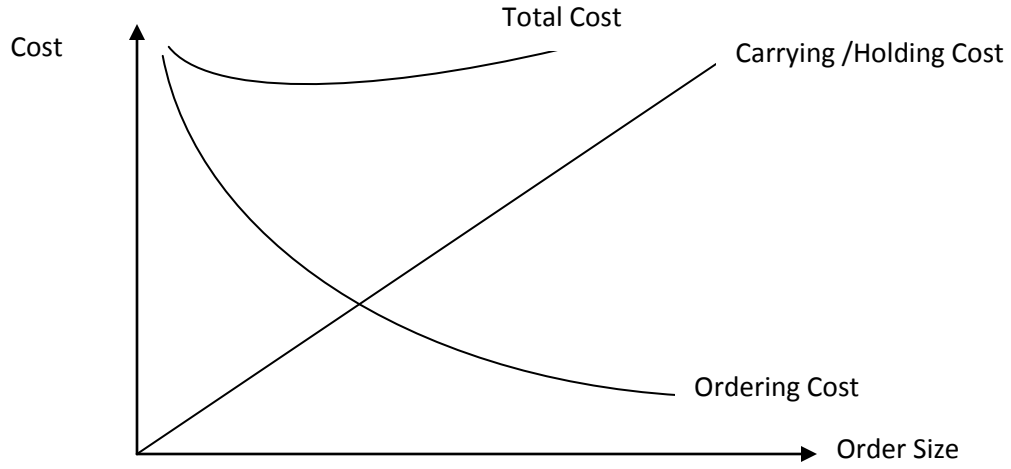
Therefore, $EOQ = \sqrt{\frac{2DS}{H}}$

TABULAR METHOD

When there are quantity discounts offered by the suppliers at different lot sizes purchases, i.e. purchase price of inventory varies at different quality levels; the tabular method is used to determine economic order quantity.

GRAPHICAL METHOD

Ordering cost is postulated to vary inversely with order size. EOQ is determined at the point of intersection of carrying cost and ordering cost curves as presented in the graph below.



Graphical Presentation of Economic Order Quantity

2.6 INVENTORY CONTROL

Inventory control of supervision of supply, storage and accessibility of itemsin order to ensure an adequate supply without excessive oversupply. It can be referred to as internal control, an accounting procedure or system designed to promote efficiency or assure the implementation of a policy or safeguard assets or avoid fraud and errors, etc.

Kohler defined inventory control as the control of merchandise, raw materials, work-in-progress, financial goods and supplies on hand by accounting and physical matters. According to Glantier, inventory control is concerned with establishing and maintaining optimum inventory levels.

According to Gordon Carson, inventory control is the process whereby the investment in materials and parts carried in stock is regulated, within pre-determined limits set in accordance with the inventory policy established by the management.

In general sense, inventory control is a method designed by the top level of management of a company. It requires a strategic decision to be taken for its effective implementation. Its proper implementation is the responsibility of the store manager.

In an academic perspective, inventory control is a method to identify those stocks of goods, which can be used for the production of finished goods. It shall be supported by a schedule which gives details regarding opening stock, receipt of raw-material, issue of materials, closing, stock and scrap generated.

Inventory control means to monitor the stock of goods for a specific time period, stock of goods are placed at some particular location. It means maintaining the inventory at a desired level. The desired level keeps on fluctuation as per the demand and supply of goods.

Point conveyed the board meaning of inventory control

1. It mainly focuses on location, storage, recording the quantity and accounting for the amount of inventories.
2. It helps to supply the inventories to different departments or units whenever the demand requisition is raised.
3. It keeps a record of inventory issued at a specific place.
4. It provided prompt and proper service to all concerned units.
5. Helps to maintain inventories at lowest costs.
6. It bifurcation high value and low value stock of goods.
7. It also avoids over stocking and under stocking of inventories.

2.6.1 ACHIEVEMENT OF INVENTORY CONTROL

The inventory control can be achieved by:

1. Purchasing items of the right quantity, at the right place and at right time.
2. Providing a suitable, secure and sufficient place for storage.
3. Developing a proper inventory identification system.
4. Maintaining an up to date record keeping
5. Making proper requisition procedure.

2.6.2 IMPORTANCE OF INVENTORY CONTROL

1. Inventory control protects a company from fluctuations in demand of it, product.
2. It enables a company to provide better services to its, customers.
3. It keeps a smooth flow of inventory and aids in continuing services operations.
4. It checks and maintains the right stock and reduced the risk of loss.
5. It makes effective use of working capital by avoiding over stocking.
6. It helps to maintain a check on less of inventory due to carelessness or pilferage (stealing).
7. It facilitates cost accounting activities.
8. It avoids duplication in ordering of stock

2.6.3 INVENTORY CONTROL METHODS

Inventory control method is used in ordering point system (also called fixed size ordering system) and refers to the stock quantity to prompt the order to be released. The method of inventory control is widely used and forms the basis for understanding other method processes as well as manual and visual environment. The determinant of when to order is a continuous inventory system which is the re-order point, the inventory level at which a new order is placed is re-order level.

Re order point also called ROP for short and order point called on for short, can be obtained by summing the safety stock quantity to the quantity consumed during the purchased lead time (the period of time taken from releasing an order to receiving the ordered item).

In there, a period is a consistent unit of time used for planning Depending on the supply chain; it may be an hour, day, week or month. The important point is to maintain consistency throughout the calculations reorder point requires the definition of these terms.

- Forecast demand per period (D)- how much we expect to use and sell.
- Supply lead time (LTS)- time expressed in periods between submitting an order and receiving delivery.

- Planned order size (Q)- normal quantity inventory we plan to order each time.
- Safety stock(SS)- Target stock on hand just before we

Receive an order.

Review time (R) – time interval expressed in periods between reviews of stock levels to determine whether to place an order.

Process lead time (LTD) – time expressed in periods from receipt of goods to their being available to the customers.

These derives

Effective lead time (ELT) = LTS + LTP + $\frac{1}{2}$ R

Lead time demand (LTD) = ELT X D

Reorder point (ROP) = SS + LTD

Order up to level = ROP + Q

Each time the stock in to be reviewed, the following are counted.

Stock on hand – Read stock on the shelf.

Stock on order – The total outstanding order from the supplies

Back- orders – Any stock ordered by the customers.

These derives.

Effective stock = stock on hand + stock on order – back orders

Orders are places if, effective stock ≤ ROP

The amount ordered in

ROP + Q – effective stock

2.6.4 METHODS OF DETERMINING REORDER POINT

A crucial activity for planners into when to decide to place an order. There are a number of reorder method that can be adopted. Although most computer system is based on the materials requirement planning (MRP) method, these are other method that planners can use.

Reorder point method

Two – bin technique

Time phased order point method.

REORDER POINT METHOD

This method is based on the principle that the order has to occur at a specific time when the items will be received just prior to a university level which gals below the safety stock level. Calculation used for reorder point method in n fellows

Reorder point = (forecasted daily use x lead time days) + safety stock.

TIME PHASED ORDER POINT METHOD

This method diggers from the order point methods as it allows planners to make amendment for dependent demand such as particular customer requirement. The calculation used for this method is as follows:

Time phased order point = independent demand during load time

\+ Dependent demand during load time

\+ Safety stock.

TWO BIN TECHNIQUE

This method requires a manual version of the reorder point technique. The two bin techniques requiresthat there are two bins. The first bin contains a quantity of material that can be used without any replenishment ordering. The second bin contains the material that is needed during the lead time for the replenishment order in received the material in divided into quantities for the two bins and the begins again.

2.6.5 OTHER INVENTORY CONTROL METHODS IN HOSPITALS

1. PHYSICAL COUNTING:

According to Justin Johnson, sample counting is the process of counting only a portion of the company's inventory same companies use sample counting to check inventory between full physical counts on their only means of physical inventory counting.

Physical inventory is a process where business physically counts its entire inventory. The business may need to count inventory so component path of inventory can be restocked.

Institutions may use several different tactics to minimize the disruption coursed by physical inventory. This includes.

1. Inventory services provide quick court of inventory and minimize shutdown time.
2. Inventory control system software can speed the physical inventory process.
3. A perpetual inventory system tracks the receipt and use of inventory, and calculation the quantity on hand.

The manager of the unit in responsible for ensuring the annual physical inventory is properly performed, inventory valuation methods are appropriate and

adjustment are entered in the university accounting system on a timely same. In addition, the manager of the unit in responsible for ensuring that segregation of duties is maintained throughout the inventory process to promote the safeguarding of the asset, protection of employees and objective reporting of inventory.

PHYSICAL COUNTING PROCEDURE

In a business that does not have accurate inventory order, it is necessary to periodicallyconduct a complete count of the inventory. This is usually done at the end of the reporting period procedure for physical counting includes;

1. Order count tags – orders a sufficient number of two-part count tags should be sequentially numbers, so that they can be individually tracked as part of the counting process.
2. Review inventory: Review the inventory several days in advance of the scheduled inventory count, if there are missing part numbers or appear to be difficult to count, notify the warehouse staff to make the necessary corrections.
3. Pre-count inventory: Go through the inventory several days in advance and count any items that can be placed in sealed containers and mark the quantity on the marking tape. This makes the counting task much easier

during the actual count. If a seal is broken, then a counting team will know that they need to re-court the contents of a container.

4. Complete data entry: If there are any remaining data entry transactions to be completed, do so before the physical inventory count begins. This includes transactions for issuances from the warehouse, returns to the warehouse, and transfers between bin locations within the warehouse.
5. Notify outside storage locations: If company, have any outside storage facilities of third-party locations that hold company inventory on consignment, notify them that they should count their inventory on hand as of the official count date and forward this information to the warehouse manager.
6. Freeze warehouse activities: Stop all deliveries from the ware house and also segregate all newly-received goods where they will not be counted. Otherwise, the inventory-records will be in a state of flux during the inventory count, and so will not be entirely reliable.
7. Instruct count teams: Assemble two person teams to count the inventory and instruct them in their counting duties. Their duties involves having one person count inventory while the other person makes downthe information as count tag. One copy of the tag in affixed to the inventory while the team retains the other copy.

8. Issue tags: An inventory clerk issues blocks of count tags to the count teams. Each team is responsible for returning a specific numeric range of count tags, whether or not the tags are used. Maintaining control over all count tags endures that lost tags will be investigated promptly.
9. Assign count areas: Assign a specific range of bins to each counts team. Note there locations with a highlighter on a map of the warehouse. The inventory clerk should maintain a master list of which areas of the warehouse have been counted, and which team have been assigned to each area.
10. Count inventory: One person on each team counts a specific item within a bin location and then the other marks the bin location, item description, part number on a count tags. The team affixes the original copy to the tag to the inventory item and retains the copy.
11. Verify tags: Upon completion of a count are, each court team returns to the inventory clerk, who verifies that al tags were returned. If there are more warehouse areas to be counted, assign a new area to the count teams and issue them new blocks of count tags as necessary.
12. Enter tag information: Entre the information on the count tags into an online data entry form. Once data entry is completed, print a report showing all tag numbers entered, sorted by tag number, and look for any gaps in the number.

Investigation any numbering gaps found. This will ensure that all count tags issued were included in the file.

13. Numbering gaps found. This will ensure that all count tags issued were included in the file.

2.**LAST IN, FIRST OUT (LIFO)**

LIFO is considers the last unit arriving in inventory as the first one sold. The assumption here is that the issued out material in assumed to be last in purchased (received) goods. As a result of the above the closing stocks unit are valued at the oldest unit costs available. This method is useful during the time of inflation, as materials acquired previously or which are valued at the current price of recently purchased goods is at a lesser price assumed to be valued at the most recent price of purchased goods.

CHARACTERISTICS OF LIFO

- Cost are matched with income
- Product cost is based on current \prices and as such could be said to be more realistic.
- Stocks (ie closing stocks) are valued at oldest purchased price of material.
- In period of inflation, profit measured for tax purposes will neglect actual tax to be paid.

- This method is not recommended by SSAP and as such not acceptable to Inland Revenue.

3. FIRST IN, FIRST OUT (FIFO)

This method is based on the assumption that the oldest purchased goods are sold or issued out first and the most recently most recently purchased goods are the closing stockbalance.

CHARACTERS OF FIFO

- It is good representation of sound store keeping whereby oldest stocks are issued out first.
- Unrealized profit or losses does not arise, since material cost in matched with the actual price of purchasing such material.
- The closing stock valuation is based on price of material purchased.
- This method is acceptable to Inland Revenue and is recommended by SSAPA.

4. COLD CHAIN SYSTEMS

Many pharmaceutical products are sensitive biological substances that progressively lose their potency. The loss of potency is much faster when the product is exposed to temperatures outside the recommended range. All losses of

potency are permanent, irreversible and cumulative. This means that is a temperature sensitive product is exposed severed times it may lose it potency completely due to cumulative damage. It is necessary to have a cold-chain system is place to ensure that products are stored and transported is a validated and verifiable way to retain the integrity of the product up to time of administration.

5. COMPUTERIZED DRUG CONTROL

Computer are being used in increasing numbers is the pharmaceutical industry and hospitals. As micro-processors become more powerful, reliable, and less expensive we can expect the proliferation of this technology with increasing use by even very small pharmaceutical establishments.

Computer systems are used is a wide variety of ways in a pharmaceutical establishment such as, maintenance of quarantine systems for drug composites, control of significant steps is dosage form, control of laboratory functions, management of warehousing and distribution activities. Computer systems may control one or more of these phases, either briefly or as part of a highly automated integrated complex.

2.6.6 SEGREGATION OF DUTIES IN PHARMACY WHEN COLLECTING DRUGS

Segregation of duties means separating the record keeping function from the operational responsibility of that activity and from those who exercise physical control over the records.

Accounting specialists to the medical progress in lays down the separation of record keeping and control of assets to prevention of fraud. Unfortunately, employees can embezzle assets for which they are responsible because they can conceal their actions simply by manipulating the supporting records i.e. by fraudulently enclosing checks and posting adjustments to the patent computer account or large card.

The scope of pharmacy practice includes more traditional roles or functions such as compounding and dispensing of medication and also includes more modern service related to health care, including clinical service, reviewing medications for safety and efficiency and providing drug information pharmacist, therefore, are the expects on drug therapy and are the primary health professional who optimize medication use to provide patients with positive health out causes.

1. Ordering of Drugs:

According to the remote health atlas, drugs and related pharmaceutical items required go clients are ordered either by prescription for individual clients or as bulk supply. Drugs prescription for individual clients are ordered using rural prescriptions, where applicable, supply of drugs in Dose Administration Aids in ordered by notation on the prescription. Ordering in bulk supply is based on standard Drug list (SDL) which is an agreed list of pharmaceuticals, the list includes both mandatory items which must be stocked is all government health institutions and non-mandatory items which health institutions may opt to holds or not hold as site.

2. Receiving Stock:

When pharmaceutical supplies are delivered to health institutions, the person signing the receipt of the delivery much checks the consignment note against the number of items that are delivered. These items are placed is drug storage room or secure area not accessed by the public until items are able to be unpacked. When unpacking the orders, items must be checked they include,

- Packing slip on delivery
- Expiry date of stock
- Viability of stock where packing may be damaged

- Maintenance of cold chain where appropriate.
- If discrepancies are noted, check the items not available and items request from, if items is not listed, contact the supplying agencies.
- When unpacking the drugs in drug storages room, stock should be:
    - Rotated and items with the longest expiry date placed at the rear.
    - Placed against the correct name tag on the shelf.

3. Dispensary of Drugs:

A dispensary distributions medication to patients as orders or recommendation from health care practitioners. At a dispensary, trained staff can process written orders for medication, which may arrive electronically if the system is connected to such systems. They can confirm the medication and dosage,prepare it and package it appropriately with directions for use. Additionally, the Drug Dispensary is integrated with inventory tracking to ensure your practices hasa sufficient supply of medications.

2.7 DIFFERENCE BETWEEN INVENTORY MANAGEMENT AND INVENTORY CONTROL

Inventory management focuses on getting inventory to the right places at the right times and inventory control focuses on using that inventory most effectively to keep costs down.Hoggman and Gunder tried to distinguish between inventory

management functions involved the development and administration of policies, systems and procedures which will minimize total cost relative to inventory decisions and related functions such as customer service requirements, purchasing traffic, etc, viewed in that prospective inventory management is broad in scope and affect, a great number of activities. While inventory control activities might involve the maintenance of inventory records and reports, the initiation of material requisition of purchase as well as accounting control over inventory transactions. Inventory control functions may include special staff activities such as the development and evaluation of alternatives, inventory problems and evaluation of existing inventory system and procedures.

Inventory management focuses on three things;

1. Correct placement of resources
2. Quick, inexpensive product re-ordering
3. Efficient product receiving and storage.

Inventory control focuses of these things

1. Cutting purchases of slow moving product
2. Keeping up with changes in demand to avoid over stock
3. Avoiding product spoilage by efficiently using inventory.

2.8 SYSTEMS INVOLVED IN INVENTORY

There are two most commonly used inventory systems they are:

1. Replacement system
2. Fixed order quantity system

REPLACEMENT SYSTEM: Under this system the quantity to be ordered is not fixed. Instead ordering time and maximum stock level for each material are fixed. There are frequent reviews of the stock. The quantity ordered in decided based on the lead time of the material, maximum stock level and the stock held on the data of review.

FIXED ORDER QUANTITY SYSTEM: The quantity to be ordered is fixed under this method. Re-orders are made once the stock reaches a certain pre-determined level called Re-order level. This is typically fixed based on the average consumption during the lead time plus some bigger stock. The best way to determine thefixed quantity to be ordered would be using the concept of EOQ. The concept is designed in a manner to ensure that the overall inventory cost are lowest. In other words, EOQ is that quantity level to be ordered each time so as to keep the inventory costs to the minimum.

2.9 HOW TO ENSURE INVENTORY CONTROL AND MANAGEMENT

1. Establish and outline operations process for service providers Draw up standard operation procedure, detailing warehouse operation process, warehouse inventory system process as well as documentation process.

2. Establish inventory visibility t each of the location through MIS reports:

Draw up list of report and MIS data for all locations and ensure they are mailed to a central desk in the inventory team for daily review. The inventory team leader should analyze daily reports and highlight any non-conformity and resolve them as well as update the management.

3. Initiate daily stock count procedure to be carried out and report back to inventory desk.

4. Monthly audit and inventory count should be implemented.

5. Central inventory team to be responsible for ensuring review of all report and controlling inventories.

Being present during physical stock audit on quarterly or half yearly basis in important.

2.10 HOW AUDIT PROCESS WORKS

Except for daily cycle counts, all other cycle counts entails counting 100% of all the stocks by stopping all transaction during the counting period system transaction are also frozen until the count is completed.

Inventory system throws up count with numbers, description and location number. The operator goes to the location, counts the quantity available and updates the list, which is then fed into the system. The system economizes the physical quantity with system quantity and throws up discrepancy report, which is further worked to tally and adjust inventory.

SUMMARY

Inventory is a necessary evil that every organization would have to maintain for various purposes. Optimum inventory management is the good of every inventory planner. Over stocking or under stocking both have impact on the financial and health of organization as well as effect organization opportunities.

Inventory holding is resorted to by organizations as hedge against various external and internal factors, as precaution, as opportunity, as a need and for speculative purposes.

Inventory control is a critical part of your business, even if one servicing their customers. Over supply or under supply may cause the storage and accessibility of items to be inefficient to prevent fraudand errors.

CHAPTER THREE

RESEARCH DESIGN AND METHDOLOGY

3.1 RESEARCH DESIGN

According to Campbell and Stanley, the design of a research comprises the various procedures and layouts adopted for the empirical analysis carried out in the study. The design adopted in this study is consistent with those usually adopted in most standard educational research.

There are various types of research design used in educational research. The prominent ones that are in use in this study includes

a. The experimental design
b. The ex-post factor design
c. The correlation design
d. The historical design

Experimental design is that type of design in which the variables used in the research are manipulated by the researcher. The variable that are manipulated are called independent or exogenous variables while variable receiving effects of the manipulations are called the dependent variables. Ex-post factor design involves the collection of any information that is already in place and such data are

therefore not directly generated by the researcher. In correlation design, it attempts to explore relationships to make predictions. Historical design, is to called, verify, synthesize evidence to establish facts that defend or refute your hypothesis, it uses primary sources, secondary sources and lots of qualitative data sources such as logs, diaries, official records, reports etc. the limitation is that the sources must be both authentic and valid.

3.2 SOURCES OF DATA

To ensure maximum co-operation to achieve the objective of this research data for these study, two sources of data where used, they are

Primary Sources of Data

The primary data for this research work was collected by using or utilizing two components of survey research which are responses from the questionnaires and short personal interaction with the hospital personnel.

Secondary Sources of Data

The secondary data are those which are already been collected by some person and already computed from the record provided by the hospital including literature publication like textbooks which were used for relevant literature review.

3.3 AREA OF STUDY

The study was carried out in University of Nigeria Teaching Hospital, Ituku-Ozala, Enugu.

3.4 POPULATION

By population, we mean all elements under investigation that is, it is the collection of all member of a well-defined clan, people, organization, the population of this under this analytical framework, the population of this study comprises all government health institutions in Nigeria but due to time constraints and cost, most research was carried out in UNTH.

The population of the study is made up of pharmacist and nurses. However, the population is restricted to those practicing in the hospital.

3.5 DETERMINATION OF SAMPLE SIZE

The statistical technique used in determining the sample is the Yaro Yamane formulae, the formula is given by

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

Where n = the sample size

N = total population size

e = level of significance or limit of tolerate error (0.05)

I = a constant unit

Using the population of 120 and applying the above formula the sample size is stated thus:

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

$$n = \frac{120}{1+120(0.05)^2}$$

$$n = \frac{120}{1+120(0.0025)}$$

$$n = \frac{120}{1+0.3}$$

$$n = \frac{120}{1.3}$$

n = 92.31 = 92

3.6 RESEARCH INSTRUMENTS

The major instrument used in data collection were copies of questionnaire administered to the staff of UNTH in addition to the structured interviews scheduled or conducted

3.7 RELIABILITY/VALIDITY OF RESEARCH INSTRUMENTS

The reliability of the instrument used cannot be over emphasized due to the direct personal inter-survey verifying to a great extent, some of the information supplied in the questionnaires and responses collected from different staff. The validity shows that bias and prejudice were reduced as information supplied by one respondent stands to be verified by those supplied by other respondents and also the work was verified by the supervisor.

3.8 SAMPLE AND SAMPLING TECHNIQUE

The research study is aimed at appraising the management and control of inventory (drugs) in government health institutions using, UNTH Enugu as a case study, thus the sample organization. The sample object under investigation shall be drug inventory in UNTH.

It also follow that this study adopts the systematic sampling techniques for the empirical analysis of the data used in the study. The samples are analyzed at random based on the answer or responses computed from the questionnaires.

3.9 ADMINISTRATION OF RESEARCH INSTRUMENT

Questionnaire and personal surveys and interviews constitute the main operational tools and instruments designed in line with the objectives of the study as state in

chapter one. The structure of the questionnaire consist several open ended questions aimed at getting drug inventory data from UNTH.

The purpose of this is to ensure that the respondents have maximum freedom to express their feeling on the type of data expected from them. The responses from the various respondents shall be treated with strict confidentiality.

3.10 METHOD OF DATA ANALYSIS

In order to appraise the management and control of inventory (Drugs) is Government Health Institution with reference to UNTH, the parameter statistical testing tool Z test was used to test hypothesis about the difference between the groups, the formula for Z-test statistical tool used is

$$Z = \frac{X_1 - X_2}{\frac{S_1^2 + S_2^2}{N_1 + N_2}}$$

X_1 and X_2 are the two groups of samples.

S_1 = Standard deviation of population1

S_2 = Standard deviation of population2

N_1 = Size of sample from population 1

N_2 = Size of sample from population 2

A five likert scale was used to award point to each specific question responded by the respondents. The favorable statements are scored as follows;

Strongly Agreed	(SA)	=	4
Agreed	(A)	=	3
Disagreed	(D)	=	2
Strongly Disagreed	(SD)	=	1
No Opinion	(No)	=	0

3.11 DECISION CRITERION FOR VALIDATION OF HYPOTHESIS

This is based on comparing between calculated Z-test and the tabulated value of Z-test. If the Z-test calculated is greater than the tabulated value in table, the null hypothesis (Ho) is rejected while the alternative hypothesis (Hi) is accepted but if the reverse is the case, the null hypothesis (Ho) will be accepted and alternative hypothesis (Hi) will be rejected.

CHAPTER FOUR

DATA PRESENTATION AND ANALYSIS

4.1 DATA PRESENTATION

This chapter examines the presentation, analysis and interpretation of primary data which were obtained through administered questionnaire. A total number of 92 questionnaires were distributed to Pharmacists and Nurses of University of Nigeria Teaching Hospital, Ituku-Ozalla, Enugu. The proportion of 50 questionnaires to Pharmacists which represents 54 percent of the population size and 42 questionnaires to Nurses which also represents 46 percent of population size.

From an in-depth analysis of the research, 15 point questionnaire statement were raised, distributed and responded by the questionnaires were represented in figures and percentages respectively as thus states in the tables below.

QUESTIONNAIRE 9

Inventory management and control system used by your institution, is very effective and efficient improves the institution's performance.

Table 1

The responses and percentages of responses from respondents to questionnaire nine.

Respondents	**Responses**						**Percentages (%) of Responses**					
	SA	A	D	SD	No	Total	SA	A	D	SD	No	Total
Pharmacist	27	11	9	5	2	50	27.17	10.86	8.69	5.43	2.17	54
Nurses	22	16	2	5	0	42	21.74	16.30	2.17	6.44	0	46
Total						92						100

Source: field survey 2013

From table 1 above, those who strongly agree and agree equal to 76 percent, those who disagree and strongly disagree equal to 22 percent. The no opinion is equal to 2 percent, which gives a total of 100 percent. Therefore, inventory management and control system used by institutions is very effective and efficient improves the institution's performance.

Questionnaire 10

Inventory management and control helps to make timely decisions and appropriate actions towards smooth operation of the pharmacy.

Table II

The responses and percentages of responses from the respondents to questionnaire Ten.

Respondents	**Responses**						**Percentages (%) of Responses**					
	SA	A	D	SD	No	Total	SA	A	D	SD	No	Total
Pharmacist	18	12	10	5	5	50	19.57	13.04	10.87	5.44	5.44	54
Nurses	24	10	4	2	2	42	26.09	10.87	4.35	2.17	2.17	46
Total						92						100

Source: field survey 2013

From table II above, those who strongly agree and agree equal to 70 percent, those who disagree and strongly disagree equal to 22 percent. The no opinion is equal to 8 percent, which gives a total of 100 percent. Therefore, inventory management and control helps to make timely decisions and appropriate actions towards smooth operation of the pharmacy. From the oral interview with some personnel in the

hospital, it shows that lack of inventory management and control tends to disrupt the operation of the pharmacy.

Questions 11

Management and control of inventory helps to facilitate the smooth and uninterrupted procurement operations.

Table III

The responses and percentages of responses from respondents of questionnaire eleven.

Respondents	**Responses**						**Percentages (%) of Responses**					
	SA	A	D	SD	No	Total	SA	A	D	SD	No	Total
Pharmacist	15	22	4	6	3	50	16.30	23.91	4.35	6.52	3.26	54
Nurses	20	9	6	3	4	42	21.74	9.87	6.52	3.26	4.35	46
Total						92						100

Source: field survey 2013

From table III above, those whose strongly agree and agree equal to 71 percent, those who disagree and strongly disagree equal to 21 percent. The no opinion is equal to 8 percent, which gives a total of 100 percent. Therefore, management and control of inventory helps to facilitate the smooth and uninterrupted procurement

operation. The personal interaction with some personnel of the hospital shows that a well managed and control inventory helps to make procurement operation easier.

Questionnaire 12

Inventory management system keeps track of the purchases, stock, re-order levels, supplies, issues return, billings and expiry of drugs.

Table IV

The responses and percentages of responses from respondents of questionnaire twelve.

Respondents	**Responses**						**Percentages (%) of Responses**					
	SA	A	D	SD	No	Total	SA	A	D	SD	No	Total
Pharmacist	10	25	6	4	5	50	10.87	27.17	6.52	4.35	5.44	54
Nurses	26	10	4	2	0	42	28.26	10.87	4.35	2.17	0	46
Total						92						100

Source: field survey 2013

From table IV above, those who strongly agree and agree is equal to 77 percent, those who disagree and strongly disagree is equal to 18 percent while those with no opinion is equal to 5 percent, which gives a total of 100 percent. Therefore

inventory management system helps to keep track of the purchase, stock, re-order levels, supplies, issues, returned, billings and expiry of drugs.

Questionnaire 13

Inventory management and control ensures the availability of inventory (drugs) when needed.

Table V

The responses and percentages of responses from respondents of questionnaire Thirteen.

Respondents	**Responses**						**Percentages (%) of Responses**					
	SA	A	D	SD	No	Total	SA	A	D	SD	No	Total
Pharmacist	12	16	6	7	9	50	13.04	16.30	6.52	7.61	8.69	52
Nurses	11	24	2	2	3	42	10.86	26.09	2.17	2.17	3.26	46
Total						92						100

Source: field survey 2013

From table V above, those who strongly agree and agree is equal to 66 percent, those who disagree and strongly disagree is equal to 20 percent while those with no opinion is equal to 14 percent, which gives a total of 100 percent. Therefore, inventory management and control ensure the availability of inventory (drugs)

when needed. From the personal interaction with hospital personnel, the inventory management and control ensure that the availability of drugs that is the important ones are always there when needed.

Questionnaire14

Overstockingofdrugsandunderstockingofdrugsbothaffectthefinanceandhealth ofinstitutions.

TableVI

The responses and percentages of responses from respondents of questionnaire fourteen.

Respondents	**Responses**						**Percentages (%) of Responses**					
	SA	A	D	SD	No	Total	SA	A	D	SD	No	Total
Pharmacist	9	17	10	11	13	50	9.78	18.48	10.87	10.86	2.17	52
Nurses	12	19	5	5	1	42	13.04	20.65	5.44	5.44	1.07	46
Total						92						100

Source: field survey 2013

From table IV above, those who strongly agree and agree is equal to 63 percent, those who disagree and strongly disagree is equal is equal to 34 percent, while those with no opinion is equal to 3 percent, which gives the total of 100 percent.

Therefore, over stocking of drugs and under stocking of drugs both affect the finance and health of institutions.

Questionnaire 15

Lack of inventory control leads to calculation of expired drugs with the unexpired drugs, which can lead to death of patients.

Table VIII

The responses and percentages of responses from respondents of questionnaire fifteen.

Respondents	**Responses**						**Percentages (%) of Responses**					
	SA	A	D	SD	No	Total	SA	A	D	SD	No	Total
Pharmacist	20	11	8	7	4	50	21.74	10.86	8.70	7.61	4.35	52
Nurses	27	9	2	4	0	42	29.35	9.78	2.17	4.35	0	46
Total						92						100

Source: field survey 2013

From table VIII above, those who strongly agree and agree is equal to 73 percent, those who disagree and strongly disagree is equal to 23 percent, while those with no opinion is equal to 4 percent, which gives the total of 100 percent. Therefore, lack of inventory control leads to calculation of expired drugs with the unexpired

drugs, which can lead to death of patients. From the personal interaction with hospital personnel, it shows that expired drugs can be very harmful to the body system and counting it alongside with unexpired drugs may cause serious hazard to the health of patient whom the drugs have been dispensed to.

Questionnaire 16

Poor management and control of inventory leads to poor storage system with resultant reduction in efficacy of drugs.

Table VIII

The responses and percentages of responses from respondents of questionnaire sixteen.

Respondents	**Responses**						**Percentages (%) of Responses**					
	SA	A	D	SD	No	Total	SA	A	D	SD	No	Total
Pharmacist	10	25	6	4	5	50	10.87	27.17	6.52	4.35	5.44	54
Nurses	26	10	4	2	0	42	28.26	10.87	4.35	2.17	0	42
Total						92						100

Source: field survey 2013

From table VIII above, those who strongly agree and agree is equal to 76 percent, those who disagree and strongly disagree is equal to 19 percent, while those with

no opinion is equal to 5 percent, which gives the total of 100 percent. Therefore, poor management and control of inventory leads to poor storage system with resultant reduction in efficacy of drugs.

Questionnaire 17

Inventory management and control helps to improve customer satisfaction.

Table IX

The responses and percentages of responses from respondents to questionnaire seventeen.

Respondents	**Responses**						**Percentages (%) of Responses**					
	SA	A	D	SD	No	Total	SA	A	D	SD	No	Total
Pharmacist	27	11	9	5	2	50	27.17	10.86	8.69	5.43	2.17	54
Nurses	20	9	6	3	4	42	21.74	9.87	6.52	3.26	4.35	42
Total						92						100

Source: field survey 2013

From table IX, those who strongly agree and agree is equal to 70 percent, those who disagree and strongly disagree is equal 24 percent, while those with no opinion is equal to 6 percent, which gives the total of 100 percent. Therefore, inventory management and control helps to improve customer's satisfaction.

Questionnaire 18

Due to lack of inventory management and control, stock out may cause interruption of services provided by the hospital.

Table X

The responses and percentages of responses from respondent to questionnaire eighteen.

Respondents	**Responses**						**Percentages (%) of Responses**					
	SA	A	D	SD	No	Total	SA	A	D	SD	No	Total
Pharmacist	12	16	6	7	9	50	13.64	16.30	6.52	7.61	9.78	54
Nurses	11	24	2	2	3	42	10.86	26.09	2.17	2.17	3.26	42
Total						92						100

Source: field survey 2013

From the table X above, those who strongly agree and agree is equal to 66 percent, those who disagrees and strongly disagree is equal to 21 percent, while those with no opinion is equal to 13 percent, which gives the total of 100 percent. Therefore, due to lack of inventory management and control, stock out may cause an interruption of services provided by the hospital.

Questionnaire 19

Poor quality of inventory control leads to out of stock of essential drugs in hospital.

Table XI

The responses and percentages of responses from respondents to questionnaire nineteen

Respondents	**Responses**						**Percentages (%) of Responses**					
	SA	A	D	SD	No	Total	SA	A	D	SD	No	Total
Pharmacist	9	17	10	11	3	50	9.78	18.48	10.87	10.86	2.17	54
Nurses	24	10	4	2	2	42	26.09	10.87	4.35	2.17	2.17	42
Total						92						100

Source: field survey 2013

From the table XI above, those who strongly agree and agree is equal to 66 percent, those who disagree and strongly disagree is equal to 30, while those with no opinion is equal to 4 percent, which gives the total of 100 percent. Therefore, poor quality of inventory control leads to out of stock of essential drugs in hospital.

Questionnaire 20

Inventory management and control have a great impact on the prevention of out of stock syndrome that is prevalent in government hospitals.

Table XII

The responses and percentages of responses from respondents to questionnaire twenty.

Respondents	**Responses**						**Percentages (%) of Responses**					
	SA	A	D	SD	No	Total	SA	A	D	SD	No	Total
Pharmacist	20	11	8	7	4	50	21.74	10.86	8.70	7.61	4.34	54
Nurses	22	16	2	5	0	42	21.74	16.30	2.17	5.44	0	42
Total						92						100

Source: field survey 2013

From the table XIII above, those who strongly agree and agree is equal to 71 percent, those who disagree and strongly disagree is equal to 25 percent, while those with no opinion is equal to 4 percent, which gives the total of 100 percent. Therefore, inventory management and control have a great impact on the prevention of out of stock syndrome that is prevalent in government hospitals.

4.2 TESTING OF HYPOTHESES

The hypotheses were tested using data collected from questionnaires distributed to population sample.

HYPOTHESIS ONE

Proper management and control of inventory has significant effect on effective and efficient services delivery in hospitals.

TABLE 1: Responses from Respondents

RESPONDENTS	**RESPONSES**					
	SA	A	D	SD	NO	Total
Pharmacist	20	12	8	6	4	50
Nurses	10	4	12	6	4	42
Total						92

Source: field survey 2013

Table II

Mean Computations of pharmacist responses to test hypotheses

	X	**F**	**FX**
Strongly Agree	4	20	80
Agree	3	12	36
Disagree	2	8	16
Strongly Disagree	1	6	6
No Opinion	0	4	0
Total		50	138

Source: field survey 2013

Mean $X_1 = \frac{FX}{N} = \frac{138}{50} = 2.76$

TableIII

Computationofstandarddeviationofpharmacistresponsestotestthehypotheses

	X	F	$X - X_1$	X_1	X_1^2	$F(X_1)^2$
Strongly Agree	4	20	4 – 2.76	1.24	1.5376	30.752
Agree	3	12	3-2.76	0.24	0.0576	0.6912
Disagree	2	8	2-2.76	-0.76	0.5776	4.6208
Strongly Disagree	1	6	1-2.76	-1.76	3.0976	18.5856
No Opinion	0	4	0-2.76	-2.76	7.6176	30.4704
Total		50				85.1200

Source: field survey 2013

Variance $S_1^2 = \frac{Ef\ (X_1)^2}{N-1}$

$S_1^2 = \frac{85.200}{50-1} = \frac{85.1200}{49}$

$S_1^2 = 1.7371$

$S_1 = \sqrt{1.7371}$

$S_1 = 1.3180$

Table IV

Mean computation Nurses responses to test hypothesis.

	X	**F**	**FX**
Strongly Agree	4	10	40
Agree	3	4	12
Disagree	2	12	24
Strongly Disagree	1	6	6
No Opinion	0	4	0
Total		42	82

Source: field survey 2013

Mean $X_2 = \frac{FX}{N} = \frac{82}{42} = 1.95$

TABLE V

COMPUTATION OF STANDARD DEVIATION OF NURSES RESPONSES TO TEST THE HYPOTHESIS

	X	F	$X - X_2$	X_2	X_2^2	$F(X_2)^2$
Strongly Agree	4	10	4 – 1.95	2.05	4.2025	42.0250
Agree	3	4	3-1.95	1.05	1.1025	4.4100
Disagree	2	12	2-1.95	0.05	0.0025	0.0300
Strongly Disagree	1	6	1-1.95	-0.95	0.9025	5.4150
No Opinion	0	4	0-1.95	-1.95	3.8025	15.2100
Total		42				67.0900

Source: field survey 2013

Variance $S_2^2 = \frac{Ef\,(X_2)^2}{N-1}$

$S_2^2 = \frac{67.0900}{42-1} = \frac{67.0900}{41}$

$S_2^2 = 1.6363$

$S_2 = \sqrt{1.6363}$

$S_2 = 1.2792$

Summary

$X_1 = 2.76$, $X_2 = 1.95$

$S_1 = 1.3180$, $S_2 = 1.2792$

$N_1 = 50$, $N_2 = 42$

Computing the Z-test

$$Z = \frac{X_1 - X_2}{\sqrt{\frac{S_1^2 + S_2^2}{N_1 + N_2}}}$$

$$Z = \frac{2.76 - 1.95}{\sqrt{\frac{(1.3180)^2 + (1.2792)^2}{50 + 42}}}$$

$$Z = \frac{0.81}{\sqrt{\frac{1.737124 + 1.636352264}{50 + 42}}}$$

$$Z = \frac{0.81}{\sqrt{0.03474248 + 0.038960777}}$$

$$Z = \frac{0.81}{\sqrt{0.073703257}}$$

$$Z = \frac{0.81}{0.271483437}$$

Z = 2.98360743090195

Z = 2.98

DECISION

Since the Z calculated value 2.98 is greater than Z critical value 1.98 at on infinite degree of freedom and 0.05 percent level of significance. We reject Ho null hypothesis and accept Hi, alternative hypothesis which states that proper management and control of inventory has a significant effect on effective and efficient service delivery in hospitals.

HYPOTHESIS TWO

Proper management and control of inventory reduces obsolescence and wastages experienced in hospitals.

TABLE 1: Responses from Respondents

Respondent	**RESPONSES**					
	SA	A	D	SD	NO	Total
Pharmacist	20	25	6	5	4	50
Nurses	5	8	10	11	8	42
Total						92

Source: field survey 2013

Table II

MEAN COMPUTATIONS OF PHARMACIST RESPONSES TO TEST HYPOTHESES

	X	**F**	**FX**
Strongly Agree	4	10	40
Agree	3	25	75
Disagree	2	6	12
Strongly Disagree	1	5	5
No Opinion	0	4	0
Total		50	132

Source: field survey 2013

Mean $X_1 = \frac{FX}{N} = \frac{132}{50} = 2.64$

TABLE III

COMPUTATIONS OF STANDARD DEVIATION OF PHARMACIST RESPONSES TO TEST THE HYPOTHESES.

	X	F	$X - X_1$	X_1	X_1^2	$F(X_1)^2$
Strongly Agree	4	10	4 – 2.64	1.36	1.8496	18.4960
Agree	3	25	3-2.64	0.36	0.1296	3.2400
Disagree	2	6	2-2.64	-0.64	0.4096	2.4576
Strongly Disagree	1	5	1-2.64	-1.64	2.6896	13.4480
No Opinion	0	4	0-2.64	-2.64	6.9696	27.8784
Total		50				9.7632

Source: field survey 2013

Variance $S_1^2 = \frac{Ef\,(X_1)^2}{N-1}$

$S_1^2 = \frac{9.7632}{50-1} = \frac{9.7632}{49}$

$S_1^2 = 0.1992$

$S_1 = \sqrt{0.1992}$

$S_1 = 0.4463$

TABLE IV

MEAN COMPUTATION NURSES RESPONSES TO TEST THE HYPOTHESIS.

	X	**F**	**FX**
Strongly Agree	4	5	20
Agree	3	8	24
Disagree	2	10	20
Strongly Disagree	1	11	11
No Opinion	0	8	0
Total		42	75

Source: field survey 2013

Mean $X_2 = \frac{FX}{N} = \frac{75}{42} = 1.79$

TABLE V

COMPUTATION OF STANDARD DEVIATION OF NURSES RESPONSES TO TEST THE HYPOTHESIS

	X	F	$X - X_2$	X_2	X_2^2	$F(X_2)^2$
Strongly Agree	4	5	4 – 1.79	2.21	4.8841	24.4205
Agree	3	8	3-1.79	1.21	1.1025	11.7128
Disagree	2	10	2-1.79	0.21	0.0441	0.4410
Strongly Disagree	1	11	1-1.79	-0.79	0.6241	6.8651
No Opinion	0	8	0-1.79	-1.79	3.2041	25.6328
Total		42				69.0722

Source: field survey 2013

Variance $S_2^2 = \frac{Ef\,(X_2)^2}{N-1}$

$S_2^2 = \frac{69.0722}{42-1} = \frac{67.0722}{41}$

$S_2^2 = 1.6847$

$S_2 = \sqrt{1.6847}$

$S_2 = 1.2825$

Summary

X_1 = 2.64 , X_2 = 1.79

S_1 = 0.4463 , S_2 = 1.2825

N_1 = 50 , N_2 = 42

Computing the Z-test

$$Z = \frac{X_1 - X_2}{\sqrt{\frac{S_1^2 + S_2^2}{N_1 + N_2}}}$$

$$Z = \frac{2.64 - 1.79}{\sqrt{\frac{(0.4463)^2 + (1.2825)^2}{50 + 42}}}$$

$$Z = \frac{0.85}{\sqrt{\frac{0.19918369 + 1.6448025}{50 + 42}}}$$

$$Z = \frac{0.85}{\sqrt{0.0039836738 + 0.039162053}}$$

$$Z = \frac{0.85}{\sqrt{0.0431457268}}$$

$$Z = \frac{0.85}{0.207715494848122}$$

Z = 4.09213573894189

Z = 4,0921

Z = 4.09

DECISION

Since Z – calculated value 4.09 is greater than Z-critical value 1.98 at an infinite degree of freedom and 0.05 percent level of significance. We reject Ho null hypothesis and accept Hi alternative hypothesis which states that proper management and control of inventory reduces obsolescence and wastages experienced in hospitals.

HYPOTHESIS THREE

There is a relationship between inventory control and stock out experienced in hospitals

TABLE I

Responses from respondents

Respondent	**RESPONSES**					
	SA	A	D	SD	NO	Total
Pharmacist	18	12	10	5	5	50
Nurses	6	5	20	8	3	42
Total						92

Source: field survey 2013

Table II

MEAN COMPUTATIONS OF PHARMACIST RESPONSES TO TEST HYPOTHESES

	X	**F**	**FX**
Strongly Agree	4	18	72
Agree	3	12	36
Disagree	2	10	20
Strongly Disagree	1	5	5
No Opinion	0	5	0
Total		50	132

Source: field survey 2013

Mean $X_1 = \frac{FX}{N} = \frac{133}{50} = 2.66$

TABLE III

COMPUTATIONS OF STANDARD DEVIATION OF PHARMACIST RESPONSES TO TEST THE HYPOTHESES

	X	F	$X - X_1$	X_1	X_1^2	$F(X_1)^2$
Strongly Agree	4	18	4 – 2.66	1.34	1.7956	32.3208
Agree	3	12	3-2.66	0.34	0.1156	1.3872
Disagree	2	10	2-2.66	-0.66	0.4356	4.3560
Strongly Disagree	1	5	1-2.66	-1.66	2.7556	13.7780
No Opinion	0	5	0-2.66	-2.66	7.0756	35.3780
Total		50				87.2200

Source: field survey 2013

Variance $S_1^2 = \frac{Ef\,(X_1)^2}{N-1}$

$S_1^2 = \frac{87.2200}{50-1} = \frac{87.2200}{49}$

$S_1^2 = 1.78$

$S_1 = \overline{1.78}$

$S_1 = 1.3342$

TABLE IV

MEAN COMPUTATION NURSES RESPONSES TO TEST THE HYPOTHESIS.

	X	**F**	**FX**
Strongly Agree	4	6	24
Agree	3	5	15
Disagree	2	20	40
Strongly Disagree	1	8	8
No Opinion	0	3	0
Total		42	87

Source: field survey 2013

Mean $X_2 = \frac{FX}{N} = \frac{87}{42} = 2.07$

TABLE V

COMPUTATION OF STANDARD DEVIATION OF NURSES RESPONSES TO TEST THE HYPOTHESIS

	X	F	$X - X_2$	X_2	X_2^2	$F(X_2)^2$
Strongly Agree	4	6	4 – 2.07	1.93	3.7249	22.3494
Agree	3	5	3-2.07	0.93	0.8641	4.3245
Disagree	2	20	2-2.07	0.07	0.0049	0.0980
Strongly Disagree	1	8	1-2.07	-1.07	1.444	9.1592
No Opinion	0	3	0-2.07	-2.07	4.2849	12.8547
Total		42				48.7858

Source: field survey2013

Variance $S_2^2 = \frac{Ef\ (X_2)^2}{N-1}$

$S_2^2 = \frac{48.7858}{42-1} = \frac{48.7858}{41}$

$S_2^2 = 1.1893975609561$

$S_2 = \sqrt{1.1893975609561}$

$S_2 = 1.0908$

Summary

X_1 = 2.66 , X_2 = 2.07

S_1 = 1.3342 , S_2 = 1.0908

N_1 = 50 , N_2 = 42

Computing the Z-test

$$Z = \frac{X_1 - X_2}{\sqrt{\frac{S_1^2 + S_2^2}{N_1 + N_2}}}$$

$$Z = \frac{2.66 - 2.07}{\sqrt{\frac{(1.3342)^2 + (1.0908)^2}{50 + 42}}}$$

$$Z = \frac{0.59}{\sqrt{\frac{1.78008964 + 118984464}{50 + 42}}}$$

$$Z = \frac{0.59}{\sqrt{0.0639314270857143}}$$

Z = 9.2286

Z = 9.23

DECISION

Since the Z- calculated value 9.23 is greater than Z-critical value 1.98 at an infinite degree of freedom and 0.05 percent level of significance. We reject Ho null hypothesis and accept Hi alternative hypothesis which states that there is a relationship between inventory control and stock out experienced in hospitals.

4.3 TABULATION OF RESULT

HYPOTHESIS ONE

Respondent	X	SD	N	Z-calculated	z-critical	Decision
Pharmacist	2.76	1.3180	50			Accept Hi
				2.98	1.98	
Nurses	1.95	1.2792	42			

HYPOTHESIS TWO

Respondent	X	SD	N	Z-calculated	z-critical	Decision
Pharmacist	2.61	0.4463	50			Accept Hi
				4.09	1.98	
Nurses	1.79	1.7825	43			

HYPOTHESIS THREE

Respondent	X	SD	N	Z-calculated	z-critical	Decision
Pharmacist	2.66	1.3342	50			Accept Hi
				9.23	1.98	
Nurses	2.07	1.0908	42			

CHAPTER FIVE

SUMMARY OF FINDINGS, CONCLUSION AND RECOMMENDATIONS

5.1 SUMMARY OF FINDINGS

The pharmacy is one of the most extensively used therapeutic facilities of the hospital and one of the few areas where a large amount of money is spent on purchases on a recurring basis. These emphases the need for planning, designing and organizing the pharmacy in a manner that results in the efficient and effectiveness of clinical and administrative services.

Management and control of inventory in health institution helps to facilitate and manage the drug inventory on a day to day basis. There ensures that there is adequate stock of the required item so that an uninterrupted supply of all essential items are maintained. The system helps to keep track of the purchaser, stock, re-order levels, supplies, issues, returns, billings and expiry of drug, the various decisions and appropriate actions towards smooth operation of the pharmacy which leads to the satisfaction of customers.

The empirical analysis of data in the study revealed the following, which were in line with the previous studies reviewed earlier on in the study.

1. Inventory management and control system used, is very effective and efficient in the improvement of institution's performance.
2. Inventory management and control helps to make timely decision ad appropriate action towards smooth operation of institution.
3. Inventory management system keeps track of the purchases, stock,re-order levels, supplies, issues, returned, billings and expiry of drugs.
4. Inventory management and control ensures the availability of inventory (drugs) when needed.
5. The finance and health of a health institution are both affected by over stocking and under stocking of drugs.
6. Proper management and control of inventory reduce obsolescence and wastages experiences in hospitals.
7. Poor management and control of inventory leads to poor storage system with resultant reduction of efficacy of drugs.
8. Inventory management and control improves customer satisfaction.
9. Poor inventory control leads to out of stock of essential drugs in hospitals.
10. There is a strong relationship between inventory control and stock-out experienced in hospitals.

5.2 CONCLUSION

Drug inventories are a significant part of the total composition of the current assets of UNTH.due to the large size of inventories maintained by UNTH ,a considerable amount of fund in required to be committed to them. It is in the course of this background that the institution should device a system of inventory management and control so as to enable it manage inventory efficiently and effectively in order to avoid obsolescence and wastages. It should guide against the care of over stocking of drugs and under stocking of drugs inventory.

5.3 RECOMMENDATION

The following Recommendation have been suggested based on the findings in this study

1. Employers should be enlightened on the management and control system for an effective and efficient improvement of institution's performance.
2. A proper inventory management system should be used for tracking of data and audit trail of lost charges.
3. Due to the amount of funds committed to the institution, it should strive to avoid situation of over stocking and under stocking of drugs, so as to prevent wastages and obsolescence.

4. Monitoring and implementation mechanism should be applied with appropriate sanctions. Such sanction must be applied against fraud and theft of inventory.
5. In order for institutions to improve in their storage system, proper management and control of inventory should be implemented.

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APPENDIX I

Department of Accountancy

Caritas University

Amorji-Nike Emene

Enugu State

18th June, 2013.

Dear respondents

RESEARCH QUESTIONNAIRE

I am a final year student of the above mentioned institution. I am required to carry out a research project on the Management and Control of Inventories (Drugs) in Government Health Institutions as a partial fulfillment for the award of B.sc degree in the Department of Accountancy.

This study is extended to examine the actual problems associated with the management and control of inventory (drugs) in an institution. The results would enable me effectively access the influence of inventory management and control and your institution is one of the selected case for this study. Kindly give us your full co-operation as this will be a great assistance in completion of this study.

All information provided would be treated with strict confidence and for the purpose of the project work only.

Yours faithfully,

OffokansiOgechukwuJ.

(Researcher)

APPENDIX II

This section comprises of section A which comprises of personal data and section B contains other information requested of.

INSTRUCTIONS

Please tick (√) against your chosen options for multiple choice questions.

Section A

Individual profile

1. Sex: Male Female

2. Age 20 – 30 31-40 41 and above

3. Marital Status: Married Single

4. Qualification: WAEC/GCE HND/BSC MSC/PHD

5. Position: Pharmacist Manager Accountant

Cashier Other specify _____

6. When were you employed in the institution

Below 5 years

5 – 10

11 – 15

16 – 20

Above 20 years

7. Do you have the knowledge of inventory. Yes No

8. What method of inventory management and control do your institution adapt?

_____

Section B

In this part the option are stated as follows

SA = represents Strongly Agreed

A = represents Agreed

D = represents Disagree

SD = represents Strongly Disagree

		SA	A	D	SD	No
9	Inventory management and control system used by your institution, if very effective and efficient improves the institution's performance.					
10	Inventory management and control help to make timely decisions and appropriate actions towards smooth operation of the pharmacy					
11	Management and control of inventory helps to facilitate the smooth and uninterrupted procurement operations					
12	Inventory management system keeps track of the purchase, stock, re-order levels, supplies, issues, returns, billing and expiry of drugs					
13	Inventory management and control ensures the availability of inventory (drugs) when needed.					
14	Over stocking of drugs and under stocking of drug both affect the finance of and health of institution					
15	Lack of inventory control leads to mis-calculation of expired drugs that might lead to death of patients					
16	Poor management and control of inventory leads to					

	poor storage system with resultant reduction inefficacy of drug.					
17	Inventory management and control helps to improve customer satisfaction					
18	Due to lack of inventory management control, stock out may cause an interruption of services provided by the hospital.					
19	Poor quality of inventory control leads to out of stock of essential drugs in hospitals.					
20	Inventory management and control have a great impact on the prevention of out of stock syndrome that is prevalent in government hospitals.					
21	Proper management and control of inventory has a significant effect on effective and efficient service delivery in hospitals					
22	Proper management and control of inventory reduce obsolescence and wastages experience in hospitals.					
23	There is a relationship between inventory control and stock out experienced in hospitals.					