

ST. MARY'S UNIVERSITY COLLEGE

**BUSINESS FACULTY
DEPARTMENT OF MANAGEMENT**

**AN ASSESSMENT OF INVENTORY MANAGEMENT
PRACTICE IN COMET TRANSPORT SHARE COMPANY**

**BY
MEAZA GIRMA**

**JUNE 2010
SMUC
ADDIS ABABA**

**AN ASSESSMENT OF INVENTORY MANAGEMENT
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**A SENIOR ESSAY SUBMITTED TO THE
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BIBLIOGRAPHY

Data, A.K. (1998) Material management. Second edition: New Delhi Hall of India, Private company.

Dobler, Donand W. and Devid N. Burt. (1996) Purchasing and Supplies management. 1st edition: New York Mc Grow - Hill Inc.

Katoch S.S. (2000) Materials management. 1st edition: New Delhi Anmol Publications Pvt.Ltd.

Kumar. N. and Mittal. R (2002) Production management: 1st edition: New Delhi, Anmol Publication Private Ltd.

Nair, NG (1998) Production and Operation Management: 9th edition: Tata Mc Graw - Hill Publishing Company Limited.

Narasimhan, Mc Leavey and Billington (2005) Production Planning and Inventory Control. 2nd edition, New Delhi prentice Hall of India Private Limited.

Schroeder, Roger G. (1993) Operation management (Mc Graw -Hill series in management

Shridhara Bhat.:(2003) Production and Materials Management. 1ST Edition: New Delhi Himalaya Publishing House.

Stevenson J. William: (1990) Production /Operations Management 6th Edition: New Delhi Mc Grow-Hill Inc.

APPENDIX

Declaration

I the undersigned, declare that this senior research is my original work prepared under the guidance of Ato Aschalew Tameru. All sources of materials used for the manuscript have been dully acknowledged.

Name **Meaza Girma**

Signature _____

Place of submission **SMUC**

Date of submission **June 22, 2010**

Submission approval sheet

This senior research paper has been submitted to the department of management in partial fulfillment for the requirement of BA degree in management with my approval as an advisor.

Name _____

Signature _____

Date of submission _____

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CHAPTER ONE

1. INTRODUCTION

1.1 Back ground of the study

Inventory management is primarily about specifying the size and placement of stocked goods. Inventory management is required at different locations within a facility or within multiple locations of a supply network to protect the regular and planned course of production against the random disturbance of running out of materials or goods. The scope of inventory management also concerns the fine lines between replenishment lead time, carrying costs of inventory, asset management, inventory forecasting, inventory valuation, inventory visibility, future inventory price forecasting, physical inventory, available physical space for inventory, quality management, replenishment, returns and defective goods and demand forecasting. According to Dobler, (1986: 236) inventories should be put in proper place and handled properly until they are used. He also clearly noted that inventory of a firm should constitute 15 to 30 percent of invested capital corporate balance sheet.

Hence well planned and efficiently controlled inventories can contribute substantially to the firm's profit, my research will try to show how an inventory management is practiced in Comet Transport Share Company.

Comet Transport Share Company is located in Addis Ababa at Akaki Kaliti Sub City, Kebele 11. The Share Company is strategically situated to Addis Ababa - Djibouti corridor. Comet is one of the five freight transport enterprises which have been established up on the dissolution of the former Ethiopia Freight Transport Corporation (EFTC) in 1986 E.C.

Later, on January 9, 2002 this government owned enterprise has been restructured as a share company with a paid up capital of birr 205 Million Birr Under commercial registration and business license given by Ministry of Trade and Industry.

The mission of the share companies is:

- To render Road freight transport service
- To give heavy and light maintainace
- To engage in warehousing and heavy equipment service
- To give washing and greasing service

For facilitating its service, the share Company owns 144 heavy trucks with trailers, modern garages with various machineries, hot and cold washing bay, modern warehouse, forklifts and container hanging equipments.

1.2 Statement of the problem

A proper inventory management practices ensures that materials and assets are safeguarded and properly used by an organization. Optimal amount of inventory helps to carry out normal operation and inadequate inventory will result in an interruption of operation and loss of income on the other hand. Excess inventory also result to incur carrying cost, and tie capital, which is contradictory to the financial goal of an organization i.e. minimizing cost and reduce liquid asset to increase working capital for operation.

According to (Dobler, 1986:243), well planned and efficiently controlled inventory can contribute substantially to the firm's profit. Inventory control will also ensures that the availability of adequate recurring items helps to maintain operation and keep investment of material at optimal level by avoiding large stock. (Nair, 1998:57)

According to 2001 E.C. budget closing physical count of Comet Transport Share Company, there are about 222 line items of spare parts that don't have unit price; that understates the inventory valuation. The company's financial department

has no access to record and control the inventory movement. Hence, this study will try to address such existing problems of inventory management and forward appropriate recommendation.

1.3 Research questions

In the research I try to answer the following basic questions to assess the extent of existing problem of inventory management of Comet Transport Share Company.

- If the share company has a proper inventory management system?
- Either the share company use computers software for inventory management and control or not?
- Does the share company capital have been tied up due to excess stock, obsolescence and scrap items?
- If the inventory management system of the company possess complete and adequate information regarding inventory?

1.4 Objective of the research

The general objective of the study is exploring or assessing the inventory management systems of Comet transport Share Company, while; The Specific objectives are:

- To assess whether the company's inventory management system goes on right way with the proper inventory management practices.
- To find out the defects of inventory system with regard to having compulsory information and capital tied up.
- To identify if there is any poor performance of the inventory system and gives possible recommendation to correct the problem.
- To asses whether the company use computer program for inventory management so that check and balance are maintained easily.

1.5 Significance of the study

This research paper has some importance for the company to create a well defined and sound inventory management system, which enables to achieve the overall company goal, the researcher believes that the result of this study have the following benefits:

- It will generate information to strengthen the company's internal control system over inventory.
- It will also contribute for the effectiveness and efficiency of the company in relation to inventory management system.
- It will build the capacity of the student who is conducting this assessment.
- It will help to have an efficient operation by maintaining proper inventory level.
- It will also help the board of directors and management committees to identify the gap between the practice of the share company and that of academic literature, so that they may take proper action.

1.6 Scope /delimitation/ of the study

This study covers the existing inventory management system of Comet Transport Share Company, therefore; it is limited to and covers:

- The existing procedures and practices of inventory management,
- Identifying the weakness, effectiveness and efficiency regarding inventory management and,
- The practice of safeguarding of inventories i.e, the weakness and strength points of internal control.

The study also covers the current and the last three years practice of the share company regarding inventory management, especially the practice of supply, procurement and finance departments.

1.7 Limitation of the study

In conducting the research, I have faced with certain constraints in covering all topics within the time frame as my expectation. These limitations are:-

- Limited reference material in the share company
- Limited period of time given for making this study as there was a burden in other courses, daily paper works and reading assignments.
- Lack of enough financial as well as material resources and etc.
- Lack of cooperation of employees of the company. Therefore, the study is limited with the above constraints.

1.8 Research design and Methodology

1.8.1 Population and sampling technique

Out of the available departments and sections in the company; Inventory control section, store supervisor, Head of store division, Store man, Purchasing department, costing and budget division and, Techniques department are taken as the major focus attention in the study.

Responsible individual, employees at various departments holding various positions are contacted for the gathering required data and information necessary for the study by using random sampling method. But the sake of valuable information gathering, department and section heads are included in the sample purposively. The population size of the concerned departments and sections is 400 employees including the department and section heads. The sample size aimed at 25% of the total population. From issued questioners for the sample size i.e. 100 respondent only 32%, which are 32 respondents are willing and actively participate with the questioner and interview. For the sack of saving time I used semi structured questioner for employees and interview with department heads.

1.8.2 Sampling method

I use both random and purposive sampling for questioner and interview respectively. The sample of first group was employees; I randomly select 100 employees who have raised material request for store on daily and monthly basis and also I purposively select five department and section heads that are in charge of store, stock control, cost, and purchase activities.

1.8.3 Types of data to be used

The task of data collection begins after the research problem has been defined. Both primary and secondary source of data was used in the study.

Primary data has been collected from primary sources by use of questionnaires that are distributed to the purposively selected staff member, and interview has also been conducted in order to get depth information about the subject matter.

Organizational manuals, annual reports, audit reports and various reference books have been used as secondary source.

1.8.4 Data analysis

After the relevant data was collected, the collected data was analyzed using descriptive research methods by using percentage, because the collected primary and secondary data can be more analyzed quantitatively and qualitatively using descriptive research method.

1.9 Organization of the study

This research paper is organized in four chapters: the first chapter talks about the introduction, background of the study, statement of the problem, research questions, and objective of the study, significance of the study, Scope (delimitation of the study), limitation of the study, research design and methodology, finally organization of the study. Chapter two deals with the review of related literature on the inventory management system, the third chapter gives data presentation and analysis and the finally chapter four briefly deals with summary, conclusion and recommendation.

CHAPTER TWO

LITERATURE REVIEW

This chapter attempts to deal with review of related literature. Some important concepts are discussed here, which are believed essential for management of inventories in organization. Thus it will discuss what inventories are, types of inventories, the function of inventories, meaning of effective inventory management, cost of inventory and inventory control system.

2.1 Definition of inventory

Inventories are stock of materials of any kind stored for future use, mainly in the production process. Thus, today's inventory is tomorrow's production. However, semi-finished goods awaiting use in the next process or finished goods awaiting release for sale are also included in the broad category of inventories, which are nothing but idle resources. Therefore, inventories are materials or resources of any kind having some economic value, either awaiting conversion or use in future.

A part from these, there is also many indirect materials such as, maintenance materials, fuels and lubricants etc. Which are used in a manufacturing organization. They are also classified as inventories of materials for future use. But they differ only in their use and classification from raw and other direct materials. All of them earn nothing, yet they are badly required to be stocked and to be used as and when the needs arise. DATTA (1998:193)

Inventory is a stock of items of economic value for future consumption. It includes all materials, parts, supplies, tools, in process items, and finished products kept in the stock or plants for some period of time. It is created when the receipt of materials, parts or finished goods exceeds their disbursement. It is depleted when their disbursement exceeds their receipts (Basic material management course)

Inventory control; on the other hand, is a function of planning and maintaining the right quality of material for a given production schedules with the minimum investment Nair (1998:33)

2.2 Types of inventories

According to Datta, (1998:194-195) there are many types of inventories, such as raw materials and production inventories, components and service parts as well as work-in-process and finished goods inventories, these inventory types are listed below:

- 2.2.1 **Raw materials and production:** - these are raw materials and other supplies, parts and components which enter in to the product during the production process and generally from part of the product.
- 2.2.2 **Work in progress:-** work in progress are semi-finished goods that are partly finished products formed at various stage of production.
- 2.2.3 **Maintenance, repair and operating (MRO):-** maintenance, repair and operating supplies are consumed during the production process and generally do not form part of the product it self. (e.g, oils and lubricants, machinery and plant spares, tools and fixtures, etc) are referred to as MRO inventories.
- 2.2.4 **Finished goods:-** these are completed finished products ready for sale. Inventories may also be classified on the basis of their function as under.

2.3 Functions of inventories

The fundamental objectives of inventory management system are to provide necessary supplies for firms at the required time in the most efficient and economic manner Dobler (1996:517)

Inventories serve a number of important functions. According to Schroeder (1993:581-583), among the most salient reasons for holding inventories are the following:

2.3.1 To protect against Uncertainties

In inventory systems, there are uncertainties in supply, demand and lead-time. Safety stock is maintained in inventory to protect against those uncertainties. If customer demand were known, it would be feasible-although not necessarily economical-to produce at the same rate as consumption. In this case, no finished goods inventory needed; every change in demand would be immediately transmitted to the productive system in order to maintain customer service.

2.3.2 To allow Economic Production & Purchase

It is of then economical to produce materials in lots. In this case, a lot may be produced over a short period of time, and then no further production is done until the lot is nearly depleted. This makes it possible to spread the set up cost of production machine over a large number of items. It also permits the use of the same productive equipment for different products. A similar situation holds for the purchase of raw materials. Due to ordering costs, quantity discounts and transportation costs, it is the economical to in large lots, even though parts of the lot are then held in inventory for later use. The inventory resulting from the purchase of production of material in lots is called cycle inventory, since the lots are produced or purchase on cycle basis.

2.3.3 To Cover Anticipated Change in demand or Supply

There are several types of situations where changes in demand or supply may be anticipated. One case is where changes in demand or supply may be anticipated. One case is where the price of availability of raw materials is expected to change.

2.3.4 Another Source of anticipation

A planned market promotion where a large amount of finished goods may be stocked prior to a sale. Finally, companies in seasonal business often anticipated demand in order to smooth employment. Any inventories carried in anticipation of demand or supplies are quite naturally called anticipation inventories.

2.3.5 To provides for Transit

Transit inventories consist of materials that are on their way from one point to another. These inventories are affected by plant location decisions and by the choice of carrier. Technically speaking, inventories moving between stages of production, even within a plant, can also classify as transit inventories.

2.4 Effective Inventory Management

According to Schreibe feder management allows a distributor to meet or exceed his (or her) customer's expectation of product availability with the amount each item that will maximize the distributor's net profit. Management has two basic functions with respect to inventory. One is to establish of inventory control system, and the other is to make decision how much to order and when to order. To be effective, according to Stevenson (1990:502), management must have the following:

1. A system to keep track of the inventory on hand and on order.
2. A reliable forecast of demand that includes and indication of possible forecast error.
3. Knowledge of lead times and lead-time variability.

4. Reason estimates of inventory holding costs, ordering costs and shortage costs.
5. A classification system for inventory item.

2.5 Inventory System

According to Bhat (2003:571) there are two basic inventory decision managers must take in order to effectively manage inventories.

They are:

1. How much of an item should be ordered when the inventory is replenished?
2. When should the inventory be replenished?

Economic order quantity (EOQ) Model

The EOQ model is applicable when the demand for an item has a constant or nearly constant rate and when the entire quantity ordered arrives in inventory at one point of time (instantaneously) Bhat (2003:572).

The EOQ model system is also known as fixed order quantity system (Q system) or a continuous or perpetual review system. In this system order is placed for the same constant or fixed amount (known as economic order quantity) whenever the inventory on hand reaches a certain predetermined level known as re-order level or re-order point. Continual record of inventory level for every item is maintained. The order that is placed to replenish the stock of inventory is for fixed quantity which minimizes the total inventory carrying, ordering and shortage costs.

A positive features of continuous review system is that inventory level is closely and continuously monitored so that management always known the inventory status. This is advantageous for critical items such as replacement parts of raw materials or supplies.

The function of the EOQ model, also referred to as the economic lot size model is to determine the optimal order size that minimizes total inventory costs.

There are several variations of the EOQ model, depending on the assumption made about the inventory system. Three such variations are:

- a) The basic EOQ model
- b) The EOQ model with non-instantaneously receipt or gradual arrival of supplies and
- c) The EOQ model with shortages.

2.6 Inventory Control

Inadequate control of inventories can result in both under stocking and overstocking of items. Under stocking results in missed deliveries, lost sales, dissatisfied customers and production bottlenecks; overstocking unnecessarily tied up funds that might be more productive elsewhere Stevenson, (1990:501)

2.6.1. Objectives of Inventory control

According to Stevenson (1990:501), there are two main objectives of inventory control. One is to maximize the level of customer service (that is, have the right goods, in sufficient quantities, in the right place, the right time). The other is minimizing the cost of providing a certain level of customer service.

As indicated by Stevenson (1990:501), these two objectives are generally in opposition: high levels of customer service lead to high costs, low costs usually are accompanied by low level of customer service. Consequently, most inventory decisions are trade-offs involving a compromise between cost and customer service level.

2.6.2 Inventory Costs

Schroeder (1993:749) have pointed out inventory cost structures incorporate the following of five types costs:

1. **Item (Purchase) cost:-** This is the cost of buying or producing the individual inventory items. The item cost is usually expressed as a cost per unit multiplied by the quantity procured or produced.
2. **Ordering (or set up) cost:-**the ordering cost is associated with ordering a batch or lot of items. Ordering cost does not depend on the number of items order; it is assigned to the entire batch. This cost includes typing the purchase order, expediting the order, transportation costs, receiving costs and so on.

When the item is produced with in the firm, there are costs associated with placing an order, which are independent of the number of items produced. These so-called set up costs include paperwork costs plus the costs required to set up the production equipment for a run.

3. **Carrying (holding)cost :-** the carrying or holding cost is associated with keeping items in inventory with keeping items in inventory for a period of item. The holding cost is typically charged as a percentage of dollar value per unit time.
 - **Cost of Capital:-** when items are carried in inventory, the capital invested is not available for other purposes. This represents a cost of forgone opportunities for other investments, which is assigned to inventory as an opportunity cost.
 - **Cost of Storage:-** This cost includes variable space cost, insurance, and taxes.
 - **Cost of obsolescence, deterioration and loss:-** obsolescence cost should be assigned to items, which have higher risk of becoming obsolete; the higher the risk, the higher the cost. Perishable

products should be charged with deterioration cost when the item deteriorates overtime.

4. **Stock out cost:-**stock out cost reflects the economic consequences of running out of stock. There are two cases here. First, suppose items are back order or backlogged for the customer and the customer wait until the material arrives. There may be some loss of goodwill or future business associated with each back order because the customer had to wait. The opportunity loss is counted as a stock out cost. The second case is where the sale is lost if material is not on hand. The profit is lost from the sale, and good will, in the form of the future sales, may also be lost.
5. **Quality costs:-** The quality of the product or service is its conformance with a preannounced or pre specified standards. Four categories costs of quality are:-
 - a. **Prevention Costs:-** costs incurred in precluding the production of products that do not conform to specifications.
 - b. **Appraisal costs:-** costs incurred in defecting which of the individual units of products do not conform to specification.
 - c. **Internal failure costs:-** costs incurred when a non-conforming product is defected before it is shipped to customers
 - d. **External failure costs:-** costs incurred when a non-conforming product is defected after it is shipped to customers.

2.6.3 Inventory Control System

Inventory controls systems as already stated is technique by which the quantity of materials is held between the predetermined levels. The following techniques of inventory control are normally used to keep investment in inventories at the lowest possible level and operational efficiency at the maximum. Katoch (2000:117)

1. Perpetual inventory system

Under the Perpetual inventory system, the reorder quantity is fixed but the frequency of ordering varies depending up on the fluctuations in usage. Whenever the inventory reaches a minimum level, known as the reorder point, an order for a fixed quantity (EOQ) is placed. The perpetual inventory system is also known by other name such as fixed order quantity system or Q-system.

2. Periodic inventory system

Another major inventory control tool is the periodic review technique, frequently called the fixed-cycle technique. In this, inventory records are reviewed periodically and replenishment orders are placed for each item at each review. The review period may be a week, month, quarter, etc. whichever is best for the situation. At each review period, an order is placed for an amount equal to the difference between a fixed replenishment level and the actual inventory level. Thus, the order quantity is variable in size, whereas period between placements of orders is fixed. For example, the order quantity would be larger than usual when the demand has been greater than the exception, and it is smaller than usual when the demand has been less than the exception.

3. Optional replenishment system

This system is combination of periodic and perpetual inventory systems. Optional replenishment system is useful in situations where the cost of reviewing the inventory is high or the cost of ordering is very significant. Under this system if perpetual records cannot be maintained, due to high costs, then use of periodic review can be made. This system is more advantageous in case of bulk items, where physical assessment of stock is costly and could be inaccurate.

4. Two-bin inventory system

In this system an amount of stock equivalent to the order point is physically segregated either in to a second bin or container. When all the open stock has

been used up, the second bin or reserve container is opened and material control is notified to order more stock. This is a practical method for keeping control of low value items. A two-bin method works best in a controlled stock room where the responsibility for replenishing stock and maintaining the inventory can be assigned to one person. This procedure is also called the bank stock method.

5. Material requirement planning (MRP)

In MRP, material is ordered in amount and on time schedules to meet a preplanned programmed of production or construction. Under this technique detailed requirements schedules are prepared in respect of the project or annual normal consumption to maintain the system in case of electricity organizations. MRP schedules contain the following elements:

- Projected annual demand/usage.
- Month-wise usage.
- How much of each of these items are already in hand?
- How much are already ordered in addition and when will they arrive?
- Maximum level of each item.
- Reorder point of each item.
- Order placement at the appropriate time.
- Ensure minimum carrying and ordering costs and also the minimum investment in inventories without risking stock outs.

2.6.4 Effective inventory control

Inventory control is that function of material management which attempts to maintain stocks at their predetermined levels. It is exercised by planning required stock levels at regular intervals, by counting and validating the stock at the same intervals and by comparing the two sets of figures to feedback warning of variances Katoch (2000:104) . It has the following main purposes:

1. To determine maximum, minimum and reorder stock levels.
2. To ensure that least possible working capital is blocked without allowing stock to rise so high or fall below the predetermined minimum levels. A balance of stocks must be maintained.
3. To guard against theft, depreciation and obsolescence.
4. To dispose of scrap and unserviceable items economically.
5. To carry out physical verification and reconciliation between the actual stocks to accounting records.

2.7 Inventory analysis

According to Katoch (2000:105) these inventory control techniques are known as:-

- ABC analysis (Always, Better, Control)
- FSN analysis (Fast moving, Slow moving, Normal moving)
- VED analysis (Vital, Essential, Desirable)
- SDE analysis (Scarce, Difficult to obtain, Easy to obtain)
- XYZ analysis

ABC Analysis

ABC classification, or the alphabetical approach, or always better control system is based on the annual consumption value. It has been found that about 10% of the numbers of items contribute to about 70% of the consumption value known as 'A' category. The middle 20% in number accounts for about 20% in value and is known as the 'B' category. The remaining 70% in number accounts for about 10% of annual consumption value, and is the 'C' category. However, the exact cut-off points for A,B,C, will vary from organization to organization. The distribution of inventory in a normal organization may be of the following pattern:

- a) 5-10% of the top number of items account for about 70% of the total investment in inventories. These are 'A' items and require rigorous control.

- b) 15-20% of the total number of inventory items account for about 20% of total investment in inventories. These are called 'B' items and require a moderate degree of control.
- c) The remain 70-80% items account for 10% of the total investment. These are 'C' items and requires less degree of control.

FNS Analysis

One of the important ways of finding the usage of materials is according to their movement. For this purpose we have fast moving, normal moving and slow moving items or FNS analysis. Some managers classify their stock items as Fast moving, Slow moving and non moving i.e, FSN analysis. The general rule is that the spares and materials which are regularly consumed may be classified as F items. Spares which move once in two years or raw materials which move once in a year may be slow moving items. Rest of items may be categorized as non-moving. But this criteria differs from organization to organization.

VED Analysis

Under the classification 'V' stands for vital, 'E' for essential and 'D' for desirable. The absence of V category of inventory items whose absence will completely paralyze the work. They may not be very costly items but very indispensable for the operation of the organization. For example insulators are not very costly but essential for maintenance of electric lines. E items are those whose absence will temporarily stop the work or affect efficiency adversely. In electricity boards/ departments, electric meters are the best example of E items. D items are those whose absences will no result any stoppage of work but their availability may improve efficiency of the organization. For instance, use of high rating conductor than that is normally being used in our country for transmitting power may reduce transmission losses of power significantly

SDE Analysis

SDE items are those items which are scarce, difficult to obtain and easy to obtain. Scarce items are normally imported items obviously; it would be desirable to hold higher stock of scarce items and would need rigorous and constant control over them.

XYZ Analysis

As ABC analysis is based on annual consumption value, XYZ is based on the year end stores inventory value. X items are the top 10% items, accounting for about 70% of stock value Y the middle 20% accounting for middle 20% of stock value and Z the remaining items.

XYZ analysis of inventory classification of PDD inventories has not been attempted in the present study on account of two reasons. First, stocks in the central stores are managed quite unscientifically. Many fast moving items may either be out of stock or under stock and many slow moving and non moving items may be overstocked. Second, disposal of surplus and unserviceable items has not been carried out since long.

2.8 Inventory Classification and Codification

A scientific grouping of materials and maintenance of a proper store catalogue based on correct nomenclature are necessary for inventory management. Classification is division of materials in to different groups based on similarities or technical affinity Nair, (1998:38). A good system of classification should help the stock control.

1. To group together the stock control cards for material of identical nature.
2. To raise separate purchase requisition for different types of materials.
3. To compile budgetary figures under various sub-headings.

Every item coming under a class should have a part, stock, code or reference number.

The reasons for a good system of codification as indicated by Nair (1998:37) are

1. For proper identification of items by all departments.
2. To avoid use of long description.
3. To avoid duplicate stocks under different description.
4. To enable reduction of varieties and size and to ensure that receipts and issue documents are posted in the appropriate records.

CHAPTER THREE

DATA PRESENTATION, ANALYSIS AND INTERPRETATION.

3.1 Data Presentation

In order to undertake the study, the researcher used questionnaire and interview to collect primary data. Then the data are analyzed, summarized and presented in descriptive and tabulated form.

3.2. Data Analysis and Interpretation

Table1. General Characteristics of Respondent

Table one shows the respondent's characteristics such as sex, age, position, qualification and service year of respondents for questioners collected from Inventory control, Spare parts and Raw materials store, and Purchasing section.

No.	Item	No of respondent	Percentage
1.	Sex Female	14	44%
	Male	18	56%
	Total	32	100%
2.	Age From 18-25 Age	2	6%
	From 26 -35 Age	4	13%
	From 36-45 Age	22	68%
	From 46 and above	4	13%
	Total	32	100%
3.	Educational level 12 Complete	8	25%
	Certificate	12	38%
	Diploma	11	34%
	Degree	1	3%
	Total	32	100%
4.	Work experience Below one year	5	16%
	From 1-5 years	9	28%
	From 6-10 years	4	12%
	From 11-20 years	6	19%
	More than 20 years	8	25%
	Total	32	100%

As shown in the above table, the sex distribution shows that, 18 (56%) of the respondents were male, while 14 (44%) were female, regarding the age of the respondents, 2 (6%) was between 18-25 years old, 4 (13%) of the respondents were within the range of 26-35 years, 22 (68%) of the respondents were between the ranges of 36-45 years old. This implies that the majorities 36-45 of the respondents are between years old and male participation was high.

As indicated under item no. 3 of table 1, the educational background of the respondents was: degree 1 (3%), college diploma holders 11 (34%), certificate 12 (38%) and 12 complete are 8 (25%). This shows that 37% of respondents are educationally qualified to understand the subject matter academically.

Item no.4 of table one shows years of employees' experience. As it is shown in the table, 44% (14) of respondent have an experience in between 1-5 years, 12% (4) had between 6-10 years of experience, 19% (6) had between 11-20 years of experience. Finally, 25% (8) of the respondent has more than 20 years of experienced.

Thus, having moderately balanced sex distribution, academically qualified and rich in experience respondents helps in having more information and a dipper experience sharing in the subject matter.

Table 2. Systems on inventory control section.

No.	Item	No of respondent	Percentage
1.	Do raw materials and spare parts have their own code?		
	Yes	10	100%
	No	0	0
	Partially	0	0
	Total	10	100%
2.	Do inventory items have unit of issue and stock control card?		
	Yes	10	100%
	No	0	0
	Total	10	100%
3.	Which method of valuation for spare parts is used?		
	FIFO	0	0
	LIFO	0	0
	Weighted average system	10	100%
	Total	10	100%
4.	When do spare parts and raw materials are purchased?		
	In quarterly bases	0	0
	In yearly bases	5	50%
	If the local purchases are order before finished parts and raw material and foreign purchase yearly bases.	5	50%
	Total	10	100%
5.	Is there recording system of spare parts and raw material?		
	Manual	7	70%
	Computerized	3	30%
	Both	0	0
	Total	10	100%

From year 2001 budget closing physical count valuation sheet I have proofed that the Share Company has more than 10000 line items of spare parts, oil and lubricants and general items that needs effective controlling and efficient inventory management system.

100% of the respondents mentioned that the all material have their own unique code number in addition to internationally recognized part numbers. 100% of the responded also stated that all material have unit of issue. As I examined their operation in their work place, each inventory items do also have their own stock controlling and bin card. The stock control card is separately handled by inventory control section. Thus this shows that there is a proper controlling mechanism of stock even so it is backward and operated manual.

Concerning valuation of inventory of raw material and spare parts, 100% of the respondent mentioned that weighted average method is used. I have also proofed that the physical count of 2001 E.C. budget closing is valued using weighted average.

50% of the respondents replay that foreign purchase of material and spare parts are handled on yearly bases, whereas 50% mentioned that purchase were made locally before the stock is finished. The section doesn't use Economic Order Quantity, ABC analysis or any historical statistical facts for stock replenishment.

Concerning the record system, 7 (70%) of the respondents mentioned they used manual recording system, while other 3 (30%) of the respondents say computerized system, further visiting shows that inventory section used manual system of recording in stock control card for balance keeping, and in accounting section they use computer system. These type of operation leads to some problem like arithmetic error, Lack of speed to serve customers and error on calculation to maintain weighted average.

Table3. Systems on spare parts and raw material store

No.	Item	No of Respondent	Percentage
1.	Do various spare parts are stocked at one place or is there any characterization?		
	A) All raw material and spare parts Stocked in one store.	0	0
	B) Varies store is used to stock various parts?	6	100%
	Total	6	100%
2.	If the answer for Q. No. 1 is "B" please explain how stock are grouped.		
	• Categorized is made as spare part store, oil and lubricant store, tire and accessories store, Tools store, Stationary store and repaired parts center (RPC)	4	67%
	• There is proper grouping but some oil and grease in drum is stock in an open area out of store.	2	33%
	Total	6	100%
3.	In what way the raw material and spare parts are stocked to make it ready to technique department?		
	In terms of their movement	5	83%
	As much as possible	1	17%
	Total	6	100%
4.	Does issued spare parts and raw material are handed over by pre numbered issue forms & usage of the form is strictly following the printed numerical sequence?		
	Yes	6	100%
	No	0	0
	Total	6	100%
5.	Is there any company procedure for issuing spare parts and raw material?		
	• Yes	6	100%
6.	Is there any damage or obsolescence spare parts?		
	Yes	6	100%
	No	0	0
	Total	6	100%

No.	Item	No of Respondent	Percentage
7.	If the answer for Q. No. 6 is yes explain your answer.		
	• Obsolescence or damage parts are returned to RPC store and it is repaired or will be sold in tender.	6	100%
8.	Is spare parts and raw material have their own identification code number?		
	Yes	6	100%
	No	0	0
	Total	6	100%
9.	Is there any idle spare parts and raw material?		
	Yes	6	100%
	No	0	0
	Total	6	100%
10.	If the answer for Q. No. 9 is Yes please explain?		
	• Most of the spare parts and raw material are transfer from the former EX-EFTC.		
	• Un usable spare parts stored because they are excess and wrong purchased.		
11.	What basis of physical inventory is used?		
	Periodic	0	0
	Quarterly	0	0
	Perpetual	6	100%
	Total	6	100%
12.	In your opinion, does the Share Company inventory system is effective?.		
	Effective	3	50%
	It needs improvement	3	50%
	Total	6	100%

Concerning the characterization of spare parts and raw material, all respondents i.e. 6 (100%) of the respondents answered that the Share Company uses varies store for stocking by categorizing and 4 (67%) of the same respondents explained that spare parts and raw materials are categorized in, spare parts store, oil and lubricant store, Tire and accessories store, Tools store, stationary store

and repaired parts center /RPC/ in addition to this 2 (33%) of the respondents mentioned oil and lubricant store stocked some oil and Grease in drums in open and unrestricted area which is outside a store. Further visit by the researcher proofs that parts are ordered and located according to their characteristics: spare parts which are heavy are placed on the pallet, light item put on shelf sensitive item in the safety box, in tire and accessories store some tires are placed outside a store, all tools are placed on the shelf, oil and lubricant store and grease is stored in a drum outside the store. From this we can conclude that there is a proper parts categorization and stocking procedures if they correct open area storage be restricted from unauthorized personnel and have their own protecting shade.

Regarding shelving orders to make ready for technique department, 5 (83%) of the respondent mentioned that parts are arranged using their movement history in terms of fast movement whereas 1 (17%) of the respondents said another opinion that the movement of stock are with regards to request of technique department. The data reveal that the movement of stock to be categorized as, fast moving, stock in addition of the request of technique department schedule. This means sometimes the technique department has seasonal work.

Concerning if spare parts & raw materials are issued using invoices that are pre numbered & usage is accompanied strictly the sequence, all or 6 (100%) of the respondents answered by saying yes and they state the store procedures for issuing spare parts as:

- First if spare parts are in need by technique department, then material requisition will be prepared by technique requester and will be approved by foreman, the material requisition then will be forwarded to inventory control section.

- The inventory control clerk check the availability of the spare part from the stock control card then write the unit price, code no, and send to store.
- The store man prepares issue voucher and let signed the responsible person and give the item and finally dispatch issue to account section.

This stated system of issuing material shows that there is a proper issuing procedure of stock.

Regarding to obsolescence or damage parts, all respondent approved that there is an obsolete and damaged parts that are stored for long time in various stores and these parts are not scheduled to be disposed.

Concerning the code number of each spare parts and raw material, 100% of the respondents mentioned all material have their own unique code number in addition to internationally recognized part number. This shows that the identification and controlling aspect of parts is effective.

Concerning an usable spare parts and raw material, 6 (100%) of the respondents answered by saying yes there are an unusable spare parts. Where as most of the spare parts and raw materials are transfer from the former Ethiopia Fright Transport Corporation and some are due to excess and wrong purchased. These items are accounted up to 20% of the company stock. This implies that the company money is tied up unnecessarily.

Concerning physical count of spare parts and raw material of inventory 100% of the respondent mentioned count is carried on once in every year. The accounts section is the responsible body to carry on the physical count and later after finalizing the valuation for the physical count, the section will reconcile with the accounts record. The data show that this count is effective. Finally 50% of the respondents disagree that there is an effective inventory management and recommend for improvement.

Table 4. Systems of purchasing department respondents

No.	Item	No of respondent	Percentage
1.	When does spare parts and raw material purchase?		
	<ul style="list-style-type: none"> Local purchase are made if necessary, but foreign purchase yearly. 	5	83%
	<ul style="list-style-type: none"> Follow the plan purchases system addition to local purchasing necessarily. 	1	17%
	Total	6	100%
2.	Where do you buy spare parts? Locally or abroad?		
	With in the country	0	0
	Out side the country	0	0
	Both	6	100%
	Total	6	100%
3.	Is there any problem about spare parts and raw material purchase?		
	Yes	6	100%
	No	0	0
	Total	6	100%
4.	If answer for Q. No 3 is yes, explaining the problem?		
	<ul style="list-style-type: none"> The supplier provides wrong items while purchasing and insufficient supplier. 	3	50%
	<ul style="list-style-type: none"> Poor quality, lately deliver and price fluctuation. 	3	50%
	Total	6	100%
5.	Is the problem of purchase has an impact on maintainace process?		
	Yes	6	100%
	No	0	0
	Total	6	100%
6.	Is there purchasing procedure in the company?		
	Yes	6	100%
	No	0	0
	Total	6	100%

From the above table 4 purchase of spare parts and raw material purchase 5 (83%) of the respondents mentioned that local purchase is done when necessary and foreign purchase is done yearly, whereas the other 1 (17%) of the respondents said local purchase is ordered necessarily, but foreign purchase is done according to the plan of the company. These show that the Share Company does have both local and foreign suppliers of spare parts and general items.

All respondents agree that there is a problem of purchasing spare parts, most of the problems due to lack of program purchase. They play a yearly basis rather than using (EOQ).

Concerning the problem of spare parts and raw materials, purchase 50% of the respondents answered. It has poor quality, late delivery time and price fluctuation where as 50% of the respondents said the supplier sample and delivered parts have different quality, delivery time. They don't supply correct parts, and regarding to the problem of delayance of purchase of spare parts and its impact on maintenance system, all of the respondents approve that delayance have an impact on their maintainace schedule.

Concerning the company purchasing procedure, 100% of the respondents answered that there is a written purchase procedure which is distributed to every department and sections. According to the manual it gives various level managers to authorize purchase. Foreign purchase is authorized by the general Manager.

Table 5 systems of technique department /spare parts user/

No.	Item	No. of Respondents	Percentage
1.	Do you have spare parts catalog to refer to?		
	Yes	9	90%
	No	1	10%
	Total	10	100%
2.	If answer is Q. No. 1 Yes, please give additional suggestion		
	<ul style="list-style-type: none"> The technician don't use catalog because the awareness is less. 		
3.	Do you have work procedure to receive goods from store?		
	Yes	10	100%
	No	-	-
	Total	10	100%
5.	Which section use spare parts		
	Administration	0	0
	Technique	10	100%
	All	0	0
	Total	10	100%
6.	Which section use stationary?		
	Administration	0	0
	Technique	0	0
	All	10	100%
	Total	10	100%
7.	Do you have mechanisms which prevent theft?		
	Yes	10	100%
	No	0	0
	Total	10	100%
8.	Do you have out dated and damage spare parts?		
	Yes	10	100%
	No	0	0
	Total	10	100%

From the above table no. 5, 9 (90%) of the respondents answered that they use spare parts catalog, 1(10%) respondent do not use catalog. But most of the technician do not use catalog because their awareness is less. The data reveal that there is catalog in the company but not used as much.

Concerning the work procedure, 10 (100%) of the respondent answered that there is a working procedures, and at the same time they replay that all departments use stationeries and technic department use spare parts.

3.3 Analysis of Interview Question

The interview was conducted to asses that whether the Share company has a good inventory system or not. The result of the interview was moderately good, the reasons for the answer was that, the share company has about five various stores for spare parts, stationeries, tires and tubes, medicines, and salvage store. All stores have store keepers and bin card and items are arranged supplied in proper manner. Various pre-numbered documents for goods receipt and issues are used. The stock control section, which is under the supervision of supply manager, handles stock control card for each inventory item. While the existence of good structural follow up and control system makes strong points, where as a poor upgrading of stock system is its draw back.

The share company has about five various stores which are for spare parts, stationeries, tires and tubes, medicines, and salvage store. In these stores various materials are available. Among them various components, kits, tires and tubes, supporting materials like canvas and tolls for heavy trucks and trails and light vehicles, Stationery, cleaning, sanitation materials, construction materials and work shop materials are the most fast moving items.

The opinion of the interviewee indicate that if the inventory system have obstacles the answer is Yes, there is an obstacle in our inventory system, one of the most obstacles is that it is not supported with modern system and there is always a delay in handing receiving and issuing materials till the transaction is recorded manually in the control card and there is also a frequent error on recording cost during recording transaction.

The interview also asked about if you have enough recording system the answer was yes, there is enough recording system but it is not modern one.

As to the question about the company stock record keeping function statements are summarized as follows. The stock record keeping is done manually using standard formats and control cards. Pre numbered goods receiving report form, Issue, turn in, equipment issue voucher and store transfer documents are used for adding and deducting materials in the control card. Stock control card and Bin card are card used for recording the transactions of inventory items for control purpose.

In addition to this opinion of the interviewee indicate that if you have proper storage and store keeping the answer is Yes, we have a good storage and store keeping activity. Store materials are grouped and are stored in a separate store around a place where users have a near by access. Daily transactions are recorded in the bin card and annual inventory is taken once in a year to be reconciled with the record balance. Each inventory item does have its own unique code number and location; therefore it can easily be identified

According to them the kind of suppliers was both foreign and local suppliers. Burkhaive, an American Mack spare part supplier and Iveco an Italian spare part company are the two foreign suppliers who take the lion share. Addis spare part, Nyala Motors Corporation, Equatorial business groups, Amch are local spare

part suppliers and Web get is our local supplier for computers and accessories. Addis tyre Natherath canvas factory and various local suppliers who compete and win a tender can supply stationery and cleaning materials.

The interviews were also asked about if you have enough supply for a period the answer to this question was yes, bulk and program purchase are made for a period both form local and foreign purchases.

CHAPTER FOUR

SUMMARY, CONCLUSION AND RECOMMENDATIONS.

The study has reviewed a general overview of the components of the currently on going Inventory management practice in the Comet Transport Share Company and study has identified both problems and solutions. Based on the study the following Summary, Conclusion and Recommendation are made.

4.1 Summary

The intention of the study is to assess the Inventory management system of Comet Transport Share Company, and to do this, relevant data is gathered, analyzed and the following points are concluded as follows:

- Comet Transport Share Company has above 10,000 line items of spare parts, tiers, general items, fuel and lubricants. It uses perpetual Inventory system. In every budget closing date physical count is carried on and the count balance is reconciled with the accounts record.
- Stock control section controls the inflow and out flow of inventories using stock card and bin cards also maintain by store section. The stock control card is separately handled by inventory control section. Thus this shows that there is a proper controlling mechanism of stock even though it is backward and operated manual.
- The company takes physical counts and reconcile with cards balance to check the physical existence of inventories at the end of the year. According to Comet's corporate balance sheet of year 2001 E.C., current assets are amounting birr 114 million of which birr 31mil. Or 27% constitute various stocks, including spare parts and fuel, this stock is 16% of its investment

which shows that fair amount is set for stock. However there is almost birr mill

- The company uses the weighted average unit cost method for valuation, and it uses various pre-numbered issue and receiving documents for issuing and receiving inventories.
- The purchasing section has a yearly foreign purchase plan and local purchase is made when necessary. Delayance on purchase and wrong item delivery are the main problem for technic department on their daily operation. The section doesn't use Economic Order Quantity, ABC analysis or any historical statistical facts for stock replenishment.

4.2 Conclusion

- The stock control section is carrying out its day to day activity without the help of information technology. They use manual recording on cards to control the stock. Since the employee in the stock control section is busy and the issuing and recording on card is a tiresome activity there is always balance and arithmetic error and doesn't assure accuracy. Controlling through card is also uneconomical in cost as well as in space utilization. Reference of historical records is also ineffective exercise. In general there is an existence of backward, poor performance and inefficient controlling mechanism in inventory control section.
- At the end of closing budget year the company takes annual physical inventory. Teams are formulated from finance, Technique, and internal audit department. External audit are also examine the counting process. After the physical counts and stock record are reconciled then managerial decisions will be taken for shortage and overage. Accounts recoding and physical count discrepancy exists in every budget closing year.

- Various Pre-numbered documents are used for issuing, transferring and acknowledging purchases. They are also used maintaining their chronological order.
- Obsolete and wrong items are accounted up 20% of the company stock and they are counted in every year to assure their existence. Though there is a procedure and a committee to dispose such items, they function inefficiently since they can't even sale once in a year. Therefore a huge amount of the Share Company's capital is tied up by holding obsolete and wrong items. They are also facing carrying cost.
- Some stock items are stocked at unrestricted open area without proper shading. Such storing experience will lead to embezzlement and stocks will also face a risk of damage on accidents.

4.3 Recommendation

Based on my intensive analysis and observation of company records and manuals, I the researcher would like to recommend the following to Comet Transport Share Company.

- The company should change its manual controlling and recording system by introducing information technology. A single computers and mini packages can accumulate huge amount of data and make routine activities friendly and reference easy. By using information technology:
 - Advantage will be taken on space utilization
 - Cost will be reduced.
 - Accuracy will be maintained.
 - Operation will be effective and efficient.

- Oil, Lubricants and greases should not be stored in an open without proper shade and protect from unauthorized personnel. Therefore the company should take proper action in protecting these dangerous inflammable stock items. They must be stored under a shade, and authorized personnel can be allowed so as to secure these properties from damage and to reduce risk.
- Recording system of inventory is not properly handled. Clerks in store and in the inventory control have no deep know-how of the costing concept about inventory. Thus, it leads to error in valuation causes discrepancy with accounts record. Therefore, the management is advised to train the workers, and apply IT so as to maintain accuracy and reduce errors.
- The stock balance is reconciled once in a year as a result year end counting takes a long time. The company's stock card and bin card should be reconciled within reasonable time before physical count. So that counting time can be shortened and accurate balance can be handled at any time.
- There is a material amount of obsolete and unusual stock items and assets which the company should utilize or dispose. Due to lack of follow-up and programming to dispose, a huge amount of capital of the organization is being tied up and incurs carrying cost. Therefore, management should program and act on disposing such inventory items to increase working capital and reduce carrying cost.