# ST MARY'S UNIVERSITY

# SCHOOL OF GRADUATE STUDIES

AN ASSESSMENT OF THE FACTORS INFLUENCING INVENTORY CONTROL; THE CASE OF POPULATION SERVICES INTERNATIONAL ETHIOPIA.

BY

DANIEL DEMISSIE

JANUARY, 2015

ADDIS ABABA, ETHIOPIA

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# LIST OF ACRONYMS AND ABBREVATIONS

EOQ                 Economic Order Quantity

GIA                 Global International Audit

HR                  Human Resource

ISA                 International Standard of Auditing

JIT                 Just in Time

SCD                 Supply Chain & Distribution

SPSS                Statistical Package for Social Sciences

PSI/Et              Population Services International Ethiopia

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# ABSTRACT

*The purpose of this study was to assess the factors influencing inventory control in Population Services International Ethiopia. The various factor influencing inventory control were broken into bureaucratic procurement procedure, carrying cost ,stock audit practice ,stock record practice and staff skill & experience. The particular objective that were analyzed include; evaluation of the effects of procurement procedure to the effectiveness of inventory control, examination of the effect of high inventory carrying cost to the effectiveness of inventory control, determination of the effects of stock audit practices to the effectiveness of Inventory control, analysis of the effects of poor stock record practice to effectiveness of inventory control, and examination of the effects of staff skill & experience to the effectiveness of inventory control. The research adopted descriptive study design. A stratified random sampling technique was applied to the study. The researcher used a sample size of 30% of the target population to act as the sample size. The researcher used questionnaire to collect data for the research. The questionnaire contained open and closed ended questions and five point Likert scale questions and covered areas of inventory control to come up with good raw data for the research. The collected data were quantitatively analyzed using statistical methods such as SPSS which was commanded to produce frequency tables, graphs and pie charts for effective interpretation. The key findings from the study revealed that: delays in procurement of goods, frequent stock-outs and no use of mathematical model were some of the effects of long bureaucratic procurement procedure. According to the study, some products were over stocked, expired, damage and obsolete that eventually increase carrying cost were some of the effects in inventory control. The study revealed that lack of specific time or date for stock taking exercise and discrepancies between actual and physical stock balances were some of the effects of stock audit practice. The study also revealed that unavailability of fully computerized system all over the organization, lack of specific time or date for posting stock records, lack of adequately trained staff hinders effective performance of the organization. The researcher recommends that cumbersome rules and reliance on rigid rules and policies that slow down procurement process should be avoided; current inventory control practices and procedures need to be reviewed and redesigned. The management should stay up-to-date on inventory carrying cost. Only qualified and adequately trained personnel should be involved in stock control.*

***Key words:*** *Assessment, effectiveness, inventory, inventory control, bureaucracy, carrying cost, stock audit, stock record and staff skill.*

# CHAPTER ONE

# INTRODUCTION

## 1.1 Back ground of the Study

The American Production and Inventory Control Society (APICS) define inventory management as the branch of business management concerned with planning and controlling inventories (Toomey, 2000). Lyson and Gillignham (2003) argue that inventory management involves controlling of stock or inventory levels with the physical distribution function to balance the need for minimizing stock holding and handling costs. Consistently, inventory management is aimed at ensuring that the company is supplied with the right inventories (quantities of inventory) at the right time, in the right places and ensuring optimization of the benefits of holding inventory in the organizations. Inventories are the stock of products a company holds to further its production and sales (Pandy, 2005) they appear in the form of raw materials, work in progress, finished products and supplies maintained by firms to smoothly conduct their business

The problem of inventory has continued to receive much attention in most businesses. Inventory levels of raw materials, semi-finished and finished goods need to be effectively managed to control the cost of inventory (Kotler, 2002). It is common to find the balance sheet of an average company having inventory running to 60% of its current assets as capital tied down (Pandey, 2005). It is for this reason that the management of Population Services International Ethiopia (PSI/Et) through its warehouse manual (2010) have instituted procedures and techniques for the purpose of proper inventory control.

According to Buffa and Salin (1987), there are several reasons for keeping inventory. Too much stock could result in funds being tied down, increase in holding cost, deterioration of materials, obsolescence and theft. On the other hand, shortage of materials can lead to interruption of products for sales; poor customer relations and underutilized machines and equipments.

According to Coyle, Bardi, & Langley (2003), effective inventory flow management in supply chains is one of the key factors for success. The challenge in managing inventory is

1

to balance the supply of inventory with demand. A company would ideally want to have enough inventories to satisfy the demands of its customers- no lost sales due to inventory stock-outs. On the other hand, the company does not want to have too much inventory staying on hand because of the cost of carrying inventory. Enough but not too much is the ultimate objective.

Based on the author's observation and discussion with Supply Chain and Distribution senior officials; PSI/Et reveals Operational Constraints in areas of inventory control/management, information management, and aspects which include high inventory related cost, overstock, under stock, poor documentation, uncertainty of customer demands, Long supplier Leads times, long bureaucratic procurement procedure, and inaccurate procurement needs estimation. Therefore, the mere fact that ineffective inventory control affects virtually the organizational objectives necessitates this type of research work. This paper therefore examines the factors that influence inventory control/management practice of the organization.

## 1.2 Statement of the Problem

Inventory comprises the most significant part of current assets in Population Services International Ethiopia. Inventory accounts almost 60% of its current assent in the balance sheet of PSI/Et. Therefore, due to the relative largeness of inventories maintained by the organization, a considerable sum of an organization's fund is being committed to them. It thus becomes absolutely imperative to manage inventories effectively so as to avoid unnecessary cost and ensure high level of customer service. According to annual stock taking conducted on December 31st, 2013 in the organization, the stock taking report revealed some items are over stocked, leading to high inventory carrying cost. Contrary to over stocking, the annual report also reveals that some critical items were out of stock, leading to hasty buying because of low stock levels. The report claimed that the problem might have been attributed to long bureaucratic procedure and poor internal stock audit practice. The report also revealed the cases of inaccurate recording or poor entering of some data information, which was a good indication of poor inventory control.

Auditors from Global International Auditing (GIA) of Population Services International, on December 31st, 2013 highlighted various observations in the organization's inventory management practice. According to the GIA report over stock and stock out of some crucial items were identified. There was some discrepancy between the information

provided by stock card and the actual physical stock balance. Most of the goods received and issued during the month of December, 2013 had not been posted properly in bin card.

Invariably, the organization must neither keep excess inventories to avoid an unnecessary inventory carrying cost and unnecessary tying down of funds as well as loss in fund due to pilferage, spoilage and obsolescence nor maintain too low inventories so as to meet users demand as at when needed. Therefore, the mere fact that ineffective inventory control affects virtually the organizational objectives necessitates this type of research work.

## 1.3 Research Questions

This Study focused on seeking answer to the following research questions to address the stated problem:

i) What is the effect of long bureaucratic procurement procedure to the effectiveness of inventory control?

ii) What is the effect of stock audit practice to the effectiveness of inventory control?

iii) What is the effect of high inventory carrying cost to the effectiveness of inventory control?

iv) What is the effect of poor stock record practice to the effectiveness of inventory control?

v) What is the effect of staff skill to the effectiveness of inventory control?

## 1.4 Objectives of the study

The study has general and specific objectives.

### 1.4.1 General objective of the study

Considering the strategic importance of inventory to the effective operations of an organization in view of the problem highlighted above, the general objective of this study is to assess the factors influencing the effectiveness of inventory control at PSI/Et.

### 1.4.2. Specific objectives of the study

Specifically, the objectives of the study are:

i)   To evaluate the effects of procurement procedure to the effectiveness of inventory control;
ii)  To examine the effect of high inventory carrying cost to the effectiveness of inventory control;
iii) To determine the effects of stock audit practices to the effectiveness of Inventory control;
iv)  To analyze the effects of poor stock record practices to effectiveness of inventory control; and
v)   To examine the effects of staff skill to the effectiveness of inventory control.

### 1.5 Significance of the Study

Inventories represent a sizeable investment and a potential source of waste that needs to be reviewed regularly and closely reviewed e.g. through perpetual stock taking, periodic reviews also as well as internal and external auditing. Thus an effective inventory control is paramount to ensuring that money is utilized appropriately.

The research findings would hopefully add to the body of knowledge in the area of inventory control for common user items which would help researchers & scholars and be a basis for reference. It will assist the management in ensuring effective inventory control at all times as it will aid those entrusted with decision making to formulate strategies of combating the persistent problem of inventory control in the organization. Lastly for the Researcher, the study not only fulfills the partial requirement for the award of the Degree of Masters of Business Administration but also serve as a basis for further research in the field of inventory control.

### 1.6 Delimitation

Due to the limitation of time, it is impossible for the author to make a longitudinal study, in which the implementation result of the proposed inventory control system can be observed and verified. And this harms the credibility of the study to some extent.

The research is targeted to study inventory control practice of population Services International Ethiopia. PSI/Et with the main actors in inventory management and other treated department is estimated to 128 employees (population size), not reaching out into the other actors in the supply chain network. In other words, the interaction among the actors in the network in terms of inventory control is excluded. And from the supply chain management perspective, the contribution of the study is reduced.

### 1.7 Organization of the Study

Chapter 1: The first chapter highlights the general overview of the study including the background of the study, statement of the problem, research questions, objectives of the study, and significance of the study, along with conceptual framework of the study. The chapter ends with the delimitation/scope of the study.

Chapter 2: This chapter deals with the different theories and models that are related to the subject of this thesis and can be used for the analysis.

Chapter 3: In this chapter, the author presents the research design method applied to this thesis. Furthermore it deals with sources of data and data collection tools. Then the research presents population and sampling techniques, sources of data and data collection tools, data collection procedures, data processing and analysis and validity and reliability of instruments. The chapter ends with the ethical considerations of the study.

Chapter 4: In this chapter, the author presents the data analysis and interpretations. It gives empirical findings and discussions about factors that influence inventory control of the organization to be studied and the major issues that need to be addressed in their inventory control.

Chapter 5: In chapter five, the author presents the summary of the major finding, conclusions, recommendations and areas of further research.

The last part lists the bibliography and appendices used in the thesis.

# CHAPTER TWO

# REVIEW OF RELATED LITERATURE

This chapter explores the different theories and models that are related to the subject of this thesis and can be used for the analysis.

## 2.1 Definition of Inventory

Lysons and Gillingham (2003) defined Inventory as an American accounting term for the value or quantity of raw materials, components, assemblies, consumables, work-in-progress and finished stock that are kept or stored for use as need arises.

(Coyle et al., 2003) defines Inventory as raw materials, work-in-progress, finished goods and supplies required for creation of a company's goods and services. The number of units and/or value of the stock of goods a company hold.

Rick (1998) defines Inventory as piles of money on the shelf and profit for the company or organization. Pandey (2005) added that inventories are classified as current assets because typically they will be sold within the year or during a firm's normal operating cycle if it should be longer than a year for retailing firms, inventories are often the largest and most valuable current assets.

The relevance of these theories to the study is that Inventory is to be seen as the largest investment in assets and represents one of the primary sources of revenue generation and subsequent earnings for an organization, therefore it has to be efficiently and effectively managed to reduce cost and increase profitability in the organization.

## 2.2 Inventory Management

(Coyle et al., 2003) define Inventory management as the management of materials in motion and at rest. The following activities all fall within the scope of inventory management (Wikipedia, 2014) the fine lines between replenishment lead time, carrying costs of inventory, asset management, inventory forecasting, inventory valuation, future inventory price forecasting, physical inventory, available physical space for inventory, quality management, replenishment, returns and defective goods, and demand forecasting.

Balancing these competing requirements leads to optimal inventory levels, which is an on-going process as the business needs shift and react to the wider environment.

Inventory management basically serves two main goals (Reid & Sanders, 2007). First of all good inventory management is responsible for the availability of goods. It is important for running operations that the required materials are present in the right quantities, quality and at the right time in order to deliver a specific level of service. The second goal is to achieve this service level against optimal costs.

## 2.3 Inventory Control

Eni (2001) defines inventory control as the problems of verifying the quantity, the value and the balance of the entire range of materials held in stock, so that it would be easy and possible to give the exact quantities of materials in the store at any given time. It helps the store-keeper (or the inventory controller, as the case may be) to tell how much was ordered (requested for), how many have been used, what is remaining and when to place the next order so that the enterprises would not lack materials to work with at any point in time. Similarly, Sharma (2004), views inventory control as the means by which materials of the correct quantity and quality is made available as at when required with due regard to economy in terms of storage and costs (both ordering and working capital). He also opines that inventory control is the systematic ways of locating; storing and recording of goods in such a way that desired degree of service can be made to the operation shops at minimum ultimate cost.

Kumar & Suresh (2008) argue that effective control on inventory is a must for smooth and efficient running of the production cycle with least interruptions. They proceed with their argument that this is warranted by varying intervals between receiving the purchased parts and transforming them into final products. They further argue that inventory control would ensure adequate supply of products to customers and avoid shortages and ensure timely action for replenishment. Inventory control systems may ensures smooth production & hence no stock-out.

Inventory control aims at providing the following information to the business organizations for effective decision making (Sharma, 2004): Information on the accuracy of stock records and physical quantities, evidence in support of the value of stock shown in

the balance sheet & profit and loss statement, reveal any weakness in the method of inventory keeping, disclose any loss, fraud, or theft in the process of material handling, and identifying deterioration, obsolescence, slow movement and redundancy in the stocks on hand.

Martand (2009) have identified the objectives of inventory control to include: to minimize the costs involved in purchasing, stocking and issuing of the supplies, to reduce the frequencies of ordering for stock items, to decrease pilferage, waste and over stocking, to minimize the investment and fluctuations in Inventories while at the same time providing prompt order filling services for customers, to integrate and deploy within the logistical system the minimum amount of inventory consistent with desired delivery capability and total cost expenditure, to ensure adequate supply of products to customer and avoid shortages as far as possible, to provide a scientific base for both short term & long term planning of materials, and to provide a reserve stocks for variations in lead of delivery of materials.

Good inventory control system offers the following benefits (Clodfelter, 2003):

1. The proper relations ship between sales and inventory can better be well maintained. Without inventory control procedures in place the store department can became overstocked or under stocked.
2. Inventory control systems provide a business with information needed to take markdowns by identifying slow -selling merchandise. Discovering such items early in the season will allow a business to reduce prices or make a change in marketing strategy before consumer demand completely disappears.
3. Merchandise control systems allow buyers to identify best sellers early enough in the season so that reorders can be placed to increase total sales for the store department.
4. Merchandise shortages and shrinkage, can be identified using inventory control systems. Excessive shrinkage will indicate that more effective merchandising controls need to be implemented to reduce employee theft or shoplifting.

According to Arora (2000), the factors to be considered in inventory control include; procurement costs, inventory carrying costs, cost of spoilage and obsolescence, cost of running-out of stock and set-up cost. A good inventory control system minimize the possibility of delays in production that are caused by lack of materials, permits a company

to exercise economics in purchasing, essential for an efficient accounting system is deterrent to people who might steal materials from factory, expedite the production of financial statement, allows for possible increase in output, creates buffer between input and output, insures against scarcity of materials in the market and avoid inventory build-up (Carter, 2002).

Poor inventory control has the following symptoms: high rate of order cancellations, excessive machine downtime due to material shortage, large scale inventories written down because of price decline, distress sales, widely varying rate of inventory losses, large writing down at the time of physical inventory taking, continuous growing inventory qualities, liabilities to meet delivery schedules and even production rate (Menon, 2006).

## 2.4 Inventory Model: The Economic Order Quantity (EOQ) Model

Piasecki (2001) presents an inventory model for calculating optimal order quantity that used the Economic Order Quantity (EOQ) method. He points out that many companies are not using the EOQ method due to poor results received resulted from inaccurate data input. He clarifies that many errors resulted in the calculation of EOQ in the computer software package are due to the failure of the users in understanding how the data inputs and system setup that control the output. He says that EOQ is an accounting formula that determines the point at which the combination of order costs and inventory cost are the least. He highlights that the EOQ method would not conflict with the Just in Time (JIT) concept. In fact, he explains that JIT is actually a quality initiative to eliminate wasted steps, wasted material, wasted labor and other costs; EOQ method is used to determine which components would fit into the JIT model and what level is economically advantageous for the operation

## 2.5 Purchasing and Inventory Performance

According to Susan & Michael (2000), the primary purchasing objectives are to buy materials at the lowest responsive and responsible cost and to ensure adherence to purchasing terms and conditions. Maintaining continuity of supply and consistency of quality are also important objectives that go hand in hand with searching for new products and vendors and developing alternative supply sources. Meeting these purchasing objectives, as a means to improve inventory performance and maintenance productivity,

requires teamwork among inventory, purchasing, and maintenance departments. According to Susan & Michael (2000), improving inventory performance can be accomplished by the following: reducing purchase cycle time, including lead time, developing commodity expertise/specialization, increasing the use of different purchase order types, consolidating purchases, increasing the use of volume discounts, tightening control of purchase order terms and conditions, qualifying vendors, monitoring vendor performance, searching for new products and vendors, developing supplier relationships, and working with vendors to reduce the incidence of past-due deliveries.

Other approaches to improving inventory performance require using different procurement methods, depending on such factors as the types of material or services purchased and whether the purchase is small bid, one time, or repetitive.

## 2.5.1 Bureaucratic Procurement Procedures

Procurement encompasses the whole process of acquiring property and/or services. It begins when an agency has identified a need and decided on its procurement requirement. Procurement continues through the processes of risk assessment, seeking and evaluating alternative solutions, contract award, delivery of and payment for the property and/or services and, where relevant, the ongoing management of a contract and consideration of options related to the contract. Procurement also extends to the ultimate disposal of property at the end of its useful life (Waters, 2004).

As organizations become large and more complex, the authoritarian- paternalistic patter gave way to increased functional specialization with many layers of middle and lower management for coordinating organization effort (Kenneth & Kenneth, 2005). The advantages of bureaucracy are many folds; apart from consistent employee's behavior, it eliminates overlapping or conflicting jobs or duties and behavior of the system is predicable (Osborne and Plastrik, 1997). Despite the above advantages, bureaucratic organization has some significant negative and side effect. Too much red tapes and paper work not only lead to unpleasant experiences but also to inefficient operations (Osborne & Plastrik, 1997). Because employees are treated impersonality and they are expected to rely on rules and policies, they are unwilling to experience individual judgment and they avoid risks.

## 2.6  Inventory Cost

The basic object of inventory management is to maximize customer service through maintaining appropriate amount of inventory with minimum possible cost. There are costs associated with holding all inventories, and the costs go beyond the expenditure of the inventory investment, inventory carrying costs form an interesting concept, representing both accounting costs and economic costs (Goldsby, & Martichenko, 2005). Accounting costs are explicit and call for a cash payment. Economic costs are implicit, not necessarily involving an outlay but rather an opportunity cost.

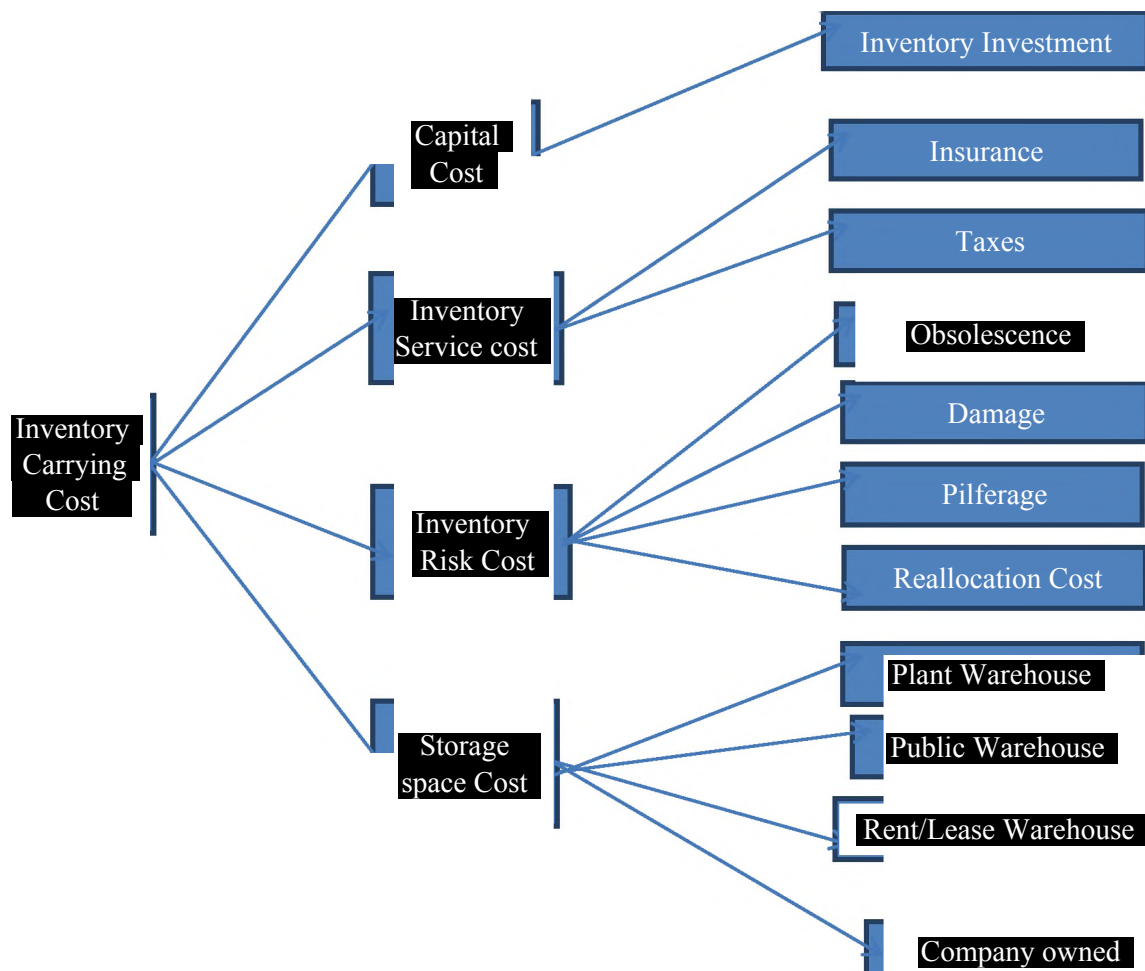The components of inventory carrying costs are illustrated below in Figure 2.1



F igure 2.1 what costs go into inventory carrying costs ?
*Source: (Goldsby, & Martichenko, 2005)*

Goldsby & Martichenko (2005) explain the cost components in Figure 2.1 above comprehensively as following: The capital cost is the single biggest factor of inventory carrying cost. It is opportunity cost; to clarify its sense, just think about what else could be done with the amount of capital if it were not tied up in inventory. Inventory is viewed as an asset on the balance sheet; hence, many state governments impose property tax rates on inventory.

Insurance premiums are paid to provide coverage against loss or damage to inventory. Obsolescence reflects the real possibility that inventory value may decline in the course of being kept. Storage costs in this figure just refer to variable costs of storage. Fixed warehousing costs, which do not change with the volume of inventory maintained are not included in inventory carrying costs but are calculated as warehousing costs in a total logistics cost

## 2.7 Internal Control

Horngren & Harrison (1992) define internal controls as the organization plan and all related measures adopted by an entity to safeguard assets ensure accurate and reliable accounting records promote operational efficiency and encourage adherence to company policies. Internal controls include administrative controls and accounting controls. Administrative controls include the plan of organization methods and the procedures that help managers achieve operational efficiency and adherence to company policies. Accounting controls include the methods and procedures that safeguard assets, authorize transactions and ensure the accuracy of the financial records. Internal controls are policies and procedures established in an organization to authorize transactions in order to ensure the accuracy of the financial records and to provide assurance that organizational objectives will be achieved.

Internal controls include all policies and procedures adopted by management of an entity to assist in achieving their objectives as far as practicable. The controls are aimed at aiding management in carrying on business in an orderly and efficient manner and showing transparency and accountability of any policies in such as stock controls through professional ethics and following routine practices.

Internal control over inventory is important to any business because inventory is the life blood of a merchandiser. Horngren & Harrison (1992) argue that successful companies take great care to protect their inventory.

According to Horngren & Harrison (1992), Elements of good internal control over inventory include: physically counting inventory at least once each year no matter which system is used, maintaining efficiency purchasing, receiving and shipping procedures, storing inventory to protect it against theft damage and decay, limiting access to inventory to personnel who do not have access to the accounting records, keeping perpetual inventory records for high unit cost merchandise, purchasing inventory in economic quantities, keeping enough inventories on hand to prevent shortage situations, and not keeping too large stock pilled, thus to avoid capital tied up.

## 2.8  Knowledge and Skills Possessed the Staff

According to Susan & Michael (2000), people in warehouse (that is, stores) are responsible for the distribution of inventory materials to all storage or using locations. They are also responsible for the physical security and safekeeping of material at all stores locations and for all storekeeping activities, including material receiving, put-away, and material picking and shipping. Other responsibilities include: maintaining accurate inventory records, managing the physical layout of storehouses, including bin location assignments, determining the physical movement and distribution of material throughout the organization, receiving and storing material; issuing stock material in response to a material request from customers, conducting cycle counts, annual physicals, or both, reconciling discrepancies between cycle count and annual physical inventory, developing and operating truck and route schedules for distribution of material, and working with purchasing departments to resolve vendor-related problems with timing, quality, quantity, and delivery.

According to PSI/Et warehouse manual (2010), warehouse officers are the direct custodians of PSI/Et stores and assist in achievement of economy in expenditure on supplies by the application of proper stores accounting, prevention and detection of losses, wastage or misuse of stores and disposing of stores in the most advantageous manner to the organization. The manual therefore recommends that in order to keep costs to the

minimum, PSI/Et should ensure that warehouse staff are properly trained, supervised and allocated for the work they are required to perform.

Lyson and Gillingham (2003) define training as a planned process to modify attitudes, knowledge or skill behavior through learning experience to achieve effective performance in an activity or range of activities. Its purpose in the work situation is to develop the abilities of the individual and to satisfy the current and future human resource needs of the organization. The author further says that employees may be trained internally on the job or externally in a college offering supply chain management courses.

Baily and Farmer (1982) argue that for the supplies function to achieve a superior supply performance, it is necessary to recruit, train and develop personnel with the capacity and motivation to do better work. Qualified staff that is competent and skilled will help the organization to achieve its goals and objectives by being efficient and effective when carrying out their various functions. For an organization to succeed, qualification is therefore a pre-requisite and must be matched with job requirement.

## 2.9  Stock Record Practice

Inventory accuracy defines how well the inventory records, specifically the quantities on hand, match the actual quantities in the storeroom. Accurate records are a prerequisite to effective inventory management. Susan & Michael (2000) accuracy of inventory records is necessary to provide satisfactory customer service, determine replenishment of individual items; ensure that material availability meets repair or project demand, analyze inventory levels and dispose of excess inventory. Bailey and Farmer (1982) argue that stock recording are expected to maintain particulars of receipt, issues and balances remaining in stock for each individual item held in the storehouse daily.

Baily and Farmer (1982) argue that transactions must be posted promptly and correctly to the records if they are to provide accurate up-to-date information which the stock controller needs. If left pending for long, transactions can easily be forgotten and the objective of maintaining stock records will not be met because stock records will be indicating balances that are not real and hence the records will not be reliable. Therefore maintaining accurate and up-to-date information of stock recording is one of the crucial tasks of warehouse personnel.

According to Carter and Price (1993), receipt of goods must be strictly controlled to ensure efficient stores management. Contributing to the function of receipt and inspection of goods, Jessop and Morrison (1994) agree that goods supplied to an organization must be properly looked after. Normally, a certain process of stores recording is followed, which in its natural course forms the basis of stores accounting system. PSI/Et Warehouse Manual (2010) argues appropriate standard records and documents should be used for receipts and inspection of goods.

Jessop and Morrison (1994) argue items in stock represent money and therefore should not be misappropriated, wasted or improperly used. Storekeepers should have full details of the name, designation and specimen signatures of all persons empowered to approve issue notes. Further, issue documents should contain the description and stores code number entered by the user who prepares the document in the first place. According to Carter and Price (1993) specialized control documents have been developed to enable the issue of stock to be successfully monitored and controlled. It is important to ensure that all stock records are updated and that an accurate picture of the total stock situation can be maintained to ensure sufficient supplies of all materials.

Stock control as described by Jessop and Morrison (1994) is the operation of continuously arranging flows of materials so that stock balances are adequate to support the current rate of consumption, with due regard to economy. Stock control documentation therefore is the capture of data relating to stock balances, dues in, dues out, consumption record, forecast requirement, lead-time and economic order quantities (EOQ).

Jessop and Morrison (1994) argue stock records are important when estimating future consumption because past performance acts as a guide. PSI/Et Warehouse Manual (2010) recommends that the basic method of controlling stock by quantity is by means of fixing, for each commodity, stock levels which are recorded in the stock record system and subsequently used as a means of indicating when some action is necessary. Carter and Price (1993) argue that stock records and control are two sections of stores management that have to work very closely together because stock records provide statistical information.

Susan & Michael (2000) argue that stock records provide the management with the information which is used to ensure accountability through stocktaking and stock audit exercise. Jessop and Morrison (1994) argue that records can be posted manually but, where the volume and complexity of the documents handled is of major proportion

mechanical methods are often to be more effective. Manual posting is comparatively slow, there is high risk of filling the wrong detail, and it can be easily misplaced or lost due to multiple handling as compared to computer posting system.

## 2.10    Conceptual Framework

The conceptual framework includes independent variables identified as long bureaucratic procurement practice, inventory audit practice, high inventory carrying cost, inventory stock record practice and staff skill & experience on one hand inventory control as dependent variable. The problem under investigation was inventory control as affected by the identified independent variables. Inventory control is shown on the right side while the independent variables are shown on the left hand side in figure 2.2.
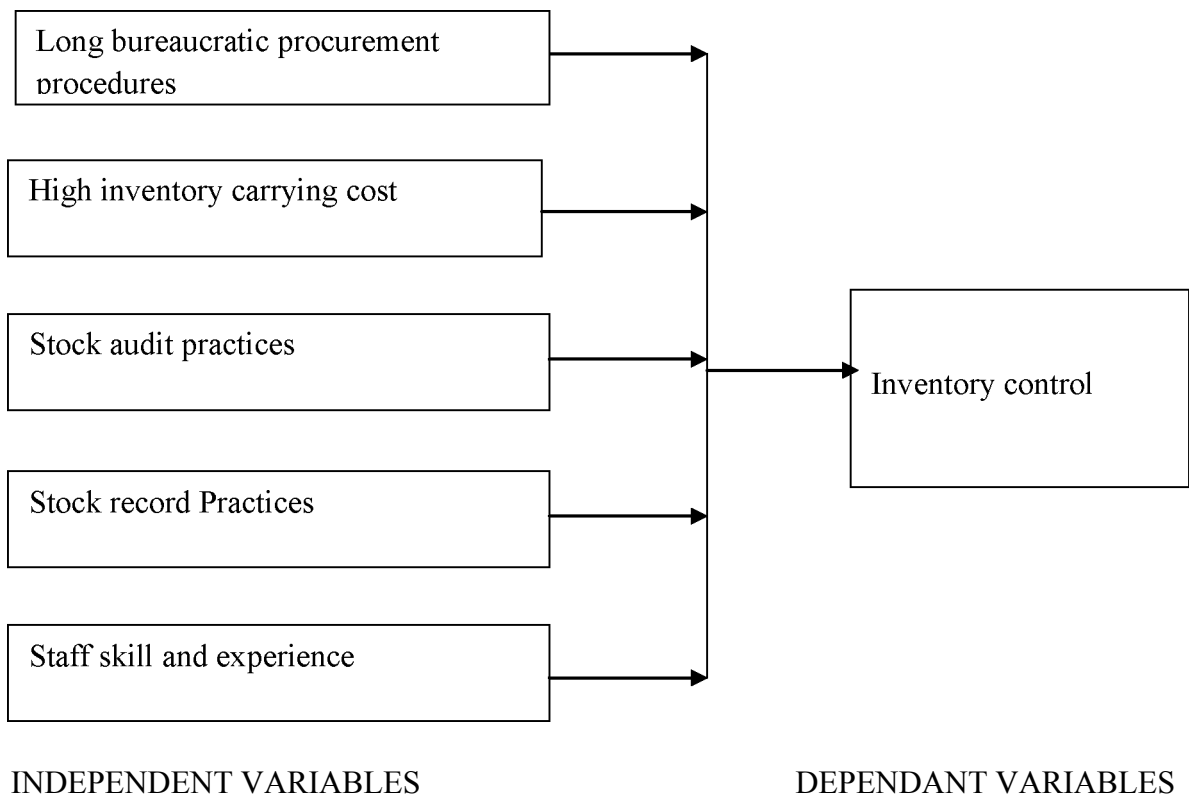


INDEPENDENT VARIABLES                    DEPENDANT VARIABLES

Figure 2.2 Conceptual framework.
*Source: (Author, 2014).*

# CHAPTER THREE

# RESEARCH METHDOLOGY

This chapter describes the methods and procedures that are used in carrying out this research. It deals with the research design, population and sampling technique, sources of data and data collection tools, data collection procedures, validity and reliability of instruments, data processing and analysis and ethical considerations.

## 3.1 Research Design

The study adopted a descriptive research design. According to Mugenda & Mugenda (2003), descriptive research is used to obtain information concerning the current status of the phenomena to describe what exists, with respect to variables or conditions in a situation. Descriptive research design is used in this study since the researcher intended to look at the problem at hand thoroughly to define it, clarify it, and obtain pertinent information that could be of use in assessment of factors that influence inventory control/management. The research conducted through a case study of Population Services International Ethiopia.

## 3.2 Population and Sampling Techniques

### 3.2.1 Population of the Study

Population refers to the group about whom the researcher wants to know more and from whom a sample can be drawn. This is often defined in terms of educational standard, position and occasion time, etc. The study targeted staff in all the nine categories of Population Services International Ethiopia (PSI/Et). The target population from which the information was solicited by the researcher were 128 (one hundred twenty eight) employees involved in controlling inventory or any other related activities in PSI/Et.

### 3.2.2 Sample Size and Sampling Techniques

A sample size is a finite part of a statistical population whose properties are studied to gain information about the whole. The researcher employed a stratified sampling technique

which is a probability sampling technique wherein the researcher divides the entire population into different subgroups or strata, then randomly selects the final subjects proportionally from the different strata. Stratified random sampling was necessary since the study had sub-groups in target population whose response was important in achieving the objectives of the study. The main factor considered in determining the sample size was to keep it manageable enough and also to enable the researcher to derive from it detailed data at an affordable cost in terms of time, finances and human resource (Mugenda & Mugenda, 2003).

Data were collected from the managerial, professional and clerical employees. The researcher took 30% of the target population in proportion to the size of the stratum (categories), since it has been confirmed that such a sample size is adequate for a descriptive survey study (Patton, 2002).

A sample size of 38 respondents was selected from the target population (128). The breakdown of the sample size was as follows:

Table 3.1 Sample size determination of the study

| No | Categories | No of Employees | Sample size (30%) |
|---|---|---|---|
| 1 | Child Survival | 3 | 1 |
| 2 | DCP-STI Project | 3 | 1 |
| 3 | HR and Operations | 31 | 9 |
| 4 | Finance and Grants | 10 | 3 |
| 5 | MULU/MARPS | 45 | 14 |
| 6 | MULU/WORKPLACE | 8 | 2 |
| 7 | Procurement | 5 | 1 |
| 8 | Product SC & D | 10 | 3 |
| 9 | Technical Services | 13 | 4 |
| | **Total** | **128** | **38** |

*Source: (Document survey, December 2014)*

## 3.3 Sources of Data and Data Collection Tools

Both primary and secondary sources of data were used in this research. The researcher collected primary data by administering a questionnaire. The study used closed & open ended questions and five point Likert scale questions. The questionnaire used structured questions, divided into five sections "A", "B", "C" "D", "E" and "F". Section A consisted of the demographical background of respondents. Section B and C referred to the bureaucratic procurement procedures and inventory carrying cost respectively. Section D

and E consisted stock record practices and stock audit practices respectively. Section F consisted of staff skill and experience.

Secondary data were also used from PSI/Et which had readily existed. It was intended to include both internal and external sources like warehouse manual, GIA audit reports, internal and external audit reports depending on the nature and scope of the information needed.

## 3.4 Data Collection Procedures

This was the steps/processes used by the researcher while collecting data using the collection instrument. Structured questionnaire was administered to the main respondents. The questionnaire was delivered by hand to the respondents at their duty stations during working hours personally. It was issued and collected after a week to give respondents enough time to answer the questions.

## 3.5 Data Processing and Analysis

Mugenda and Mugenda (2003) confirm that the main purpose of content analysis is to study existing information in order to determine factors that explain specific phenomenon. To this extent, the responses to the questions were interpreted and put into different specific and relevant categories. Being a descriptive research the data from questionnaire was summarized, edited, coded, tabulated and analyzed using descriptive methods which were illustrated the diverse findings of the study. The descriptive methods used involves; frequencies, percentages and presentations of tables and graphs. Data were analyzed using software program of a statistical package for social sciences (SPSS). The study adopted quantitative data analysis. Information about the scores in a sample was presented in frequency tables, bar graphs and pie charts. All tables, bar graphs and pie charts are clearly labeled and presented so that the reader could rapidly make sense of the information contained in them. The results of the data gave the researcher a basis to make conclusions about the study.

## 3.6 Validity and Reliability of Instruments

The structured questionnaire validity was provided through adequate coverage of the topic under investigation as per the expert advice. According to Mugenda & Mugenda (2003), expert opinion is used to check the content and format of an instrument to judge validity of

the content. The construct validity was ascertained by defining clearly the variables to be measured. According to Mugenda & Mugenda (2003), the test-retest method of assessing reliability of data involves administering the same instrument twice to the same group of subjects. Reliability of the instruments was provided through a test retest conducted in the same organization by using respondents who were not part of the study sample but work in the organization and in positions relevant to the research study.

The questionnaire was subjected to a validity test. Pre testing was done to see the applicability of the tools and seeing how the questionnaire was acceptable to the respondents. Pre testing was done in the product SC &D at Population Services International Ethiopia. After the pre test, alterations were made to the tool.

## 3.7 Ethical Considerations

The study was primarily focused to gather primary qualitative data to analyze the factors influencing inventory control of PSI/Et. The study neither involves any experiment on human subjects nor conducted without the consent of the study participants. Above all, the researcher did not ask the study participants to engage into risks as a result of participating in this study. Besides, informed verbal consent was obtained from the key respondents during data collection. The respondents were given the right to refuse or take part in the study.

All the primary and secondary data collection in the organization was under the permission of the managers and without any offence in ethical rules during the whole research process.

# CHAPTER FOUR

# DATA ANALYSIS AND INTERPRETATIONS

This chapter presents the data analysis and interpretation of the findings. The findings are based on data collected by the use of questionnaire so as to assess factors influencing the effectiveness of inventory control in PSI/Et. The analysis is performed around the objectives for this study; however, other relevant details are added for better presentation of findings.

## 4.1 Response Rate

The researcher made every effort to reach all the relevant respondents in all the nine categories. As stated under methodology, a total of thirty eight (38) copies of questionnaire were distributed, and thirty three (33) retrieved as correctly filled which were subsequently used in the analysis. The table below shows the rate of response.

**Table 4.1 Rate of response**

| No | Categories | Questionnaire Distributed | Questionnaire Responded | Rate of respondents (%) |
|---|---|---|---|---|
|  | Child Survival | 1 | 1 | 100 |
| 1 | DCP-STI Project | 1 | 1 | 100 |
| 2 | HR and Operations | 9 | 8 | 89 |
| 3 | Finance and Grants | 3 | 3 | 100 |
| 4 | MULU/MARPS | 14 | 11 | 79 |
| 5 | MULU/WORKPLACE | 2 | 2 | 100 |
| 6 | Procurement | 1 | 1 | 100 |
| 7 | Product SCD | 3 | 3 | 100 |
| 8 | Technical Services | 4 | 3 | 75 |
| 9 | **Total** | **38** | **33** | **87** |

*Source: (Own survey, December 2014)*

As it can be noted from table 4.1 above, the researcher obtained feedback from thirty three (33) respondents out of the targeted thirty eight (38) respondents across the nine categories of PSI/Et. Child survival, DCP STI project, finance and grants, MULU WORK PLACE, Procurement, and Product SC &D all registered 100% response rate. On the other hand HR and Operations registered 89% response rate, MULU MARPS register 79% response rate and Technical Services registered 75% response rate.

## 4.2 Findings of Demographic Characteristics of Respondents

The findings of demographic characteristics of the sample include: gender, age, position, level of education, and year of service. This aspect of the analysis deals with the personal data on the respondents of the questionnaire given to them. Table 4.2 below shows the details of background information of the respondents in tabular form.

**Table 4.2 Result summary of demographic characteristics of respondents**

| Gender of Respondents | | | | |
|---|---|---|---|---|
| | Frequency | Percent | Valid Percent | Cumulative Percent |
| Male | 25 | 75.8 | 75.8 | 75.8 |
| Female | 8 | 24.2 | 24.2 | 100 |
| Total | 33 | 100 | 100 | |
| **Age Group of Respondents** | | | | |
| | Frequency | Percent | Valid Percent | Cumulative Percent |
| 19-30 Years | 9 | 27.3 | 27.3 | 27.3 |
| 31-40 Years | 21 | 63.6 | 63.6 | 90.9 |
| 41-50 Years | 2 | 6.1 | 6.1 | 97 |
| 50 + Years | 1 | 3 | 3 | 100 |
| Total | 33 | 100 | 100 | |
| **Current Position o:' Respondents** | | | | |
| | Frequency | Percent | Valid Percent | Cumulative Percent |
| Managerial | 5 | 15.2 | 15.2 | 15.2 |
| Non-managerial | 28 | 84.8 | 84.8 | 100 |
| Total | 33 | 100 | 100 | |
| **Educational Background of Respondents** | | | | |
| | Frequency | Percent | Valid Percent | Cumulative Percent |
| Masters | 8 | 24.2 | 24.2 | 24.2 |
| Bachelors | 22 | 66.7 | 66.7 | 90.9 |
| Diploma | 3 | 9.1 | 9.1 | 100 |
| Total | 33 | 100 | 100 | |
| **Service Year of JRespondents** | | | | |
| | Frequency | Percent | Valid Percent | Cumulative Percent |
| Less than 1 Year | 2 | 6.1 | 6.1 | 6.1 |
| 2 to 5 Years | 11 | 33.3 | 33.3 | 39.4 |
| 6 to 10 Years | 10 | 30.3 | 30.3 | 69.7 |
| 11 to 15 Years | 6 | 18.2 | 18.2 | 87.9 |
| 15 + Years | 4 | 12.1 | 12.1 | 100 |
| Total | 33 | 100 | 100 | |

*Source: (Own survey, December 2014)*

As noted in table 4.2 above, the majority of the respondents (75.8%) were male and the remaining 24.2 % were female. This shows that many males participated in the study because in most cases they dominate the handling of inventory in the organization. They have got their own inefficiencies that lead to negative contribution towards inventory control of a given organization.

As shown in table 4.2 above, it indicates that 63.6% of the staffs of PSI/Et were in the age bracket of 31-40 years, 27.3% of the staffs were in the age bracket of 19-30 years, 6.1% of the staffs were 41-50 years and 3.0% of respondents were in the age of above 50 years. However, the research revealed that none of the staff of the organization were under the age of 19 years. This implies that all the respondents were above age nineteen years and could give reliable data for the study.

As depicted in table 4.2 above, from the total thirty three (33) respondents only five respondents (15.2%) were from managerial position while eight four point eight (84.8%) respondents out of 33 were from non-managerial position. This implies that for the credibility of the research participated both managerial and non managerial employees of the organization.

As indicated in table 4.2 above, the majority of the respondents of PSI/Et were bachelor (first degree) holders accounting about 66.7% of the staff. On the other hand 24.2% were second degree holders while 9.1% had other qualification apart from university degree. None of the staff of the organization holds a senior high school certificate. This implies that all respondents acquired knowledge through formal education.

As depicted in table 4.2 above, it shows that 33.3% of the respondent had the experience of 2-5 years of service in the area of inventory control section, 30.3% respondent had the experience in the age bracket of 6 to 10 years of inventory section, 18.2 % of the respondent had the experience in the area of inventory control section for age bracket of 11 to 15 years and 12.1 % had served in the area of inventory control section for more than 15 years. The research also revealed that 6.1 % of the respondent had experienced in inventory control section for less than a year. This shows that more than one third (39.4%) of the respondents are not that much experienced because of working for period of 1 - 5 years.

4.3 Findings of Bureaucratic Procurement Procedure

The findings of bureaucratic procurement procedure of the sample include: experience on long bureaucratic purchase difficulties, frequency of stock out and respondents view on whether long bureaucratic procurement procedure affects inventory control. This aspect of the analysis deals with the review of respondents on the questionnaire about bureaucratic procurement procedure in the organization. Respondents were required to tick according to how they felt about the issues of bureaucratic procurement procedure in the organization. Figure 4.2 to figure 4.4 below show the details of review of the respondents in pictorial form

### 4.3.1  Result summary of whether there were experienced long bureaucratic purchase difficulties

As shown in figure 4.2 below, long bureaucratic procurement procedure related purchase difficulties in Population Service International Ethiopia were reported by 27 of the respondents out of 33 respondents. It was only 6 respondents out of 33 (18.2%) of respondent who were not experienced long bureaucratic purchase difficulties. On the other hand 81.8 *%* of the respondents were experienced long bureaucratic procurement procedure related purchase difficulties that made the purchase of goods difficult.
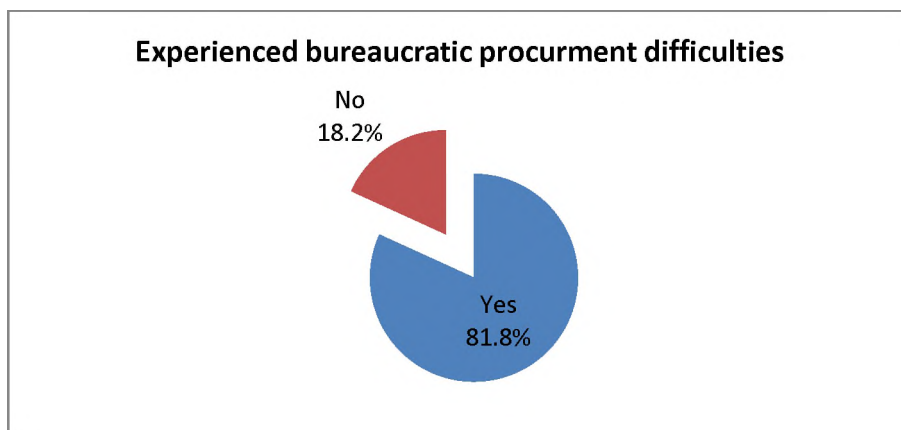


Figure 4.1 Result summary of experienced bureaucratic procurement difficulties
*Source: (Own survey, December 2014)*

The results of the finding are similar with other scholars. According to Burton (1981), the long procedures in procurement have made the purchase of goods and services difficult, as all of them have to follow step by step making the process cumbersome and discouraging, resulting into a lot of inefficiencies and irregularities.

### 4.3.2 Result summary of stock out frequency due to bureaucratic procedure purchase difficulties

As depicted in Figure 4.3 below, 48.5 % of respondents indicated that stock out in the organization due to long bureaucratic procedure purchase difficulties was frequent while 21.2% respondents indicated that stock out was less frequent in the organization. However, 30.3 % of respondent indicated that stock out in the organization is rare.
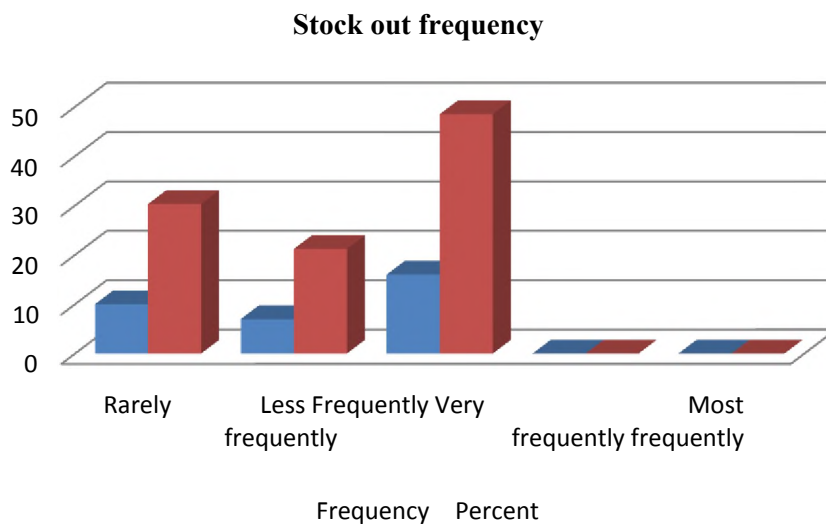
**Stock out frequency**



Figure 4.2 Result summary of stock out frequency due to bureaucratic purchase difficulties
*Source: (Own survey, December 2014)*

The finding implies the long bureaucratic procurement procedure negatively influences inventory control of the organization.

### 4.3.3 Result summary of respondents view on whether long bureaucratic procurement practice affects inventory control

As it can be noted from figure 4.4 below, 60.6% of the respondents strongly agreed with the statement, 18.2% agreed, 4.8% were neither agreed nor disagreed and 6.1% of respondents indicated somewhat disagreed. Finally 6.1% respondents indicated strongly disagreed. Since majority of the respondents (78.8%) agreed with the statement, it implies that long bureaucratic procurement practice affects inventory control the organization and therefore the organization should ensure to avoid long bureaucratic procurement procedure to improve inventory control.
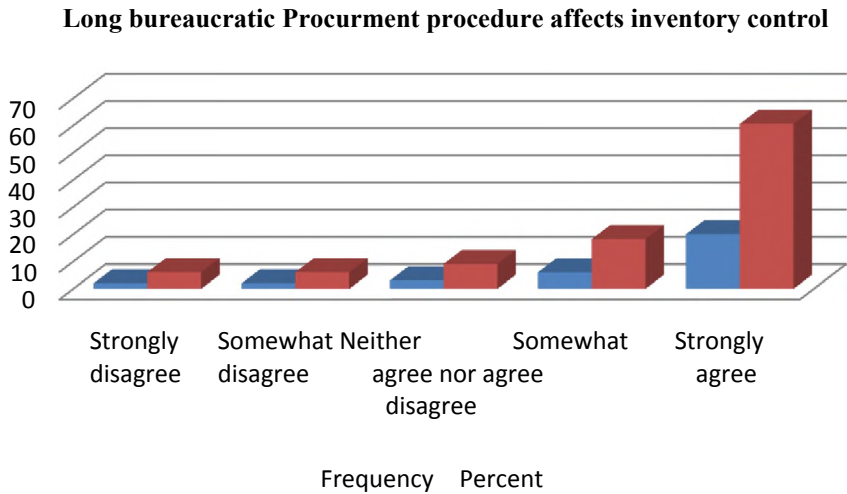
Long bureaucratic Procurment procedure affects inventory control

Figure 4.3 Result summary of long bureaucratic procurement procedure affects inventory control
*Source: (Own survey, December 2014)*

The finding agrees with the Osborne & Plastrik (1997) finding who indicated that bureaucratic organization has some significant negative side effect. According those Scholars, too much red tapes and paper work not only lead to unpleasant experiences but also to inefficient operations.

## 4.4 Findings of Inventory Carrying Cost

The findings of Inventory carrying cost of the sample include: determination of inventory order size, insurance coverage, availability of expired, obsolescence and damaged inventory items in the warehouse, and respondents view on whether carrying cost affects inventory control of the organization. This aspect of the analysis deals with the review of respondents on questionnaires about inventory carrying cost. Figure 4.5 to 4.9 below show the details of review of the respondents in pictorial form.

### 4.4.1 Result summary of the determination of inventory order size

As indicated at Figure 4.5 below, thirty six point four percent (36.4%) of respondents indicated that inventory order size were determined by vehicle capacity, 27.3% of respondents indicated that inventory order size were determined by past experience. On the other hand 33.3% and 3.0% of respondents indicated that inventory order sizes were determined by forecasting and mathematical model respectively.
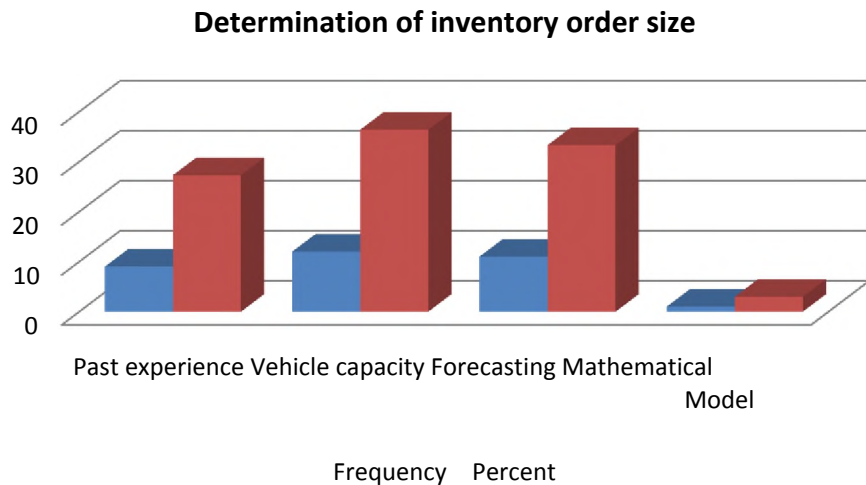
**Determination of inventory order size**



Past experience  Vehicle capacity  Forecasting  Mathematical
Model

Frequency    Percent

Figure 4.4 Result summary of determination of inventory order point
*Source: (Own survey, December 2014)*

The study revealed that the respondents were almost not used mathematical model to determine inventory reorder level of the organization. Thus ordering cost were increased inventory carrying cost.

**4.4.2 Result summary of insurance coverage to inventory items**

As noted from figure 4.6 below, sixty three point six percent (63.6%) of respondents indicated that there was insurance coverage for inventory items. On the other hand 27.3% of respondents indicated that there was no insurance coverage for the inventory items. However, 9.1% of the respondents indicated that they refused to answer whether there was insurance coverage or not for inventory items in the organization.
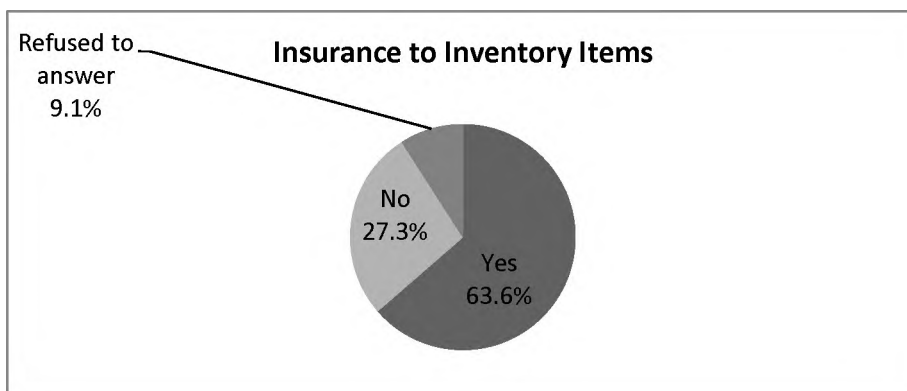


Figure 4.5 Result summary of Insurance coverage to inventory items
*Source: (Own survey, December 2014)*

The study revealed that insurance premium was paid out for those over stocked items which eventually increase carrying cost of the organization.

### 4.4.3 Result summary of expired, obsolescence and damaged inventory items in the warehouse

As it can be noted from figure 4.7 below, seventy eight point eight percent (78.8%) of respondent indicated that there was expired, obsolescence and damaged inventories in the warehouse. On the other hand there were only 21.2% of respondent who were reported as there was no expired, obsolescence and damaged inventory in their warehouse.
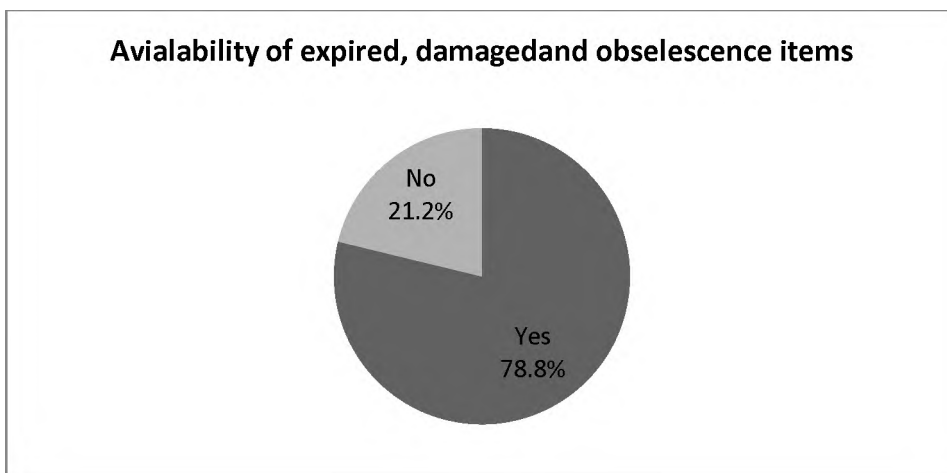


Figure 4.6 Result summary of the availability of expired, damaged and obsolescence items
*Source: (Own survey, December 2014)*

The finding agrees with the Goldsby & Martichenko (2005) finding who indicated that obsolescence reflects the real possibility that inventory value may decline in the course of being kept. Thus a decline in inventory value increases carrying cost.

### 4.4.4 Result summary of inventory over stock in the warehouse

As indicated in figure 4.8 below, seventy two point seven percent (72.7%) of respondent indicated that some items of inventories were over stocked in the organization. On the other hand 27.3 % of respondents reported that inventories were not overstocked in the organization. This shows that the organization capital cost was tied up due to over stock of some items of inventories in the organization.
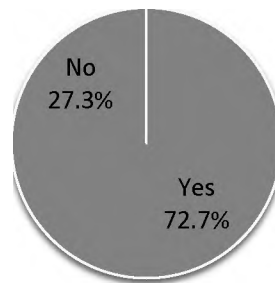
**Inventory overstock**



Figure 4.7 Result summary of inventory over stock
*Source: (Own survey, December 2014)*

The finding agrees with the Goldsby & Martichenko (2005) findings who indicated that money were been tied up on those over stock inventories. According those Scholars, capital cost is the single biggest factor of inventory carrying cost. It is opportunity cost; to clarify its sense, just think about what else could be done with the amount of capital if it were not tied up in inventory.

**4.4.5 Result summary of respondents view on whether high carrying cost affects inventory control**

As it can be noted from the figure 4.9 below, 60.6% of the respondents were strongly agreed with the statement and 24.2% agreed. On the other hand.0% were somewhat disagreed and 9.1% strongly disagreed. However, 3.0% were neither agreed nor disagreed.
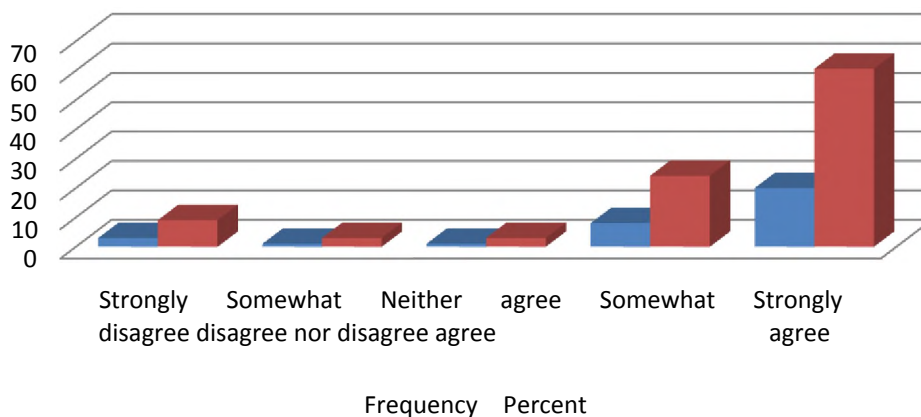
**High carrying cost affects inventory control**



Figure 4.8 Result summary of extent to agree on high carrying cost affects inventory control
*Source: (Own survey, December 2014)*

Since majority of the respondents (84.8%) agreed with the statement, it implies that high carrying cost affects inventory control of the organization and the organization should ensure that inventory carrying cost should kept at a possible minimum level.

**4.5    Findings of Inventory Audit Practices**

The findings of stock audit practice of the sample include: system of stock audit, frequency of stock audit practice, and respondents view on whether stock audit practice affects inventory control in the organization. This aspect of the analysis deals with the review of respondents on questionnaires about inventory audit practices. Figure 4.10 to 4.14 below show the details of review of the respondents in pictorial form.

**4.5.1  Result summary of whether there was stock audit system in the organization**

As it can be noted from figure 2.10 below, 90.9 % respondents indicated that there was stock audit system in their respective organization. On the other hand 9.1% respondents indicated that there was no stock audit system in their organization.
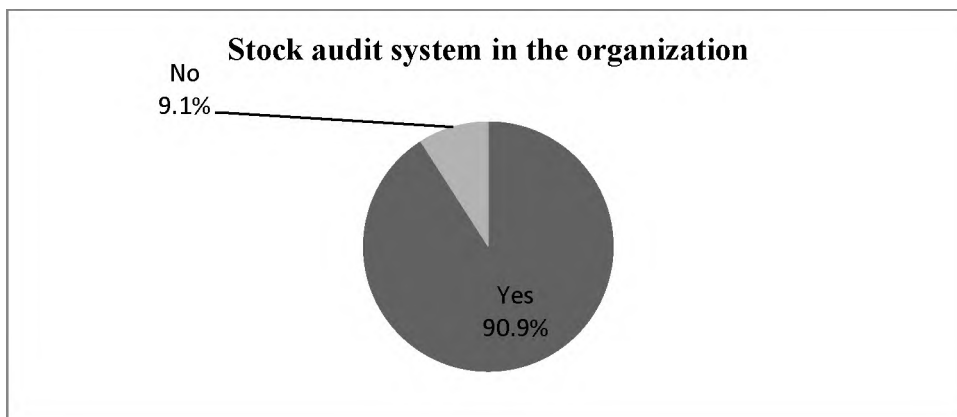


Figure 4.9 Result summary of stock audit system in the organization
*Source: (Own survey, December 2014)*

The result of the finding implies stock taking is not 100 % implemented in the organization which might influences inventory control of the organization

**4.5.2  Result summary of frequency of Stock taking in the organization**

As indicated in figure 4.11 below, the majority of respondents (54.5%) of the respondents reported that they were conducting inventory count on a monthly basis, 15.1% of respondents indicated that they were conducting inventory count on a weekly basis, 6.1%

of respondents indicated that they were conducting inventory count on quarterly basis. On the other hand 6.1% and 9.1% of respondents indicated that they were conducting inventory on biannual and annual basis respectively. However, 9.1 %( three respondents) indicated that there was no stock taking at all.
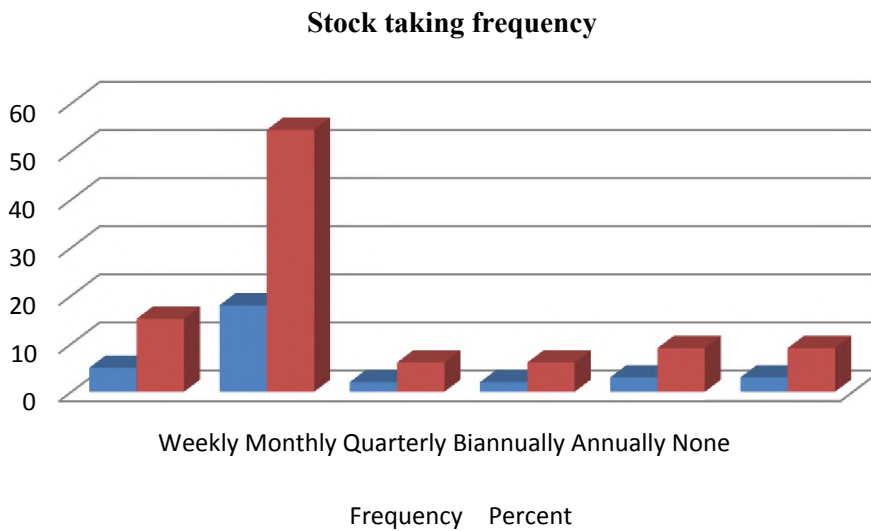
**Stock taking frequency**



Figure 4.10 Result summary of stock taking frequency
*Source: (Own survey, December 2014)*

The finding agrees with the Jessop and Morrison (1994) findings who indicated that there must be a regular stock taking. According to Jessop and Morrison (1994), there must be a regular stock taking to check on surplus, obsolete and obsolescence stock from the warehouse to assist in matching the physical and record balances for efficient working condition and also in harmonizing the discrepancies to reflect the actual position in the store. The study reveals that there is no specific time in which the stock taking exercise should be conducted.

### 4.5.3 Result summary of the frequency of reviewing inventory records and reports

As it can be noted from figure 4.12 below, 30.3 % of respondents indicated that review frequency of inventory records and reports in the organizations were less frequent, 15.2% of respondents indicated that review frequency of inventory records and reports in the organizations ware rare. On the other hand 42.4 % of respondent indicated that review frequency of inventory records and reports in the organization were frequent, 3% and 9.1% of respondents indicated that review frequency of inventory records in the organization were very frequent and most frequent respectively
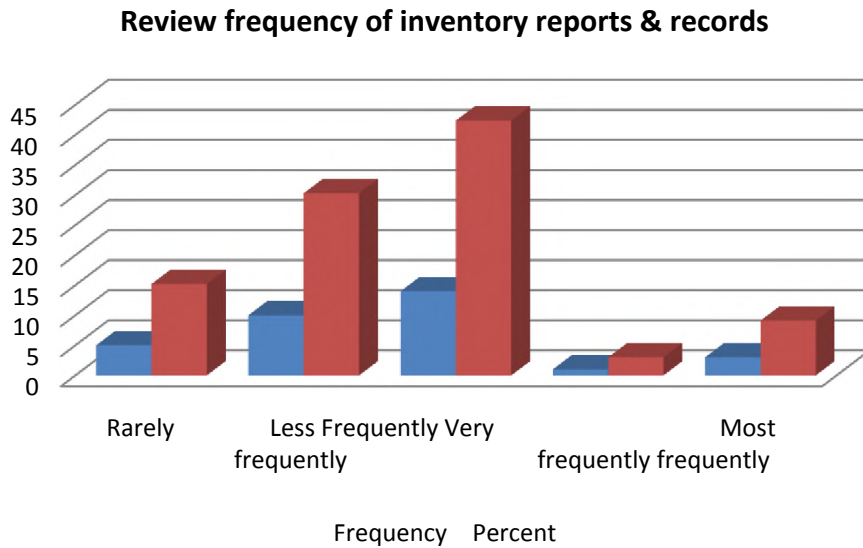
**Review frequency of inventory reports & records**



Frequency    Percent

Figure 4.11Result Summary of the frequency of review inventory records and reports
*Source: (Own survey, December 2014)*

The figure above reveals that there was no specific time in which the inventory record updates and reports reviewing exercise should be conducted.

### 4.5.4  Result summary of whether there were experienced discrepancies between actual and physical stock balance

As indicated in Figure 4.13 below, 78.8% respondents indicated that they were experienced discrepancies between stock card balance and physical count of the stock. On the other hand 9.1% of respondents indicated that there were no experienced discrepancies between stock card balance & physical count.
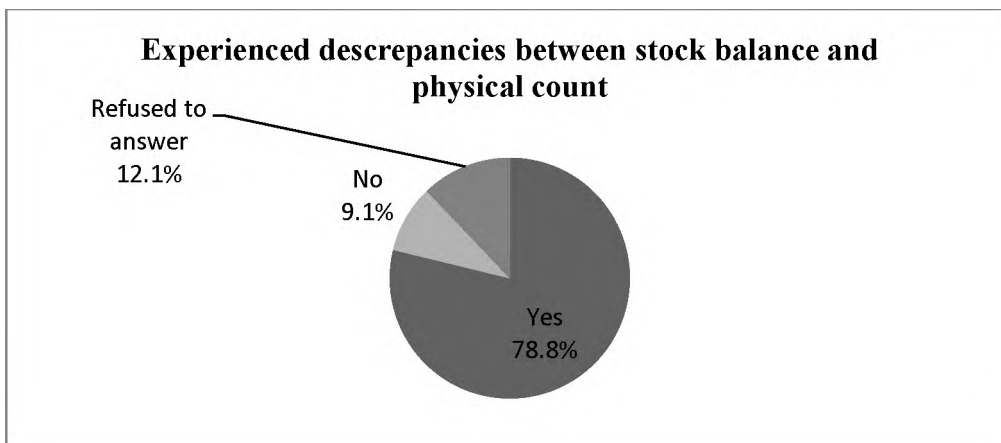


Figure 4.12 Result summary of experienced discrepancies between actual and physical stock balance
*Source: (Own survey, December 2014)*

However, 12.1% of the respondents were refused to answer whether to answer whether there were experienced discrepancies between stock card balance and physical count of the stock. Discrepancies were less likely to occur in cases where stock taking was done more frequently.

## 4.5.5 Result summary of respondents view on whether stock audit practice affects inventory control of the organization

As indicated from the figure 4.14 below, 48.5% of the respondents were strongly agreed with the statement and the other 24.2% of respondents were agreed.
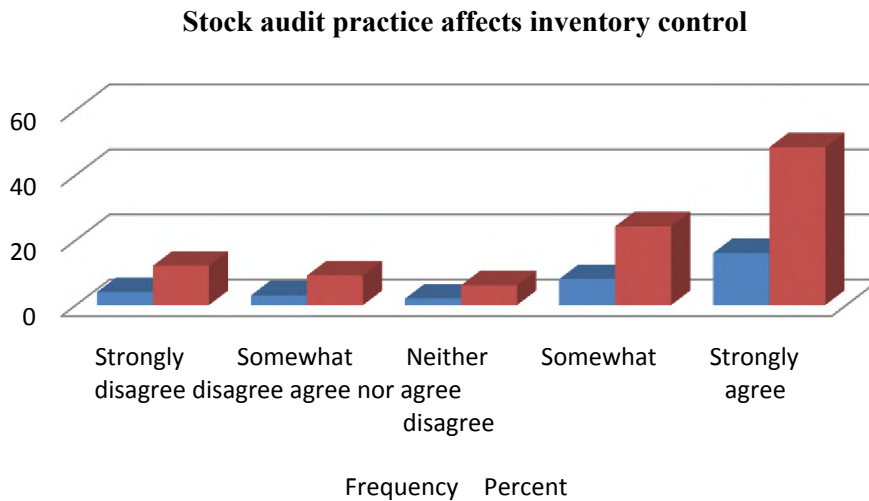


Figure 4.13 Result summary of stock audit practice affects inventory control
*Source: (Own survey, December 2014)*

On the other hand 12.1% and 9.1% of respondents indicated that they were strongly disagree and somewhat disagree with the statement respectively. However, 6.1% were neither agreed nor disagreed. Since majority of the respondents (72.7%) agreed with the statement, it implies that stock audit practice affects inventory control of the organization and the organization has to ensure strong stock audit procedure.

## 4.6 Findings of Stock Record Practice

The findings of stock audit practice of the sample include: inventory record maintenance, nature of inventory record system, frequency inventory record update, level of satisfaction with the current inventory record system and respondents view on whether poor stock record practice affects inventory control. This aspect of analysis deals with the review of

respondents on questionnaire about stock record practices. Figure 4.15 to 4.19 below show the details of review of the respondents in pictorial form.

## 4.6.1 Result summary of whether there was inventory record maintenance in the organization

As it can be noted from figure 4.15 below, all respondents indicated that there was maintenance of inventory record in their respective categories.
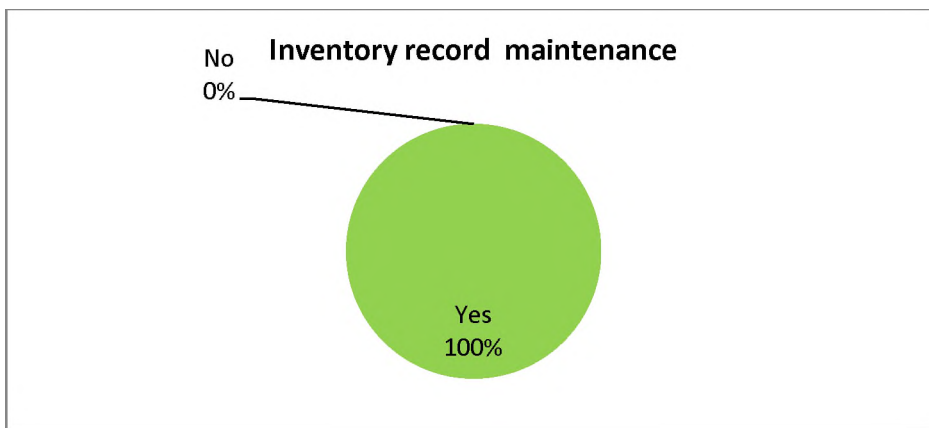


Figure 4.14 Result summary of maintaining inventory record
*Source: (Own survey, December 2014)*

The result of the finding implies that the organization had a policy of maintaining inventory record in all the five categories.

## 4.6.2 Result summary of the nature of inventory record system in the organization

Indeed as shown in Figure 4.16 below, 60.6 *%* of respondents indicated that inventory control posting systems within their respective categories were both manual and computerized. On the other hand 15.2 % of respondents indicated that the nature of inventory record system is fully computerized. However, 24.2 % of respondents indicated that the nature of record system is manual that implies, lack of proper automation of the entire stock control system was indicated as a challenge to proper maintenance of stock records system.

**Nature of Inventory record system**
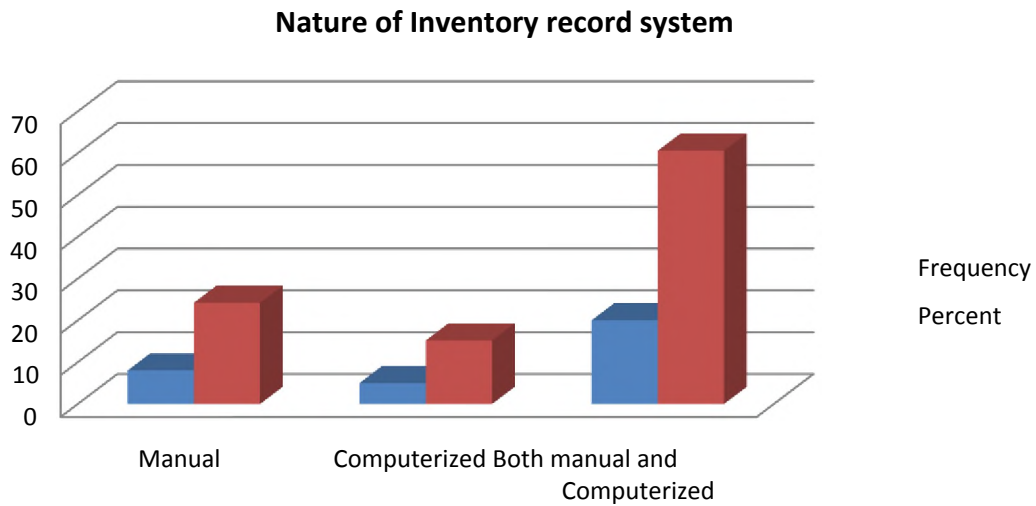


Figure 4.15 Result summary of the nature of inventory record system
*Source: (Own survey, December 2014)*

The result of the finding implies that it is cumbersome to manipulate stock control data without the aid of stock control software. It is clear that the 24.2% of respondents rely on manual system which can result to inaccuracies, errors, delayed reports, poor forecasting & ineffective decision making.

### 4.6.3 Result summary of level of satisfaction with the current inventory record system

As indicated in the figure 4.17 below, 48.5% of respondents were somewhat dissatisfied and 6.1% of respondents were most dissatisfied with the current inventory record system of the organization.

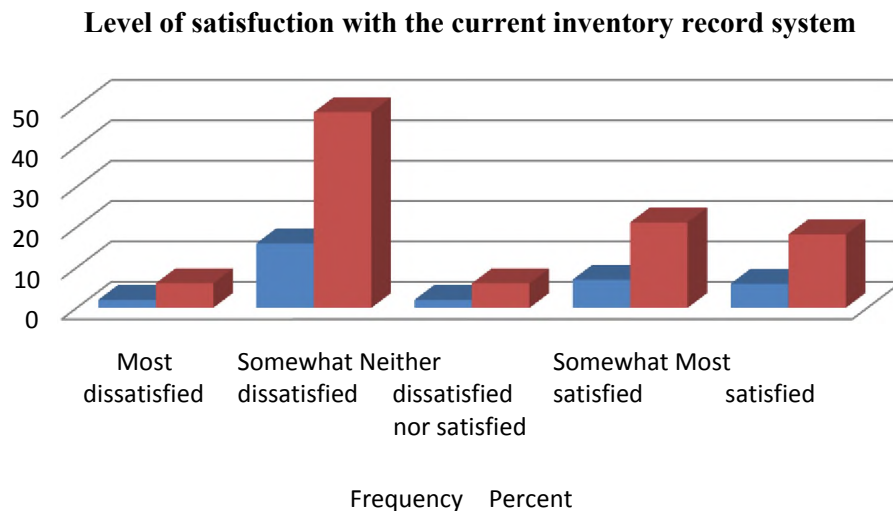**Level of satisfuction with the current inventory record system**



Figure 4.16 Result summary of level of satisfaction with the current inventory record system
*Source: (Own survey, December 2014)*

The level of satisfaction with these systems was low with only 18.2% and 21.2% of respondents reporting were mostly satisfied and somewhat satisfied with current inventory record system respectively. Satisfaction was more commonly reported among respondents in departments that conducted stock taking more frequently. On the other hand 6.1% of respondent indicated that level of satisfaction were neither dissatisfied nor satisfied with the current inventory record system. Basing on the above responses, 54.6% of the respondents were not satisfied with the current inventory record system of the organization.

### 4.6.4 Result summary of frequency of inventory record update in the organization

Indeed as shown in figure 4.18 below, 51.5 % of respondents indicated that the frequency of inventory record update within their respective categories were on monthly basis and 24.2 % of respondents indicated that the frequency of inventory record update were on weekly basis. On the other hand 6.1 % and 18.2% of respondents indicated that the frequencies of inventory record update were on immediately and daily basis respectively.

**Frquency of inventory record update**
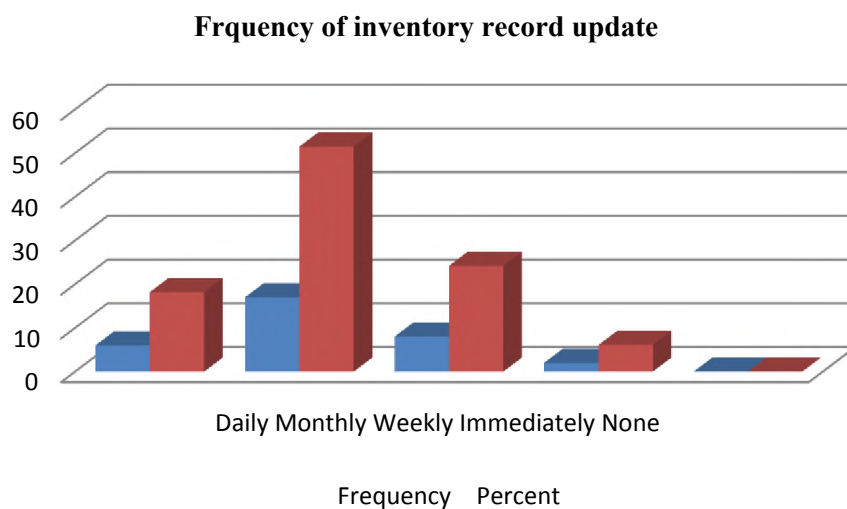


Figure 4.17 Result summary of frequency of inventory record update
*Source: Source: (Own survey, December 2014)*

The figure above reveals that there is no specific time in which the stock recording exercise should be conducted. Jessop and Morrison (1994) had emphasized on the important to design receipt and issuing times and days for good to and from the warehouse in order to give time stock control staff adequate time to do the posting of records.

**4.6.5 Result summary of respondents view on whether poor stock record practice affects inventory control**

As indicated in the figure 4.19 below, 57.6 % of the respondents were strongly agreed with the statement and 24.2% of respondents were somewhat agreed. On the other hand 12.1% and 3.0% of respondents were strongly disagree and somewhat agree with the statement respectively. However, 3.0 % of respondent were neither agreed nor disagreed with the statement.

**Poor stock record practicde affcts inventory control**
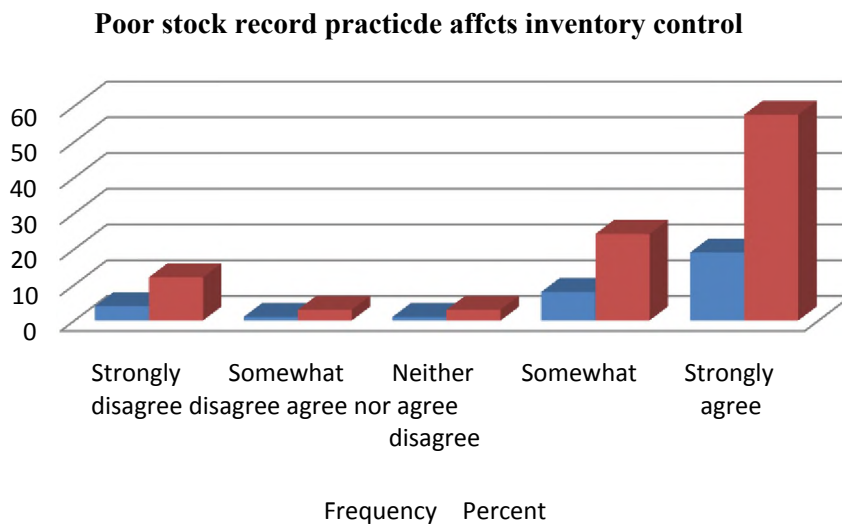


Figure 4.18 Result summary of the extent to agree on poor stock record practice affects inventory
*Source: (Own survey, December 2014)*

Since majority of the respondents (81.8%) agreed with the statement, it implies that poor stock record practice affects inventory control and the organization must ensure the development an excellent /automated stock record system in the organization.

**4.7 Findings of Staff Skill and Experience**

The findings of stock audit practice of the sample include: service years in inventory control section, pre/post employment training on inventory control, level of training and respondents view on whether staff skill and experience affects inventory control. This aspect of the analysis deals with the review of respondents on questionnaires about staff skill and experience. Figure 4.20 to 4.23 below show the details of review of the respondents in pictorial form.

## 4.7.1 Result summary of service year in inventory control

As it can be noted from figure 2.20 below, 42.4% of the respondents had been performing inventory control function for the periods of between 2 to 5 years and 27.3 % had been performing inventory control functions of periods of between 6 to 10 years. On the other hand 12.1% and 6.1% of respondents indicated that they have worked in inventory control functions for periods of between 6 to 10 years and above 15 years respectively. However, 12.1% of respondents reported having worked in inventory control functions for less than 1year.

**Service year in the area of inventory control**
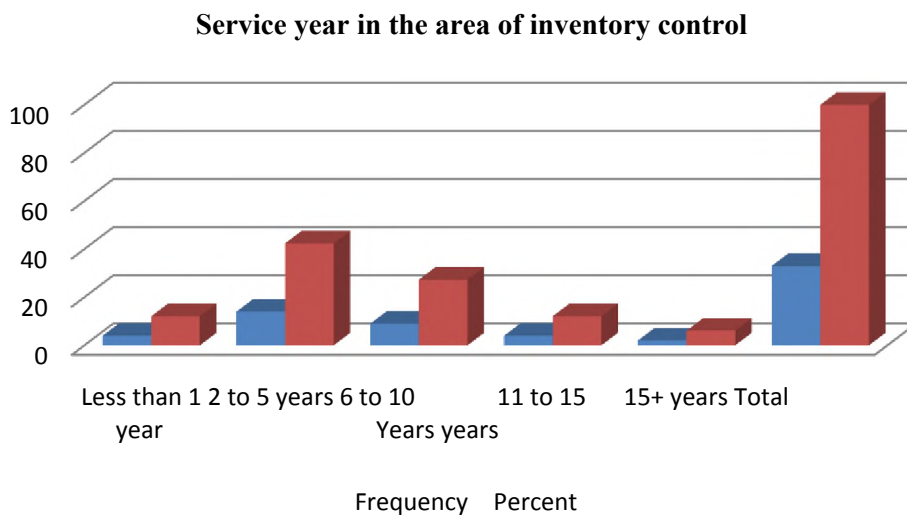


Figure 2.19 Result summary of service year in inventory control
*Source: (Own survey, December 2014)*

It is indicated in figure 2.20 above, a total of 54.5% of respondents were having work experience of less than five year inventory control. This shows that most of the officers working in inventory control unit had no much experience which might be a factor that influences the effectiveness of inventory control. Jessop and Morrison (1994) were on opinion that experienced personnel should be employed in the organization to help in proper stock recording system.

## 4.7.2  Result summary of pre/post employment training on inventory control

As indicated in figure 2.21 below, fifty seven point six percent (57.6 %) respondents indicated that they were received pre/post employment training on inventory control. On the other hand 14 out of 33 of respondents (42.4%) indicated that they did not received pre/post employment training about inventory control.
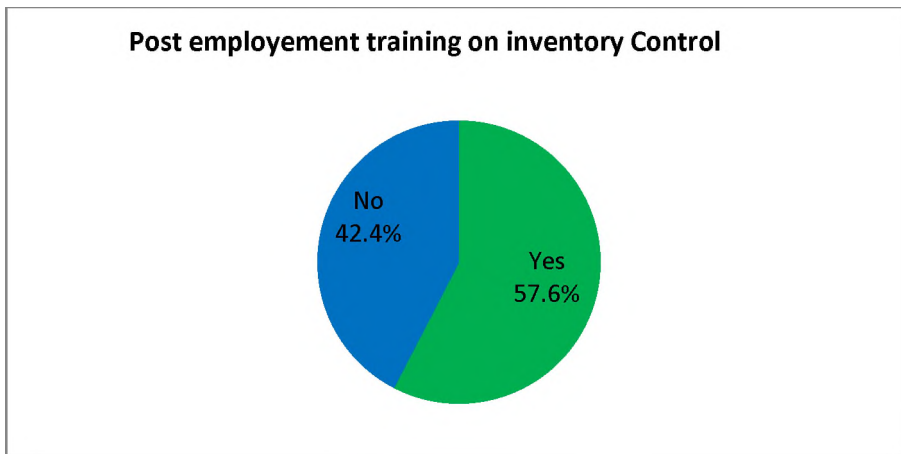
Figure 2.20 Result summary of pre/post employment training on inventory control
*Source: (Own survey, December 2014)*

The response indicated that post employment training was not a common means for preparing staff before deployment to inventory control sections in the organization. This implies that most of the staff has only the educational qualification out of inventory management area which might have an effect on efficiency of inventory control. Bailey and Farmer (1982) say that, if staff involved in stock control is not qualified and competent, then there will be ineffectiveness in inventory control.

### 4.7.3  Result summary of the level of training in inventory control

As indicated in figure 4.22 below, forty two point four percent (42.4%) respondents were taken pre/post inventory control training and received certificate.
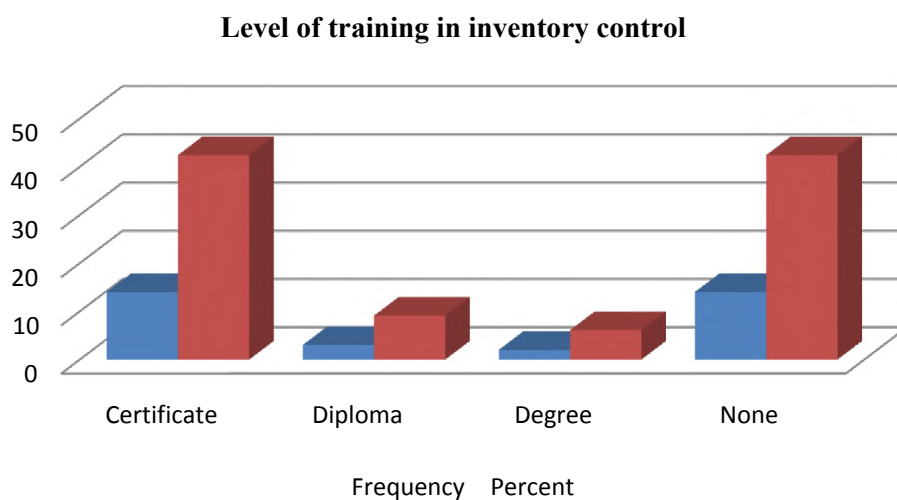


Figure 4.21 Result summary of level of training in inventory control
*Source: (Own survey, December 2014)*

On the other hand 9.1% and 6.1% of respondent were taken pre/post inventory management training indicated that they received diploma and degree respectively. However, 14 out of 33(42.4%) respondents received none about inventory control. All the 14 respondents out of 33 indicated that the training was very essential as had helped them to be more efficient and effective in performing their daily duties.

The study finding agrees with Jessop and Morrison (1994) finding, who were on opinion that well trained personnel, should be employed in the organization to help in proper stock recording system. Carter and price (1993) indicate that training of staff is vital if full use is to be made of their abilities and talents.

### 4.7.4 Result summary of respondents view on whether staff skill and experience affects inventory control

As it can be noted from 4.23 below, 78.8 % of the respondents were strongly agreed with the statement and 9.1% of respondents were somewhat agreed. On the other hand 9.1% and 3.0% of respondents were strongly disagree and somewhat disagree with the statement respectively.

**Staff skill and experience affects inventory control**
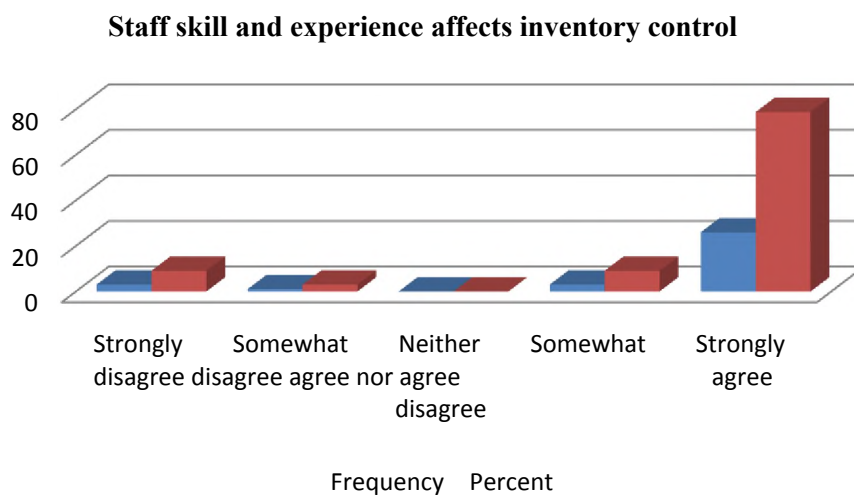


Figure 4.22 Result Summary of staff skill and experience affects inventory control
*Source: (Own survey, December 2014)*

Since majority of the respondents (87.9%) agreed with the statement, it implies that staff skill and experience affects inventory control and the organization should ensure that adequately trained, experienced and qualified personnel must be employed.

# CHAPTER FIVE

# SUMMARY, CONCLUSIONS, AND RECOMMENDIATIONS

This chapter presents a summary of key data findings, conclusions drawn from the findings highlighted and recommendations made there-to. The conclusions and recommendations drawn focused on assessing factors influencing the effectiveness of inventory control at Population Services International Ethiopia.

## 5.1 Summary of the Major Findings

This study had five objectives. To evaluate the effect of procurement procedure to the effectiveness of inventory control, to examine the effect of high inventory carrying cost to the effectiveness of inventory control, to analyze the effect of poor stock record practice to the effectiveness of inventory control, to examine the effects of staff skill procedures to the effectiveness of inventory control and to determine the effects of stock audit practices to the effectiveness of Inventory control. The five variables were found to have an effect on the effectiveness of inventory control at PSI/Et.

### 5.1.1 Bureaucratic Procurement Procedure

The study found that long bureaucratic procurement procedures are being experienced in PSI/Et making the purchase of goods difficult. As a result, delays in procurement of goods cannot be avoided. Having cumbersome procurement procedures was the cause of long bureaucratic delays. The study revealed that long bureaucratic procurement procedure affects inventory control of the organization. The study also revealed that: delays in procurement of goods, frequent stock-outs, and poor inventory control were some of the effects of long bureaucratic procedure which have a negative effect on effectiveness of inventory control.

### 5.1.2 Inventory carrying cost

The study found that there is high carrying cost in population services international Ethiopia. The research revealed that money was being tied up on some of those over stocked inventories. Hence capital cost is the single biggest factor of inventory carrying cost; it is opportunity cost the organization. Thus excess product created additional

inventory carrying cost. Besides the study found that there was stock out of some crucial items that causes lost sales; thus lost sales increased inventory carrying cost of the organization. The study revealed that there are expired, damage and obsolescence products which eventually increases carrying cost and affects inventory control of the organization. The study also revealed that high carrying cost affected inventory control of the organization.

### 5.1.3 Inventory Audit system

The study revealed that there was no specific time in which the stock taking exercise was set to take place, discrepancies between actual and physical stock balances is evident. The respondents attributed the discrepancy between the physical stock balance and balances reflected in stock control record to be attributing factor for theft and pilferage, frequent stock out of some crucial items and poor planning. Thus stock audit practice affected negatively the inventory control of the organization.

The study also revealed that there was no specific time in which the review of inventory records and reports was set to take place which had a direct effect on inventory control. Majority of respondents believed that stock audit practice affects inventory control of the organization.

### 5.1.4 Stock Record system

The study found that lack of a fully computerized system for posting inventory data was one of the factors that affect the effectiveness of inventory control to a great extent. The study revealed that majority of the respondents was not satisfied with the current system used. The study also revealed that lack of specific time or date for posting stores records had a direct effect on inventory control. Majority of respondents believe that poor stock record practice affects inventory control of PSI/Et. Poor stock recoding have a negative effect on inventory control activity.

The study also found out that stock record facilities were not adequately provided; only partial automation of stock control systems and software were available and therefore the principle merit of a good and proper system stock record and benefits of perpetual stock verification system could not be attained, additionally sound stock record system vital for procurement decision making was also not accomplished.

### 5.1.5  Staff Skill and experience

The study revealed that, the skills mix and experience of respondents working in the inventory control sections within the organization showed considerable variation. In effort to determine the highest level of education, the findings reveals that at all personnel had attended formal education but attained different level of educational qualifications. The findings showed that it is almost only half percentage of staff involved in inventory control function have undertaken pre/post employment training in different aspects of inventory control. The study also revealed that post employment training was not a common means for preparing staff before deployment to inventory control sections.

### 5.2  Conclusions

### 5.2.1 Bureaucratic Procurement Procedure

There are long bureaucratic procurement procedures being experience in the organization arising as a result of intra-departmental communication and planning, decision making processes and having a very elaborate procurement procedure. The long bureaucratic procedures have various negative effects that include delays in procurement of goods, frequent stock-outs /under-stocking, and poor inventory control.

### 5.2.2 Inventory Carrying Cost

It can be concluded that most of the staff did not use any mathematical model for determination of inventory order size as a result there was high ordering cost. There was high inventory carrying cost in the organization arising as a result of over stock, under stock, damage, expired and obsolescence items in the organization. Capital had been tied up on those overstock items, sales was lost on those under stocked items and capital cost was declined due to expired, obsolescence and expired items. Thus high carrying cost in the organization negatively affected inventory control of the organization.

### 5.2.3 Stock Audit Practice

It can be concluded that aspects of existing stock audit practice had influence on the effectiveness of inventory control of the organization. There was no specific time in which the stock taking exercise was set to take place, reviewing of stock records and reports, discrepancies between actual and physical stock balances is evident. The discrepancy

between the physical stock balance and actual balance reflected in stock control record to be attributing factor for frequent stock out of some crucial items and poor planning.

### 5.2.4 Stock record practice

It can be concluded that aspects of existing stock records practice had influence on the effectiveness of inventory control of the organization. The lack of immediate update of inventory records used in stock control leading to inefficiencies in updating previously accumulated documentation work and finally indirect violation of inventory control regulations due to late entry. Failure to have a specific time or date for posting of inventory records greatly affected inventory control. Manual recording systems and delays in posting of inventory records causing discrepancies between actual and physical stock balances influenced inventory control of the organization.

### 5.2.5 Staff Skill and Experience

It is showed that most of the officers working in inventory control units have less than five year work experience which was a factor that influenced the effectiveness of inventory controls. Most of the officers working in inventory control section do not have the necessary professional qualifications in inventory management. Post employment training is not common in inventory control sections. Staff skill and experience contributed to ineffectiveness of inventory control due to deficient of stores officer qualifications, lack of training & record procedure violation.

### 5.4  Recommendations

In light of the findings outlined herein, the following recommendations were made:

i)  Too much cumbersome rules and reliance on rigid rules and policies that slow down procurement process should be avoided by adopting a recent technology. Modernize the procurement process through computerization of the systems for example embracing the E-procurement, which will realize real time procurement thus increasing transparency in procuring goods and services. It will also help in overhauling the paper based system that is inefficient and lower transactions cost.

ii)  To stay relevant and up-to-date on inventory carrying cost, it is essential for the organization to invest in a reliable inventory control system. As far as possible, carrying cost should be kept at a minimum possible level. Over stock and under stock of products

should be avoided. Another recommendation is to utilize the economic order quantity model. Inventory management software designed to use EOQ takes organizations' historic sales data and makes assumptions based on that data. EOQ provides sufficiently accurate predictions to control ordering and inventory costs.

iii) The current inventory audit practices and procedures need to be reviewed and redesigned while a fully computerized stock record system for posting inventory control data is adopted.

(iv) Stock records practice should be complied with fully during receipt, issuing, control and recording to ensure accurate and timely inventory management information.

(v) Stock record facilities must be adequately provided and full automation of stock control systems and software availed coupled with proper integration with other areas of supply chain management to attain the benefits of perpetual stock verification system.

(vi) Warehouse staff should be adequately equipped with appropriate qualifications, proper training & supervision, ensure adherence of stock record procedures & proper work allocation to promote effectiveness of stock record systems. The organization should ensure that inventory control function is only handled by competent well trained supply chain officers.

## 5.5 Areas of Further Research

Despite the successes scored during the study, some factors have not been properly accounted for due to its scope. It is therefore suggested that further research should be done on some topics related to this one. In this regard, the researcher recommends further research in the following areas:

i) How to reduce the long bureaucratic procurement procedure at PSI/Et

iii) To determine stock record practice improvement at PSI/Et.

iii) To identify the relevance of improved staff skill in inventory control at PSI/Et.

These areas must be evaluated further because they seem to be the major promoters of problems of inventory control at Population Service International Ethiopia

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# Appendix

**Appendixl: Questionnaire**

Questionnaire on an Assessment of Factors Influencing Inventory Control / Management of Population Services International Ethiopia (PSI/Et).

Dear Participant,

This questionnaire is designed to study on factors influencing inventory control of PSI/Et. The information you provide will help me better understand the factors influencing inventory management. Because you are the one who can give me a correct picture of what factors influence inventory control, I request you to respond to the questions frankly and honestly.

Note: This questionnaire will be treated confidential and no information will be divulged to any third party.

Cordially,

Daniel D. (MBA Candidate)

For the following questions, please tick <u>R1 (mark) on the appropriate box to assess the factors that influence inventory control/ management in PSI/Et.</u>

Section (A) - Demographic Background

1. Gender:     □ Male □ Female

2. Age:     □ 20-30 Years □ 31-40 Years □ 41-50 Years □ 50 + Years □ less than 19 Years

3. Current position:     □ Managerial     □ Non-managerial

4. Educational Background (tick only the highest level you have):

   □ Masters □ Bachelors □ Diploma □ completed high School □ Other, Please specify_____

5. Years of Service:　□ less than 1 year　　　□ 2 to 5 years Q6 to 10 years

　　　　　　　　　　　□ 11 to 15 years　　　□ 15+ years

Section (B)-Effect of Long Bureaucratic Procedures on Inventory Control

1. How often is stock out frequency in the organization?

   □ Rarely □ Less Frequently　　　　　□ Frequently　　　QVery frequently

   □ Most frequently

2. How do you determine inventory order size?

   □ Past experience　　　　□ Vehicle capacity　　　　□ Forecasting

   □ Mathematical model

3. Have you experienced long bureaucratic related purchase difficulties?

   □ Yes　　　□ No

4. If your answer is yes to question # 3 of section (B), what are the causes of these long bureaucratic purchase difficulties?_____

5. To what extent do you agree that long bureaucratic procurement practice affects inventory control/management?

   □ Strongly disagree □ Somewhat disagree　　　□ Neither agree nor disagree

   □ Somewhat Agree □ Strongly agree

Section (C) - Effect of Carrying Cost on Inventory Control

1. Is there any inventory item in the warehouse which is overstocked?

   □ Yes　　　□ No

2. Do you have insurance for inventory items?

   □ Yes　　　GNo

3. How do you determine inventory order size?

   □ Past experience □ Vehicle capacity □ Forecasting □ Mathematical model

4. Do you have any expired, obsolescence and damaged inventory items in warehouse? □ Yes　　　□ No

5. To what extent do you agree that high carrying /holding cost affects inventory control?

   □ Strongly disagree □ Somewhat disagree □ Neither agree nor disagree

   □ Somewhat Agree □ Strongly agree

Section (D) - Effect of Stock Record Practice on Inventory Control

1. Do you maintain inventory record? □ Yes          GNo
2. What is the nature of your organization inventory record system?

   □ Manual          □ Computerized          □ Both manual and computerized
3. To what extent does the current inventory recording system satisfied you?

   □ Most dissatisfied □ Somewhat dissatisfied □ Neither dissatisfied nor satisfied

   □ Somewhat satisfied □ Most satisfied
4. Frequency of inventory record update

   □ Daily □ Monthly □ Weekly                    □ Immediately □ Others, Please

   specify_____
5. To what extent do you agree that documentation affects inventory Control?

   □ Strongly disagree □ Somewhat disagree          □ Neither agree nor disagree

   □ Somewhat Agree □ Strongly agree

Section (E) - Effect of Stock Audit Practice on Inventory Control/Management

1. Do you have stock audit systems in your organization? □Yes                    □ No
2. Have you experienced discrepancies between actual and physical stock balances?

   □ Yes          □ No
3. If your answer is yes for Q#2 of section(E), then what are the possible causes of

   discrepancies_____

4. How frequently does stock taking activity done?

   □ Weekly □ Monthly □ Quarterly □ Biannually □ Annually
5. Frequency of review of inventory reports and records

   □ Rarely □ Less frequently □ Frequently □ Very frequently □ Most frequently
6. To what extent do you agree that stock audit practice affects inventory control

   □ Strongly disagree □ Somewhat disagree □ Neither agree nor disagree

   □ Somewhat Agree □ Strongly agree

Section (F) - Effect of Staff Skills on Inventory Control/Management

1. How many years have you been working in area of inventory control or Supply

   chain & distribution activity?

   □ Less than 1 year          □ 2 to 5 years          □ 6 to 10 years

   □ 11 to 15 years          □ 15+ years

2. Have you taken pre /post employment training on inventory control/Supply Chain Management? □ Yes □ No

3. If your answer is yes to question #2 of section F what is your level of training?

   □ Certificate □ Diploma □ Degree □ None □ Others, please specify_____

4. To what extent do agree that staff skills on inventory management affect inventory control?

   □ Strongly disagree □ Somewhat disagree □ Neither agree nor disagree

   □ Somewhat Agree □ Strongly agree

Thank you for your cooperation!

## Declaration

I, Daniel Demissie, declare that this report is entirely out of my own effort with the guidance of my advisor, Assistant Professor Goitom Abraham and has not been presented anywhere for any award. The report was written basing on the findings and information collected about the study of an assessment of the factors influencing inventory control.

SIGNED

DATE

## Approval

This is to certify that the study on "an assessment of the factors influencing inventory control" was carried out under my supervision as a University supervisor.


SIGNED


DATE...


SUPERVISER:

**Institute of
Development Studies**