St. MARY'S UNIVERSITY COLLEGE
BUSINESS FACULTY
DEPARTMENT OF MANAGEMENT

AN ASSESSMENT OF INVENTORY MANAGEMENT PRACTICE IN CENTRAL WAREHOUSE OF ETHIOPIAN TELECOMMUNICATIONS CORPORATION

By

Rekik Mistiru

July, 2010

SMUC

Addis Ababa

AN ASSESSMENT OF INVENTORY MANAGEMENT PRACTICE IN CENTRAL WAREHOUSE OF ETHIOPIAN TELECOMMUNICATIONS CORPORATION

A SENIOR ESSAY SUBMITTED TO THE DEPARTMENT OF MANAGEMENT BUSINESS FACULTY

St. MARY'S UNIVERSITY COLLEGE

IN PARTIAL FULFILLMENT OF THE REQUIREMENTS FOR THE DEGREE OF BACHELOR OF ART IN MANAGEMENT

By

Rekik Mistiru

July, 2010

SMUC

Addis Ababa

St. MARY'S UNIVERSITY COLLEGE

An Assessment of Inventory Management Practice in Central Warehouse of Ethiopian Telecommunications Corporation

By

Rekik Mistiru

Faculty of Business

Department of management

Approved by the Committee of Examiners

_____	_____
Chairperson	Signature
_____	_____
Advisor	Signature
_____	_____
Examiner	Signature
_____	_____
Examiner	Signature

ACKNOWLEDGEMENTS

This research would, however, not been possible obviously with out the assistance and contribution of people. Thus, I would like to thank my advisor Ato Messelu Fanta for his professional assistance from the beginning up to the end.

I would like to express my deep hearted thanks to my husband Atnafu Dereje who gave the necessary support, love and patience with hospitality to finalize my senior essay. Above all, I would like to thank the all Mighty God who enabled me to have strong, courage and energy to wind up my work.

Table of Content

Content Page

Appendix

LIST OF TABLE

TABLES **PAGES**

Acronyms

BDD	-Budget and Disbursement Deputy
EOQ	- Economic order quantity
ETC	- Ethiopia Telecommunication Corporation
FIFO	- Fist in fist out
L/FPDD	- Local/ Foreign procumbent Deputy
LIFO	- Last in first out
MCTL	-Materials Control reports to material control team leader
MDD	-Materials management Division
PO	- Purchase Order
SCT	- Stock control team
TL	- Team leader

CHAPTER ONE
INTRODUCTION

1.1 Background of the study

Inventory management is very essential for controlling and managing assets by facilitating the appropriate data of receipts of goods, movements of goods from place to place within the company, dispositions of goods, and to precisely know the status of good remaining at the store in time. This research tries to indicate the problems of inventory management system in Ethiopian Telecommunications Corporation central warehouse. As Jon Schreibfeder, (2008) mentions that inventory management system have the following characteristics:

I. Each warehouse has to establish an approved stock list and assign and use bin locations.
II. Process paper work in timely manner and make sure that every employee is aware of the cost of bad inventory management.
III. Ensure that stock balances are accurate and will remain accurate and the inventory management consideration should be part of corporate strategic planning.
IV. Initiate an ongoing dead stock and excess inventory control program.

This shows that variety of items stored is so large that a planned handling and controlling system is necessary to keep them safely and in order to know precisely the status of goods remaining at the store in time. If there is inaccurate inventory management system can bring out of stock items can result incorrectly reported assets ad also bring problem in carrying out the performance of the company.

1.2 Background of the Ethiopian Telecommunications Corporation

Ethiopian Telecommunications Corporation (ETC) is largest state-owned telecommunication service provider in Ethiopia and based in Addis Ababa.

The first telegraph line in Ethiopia was constructed in the year 1897-1899 between the cities of Harar and the capital Addis Ababa. this was extended in 1904 by a line that run from Addis Ababa through Tigray in to Eritrea and to Massawa; and the next year by a line again from Addis Ababa to gore in the province of Illubabor and Jimma in kaffa.

The first telephones were brought by Ras mekonnen from Italy in 1890, and connected between the palace and the imperial treasury; the sound of disembodied voices frightened the local priest, who through it was the work of demons. The emperor menelik II responded to their protest with disdain, and later used the telephone to give orders to his provincial governors. Emperor Haile selassie had begun the process of introducing radio transmitters to the country for civilian and military use in the years before the Italian invasion.

According to the Ethiopian telecommunication corporation (ETC), the average rural inhabitant of Ethiopian has to walk 30 kilometers to the nearest phone. The ETC announced 7 September 2006 a program to improve national coverage, and reduce the average distance to 5 kilometers.

The Ethiopian telecommunication corporation (ETC) serves the whole country in facilitating information. Hence, the corporation to shoulder its tasks has a central ware house which is structured at division level in Addis Ababa in the sub city of cherkos in Keble 50 with a major duties and responsibilities of:

I. Material procured from foreign markets and all strategic material procured by the corporate procurement organ have to be held at central warehouse till arrangement made for dispatching to the respective areas.
II. Material procured by corporate procurement organ is distributed accordingly to preplanned requirements to projects, regions, zones e.t.c.

Thus, this study tries to asses; the inventory management system used in.

1.3 Statement of the problem

Good and systematic invitatory management will help the corporation to effective and efficient. However, Ethiopian Telecommunications Corporation does not give the required level of attention, to the importance and relevance of inventory management. Those purchased and donated assets in central warehouse have some problems. Thus,

this study assess how purchased and donate assets are managed and control by asking the following basic questions.

1.4 Basic questions

I. What kind of inventory system is applied in the central warehouse?

II. What kind of organizational manual follow and how to manage inventory central warehouse?

III. What techniques should be used to known annual consumptions?

IV. What is the attitude of employees on the existing inventory costing or cost flow assumptions?

1.5 Objectives of the Study

1.5.1 General Objective

Assessing how procured and donated assets in Ethiopian Telecommunications Corporation (ETC) are managed and controlled and to propose possible solution for the problem.

1.5.2 Specific Objectives

The followings are specific objectives:-

1. Assess the kind and challenges of inventory management system and recording.
2. Assess whether timely and appropriate manpower is practiced to carry out tasks.
3. Bring the attention of the concerned body for further study.

1.6 Significance of the Study

Assessment of inventory management system in the central warehouse

- Give an insight to the corporation how the procured and donated assts are managed, controlled and show clearly how maximum and minimum levels of stocks are kept at their optimum.
- The study has its own part in reflecting the real practice of warehouse inventory management.

- By finding out realities and suggesting feasible strategies it will contribute for better inventory management system in the central warehouse.
- It can also serve as stepping-stone for further research work.

1.7 Delimitation of the Study

Though the Ethiopian telecommunication corporation has stores for its equipment and other office material all over the country; this research would focus on the inventory management system of central warehouse located in Addis Ababa.

1.8 Research Design and Methodology

1.8.1 Research design

The research method followed by quantitative approach. As part of research looking at certain characteristics (variables) to show something interesting about how they are distributed with in a certain population. A variable need to be measured for the purpose of quantitative analysis.

A quantitative approach useful to assess the inventory control in central warehouse, the questionnaires and interview checklist, develop.

1.8.2 Population and Sampling technique

Population of the study focus on employees in central warehouse of Ethiopian Telecommunications Corporation. The technique used for sampling is availability (comprehensive) sampling technique to sample respondents. So, the paper use a population of 20 individuals and 100% of them are sample size.

1.8.3 Data collection Instrument

The following are the main methods used for data collection. The study uses both primary and secondary sources of data.

Questionnaires: - Questionnaires are prepared and collected for Ethiopian telecommunications central warehouses, so that it can help to analyze the required information from those concerned personals in site. The questionnaire is prepared in Amharic for ware house employees for easy understanding of points so as to get

appropriate feedback. This method of data collection helps to get relevant information how the assets in the central warehouse are handled and controlled.

Interviews: - presented for two or three, that is, from the managers of the warehouse as needed as possible, so that some missed and important information can be obtained, other than the questionnaires.

Observations: - Observations of the central warehouse assets recoding, coding, arrangement (handling and controlling) system be observed by preparing checklist. Finally the information be analyzed and interpreted.

1.8.4 Document analysis

Document analysis is also part of this study. Thus data from records, annual reports and audit evaluation were assessed.

1.8.5 Data analysis method

The data collected would be analyzed qualitatively and quantitatively, thus, observation reflects the perception of the participants and the researcher. Hence, the feedback organized and interpreted in qualitative terms. On the quantitative part questionnaires collected analyzed in percentiles and correlated with the qualitative repose.

1.9 Organization of the Study

This paper would have four chapters. The first chapter focuses on the problem and its approach of the inventory management system in central warehouse of Ethiopian Telecommunication Corporation.

The second chapter presents the review of relevant literature. The third chapter includes presentations, analysis and discussion on the findings of the data. The summary of the findings, conclusion and recommendations are presented in the forth chapter.

CHAPTER TWO
REVIEW OF RELATED LITERATURE

2.1 **Meaning of Inventory**

There is different kind of definitions, but as Panday (1995) defines the term inventory refers to current assts which will be used in production or sold in the future in the normal courses of business operations. Inventory is a necessary current asset that permits the production sale process to operate within minimum of disturbance, like accounts receivable, inventory represents a significant monitory investment on the part of most firms. Inventory management is concerned with keeping enough inventories on hand to a void running out of stock while at the same time maintaing a small enough inventory balance to allow for a reasonable return on investment.

2.2 **Types of Inventory**

According to Smith (1997), there are three types of inventories: raw material, work process and finished goods inventories.

2.2.1 **Raw Material Inventory**

Consists of items procured by the firms for use in the manufacture of a finished product. If a firm manufactures items that has been purchased from another company or from another division of the same firm it is called raw material inventory.

2.2.2. **Work in Process Inventory**

Consist of all items that are currently in production process. These are normally partially finished good at some intermediate stage of competition. An inventory of partially completed units allows the separation of different phases of the production process. The amount of work in process inventory is in part a function of the type in product: the measurement period, and the nature of the production process“(Smith; 1977)”.

2.2.3. **Finished Goods Inventory**

Consists of items that have been produced completely but not yet sold. An inventory of finished goods allows separation of production from selling. With a stock of finished merchandized on hand, a firm can fill order as they are received rather than depend up on the completion of production to satisfy demands“(Smith, 1977)”.

2.3. **Inventory System**

The practice of inventory system enables the organization or company to be efficient and effective in it its manufacturing performance. Thus, as Simons, a (1977) states system of inventory is either as a periodic system or perpetual systems.

2.3.1. **Periodic Inventory System**

Relies on a physical count of the goods on hand as the basis of control, management decisions, and financial accounting. Although this procedure may give accurate results on a specific date, there is no continuing record of the inventory“(Simons, 1977)”.

2.3.2. **Perpetual Inventory System**

Requires a continuous record all receipts and withdrawal of each items of inventory. The perpetual record some times is kept in terms of quantities only. This, procedure provides a better basis for control than is obtained under the periodic system. When the perpetual system is used, a physical count of the goods owned by the business enterprises must be made periodically to verify the accuracy of the inventories reported in the accounting record. Perpetual or book inventories can be kept in terms of both quantities and costs. Inmost manufacturing and trading companies, perpetual inventory system is adapted as it enables continuous check and control over inventories as well as immediate data concerning inventory position. Thus, purchasing and production planning are facilitated, supplies at hand are assured, and losses due to damage and/or theft are clearly known “(Simons, 1977)”.

2.4. Types of demand inventory

The inventory management activity is concerned with the planning and control of inventories. There are two general types of inventory. (Steven A. : 1994:25)

1. Dependant demand inventory and
2. Independent demand inventory

Dependant demand inventory is made up of inventory items that are consumed with in an organization to produce a finished product.

Independent demand inventory comprises inventory items consumed by customer's external to the organization.

2.5 Purposes of inventory

- Inventory exists for many purposes including:
- To provide and maintain good customer services.
- To smooth the flow of goods through the productive process.
- To provide protection against the uncertainties of supply and demand.
- To obtain a reasonable utilization of people and equipment.

For every item carried in inventory, the cost of having it must be less than the cost of not having it. Inventory exists for this reason alone. (Donald W.Dobler 2002:202)

2.6 Cost allocation method (valuation of inventory)

According to international accounting standard, the inventories should be valued at the lower of "historical cost" and "net realizable value". each inventory method have certain advantage and shortcomings. in the final analysis, the selection of inventory evaluation method is a managerial decision. However, the method used in financial statement always should be disclosed in notes accompanying the statement.

2.7 Importance of valuation of inventory

Valuation of inventory is important for various reasons, which are mentioned as follows:-

- To know the value of each category in the warehouse

- To see the trend of value of different categories of inventories in the warehouse.
- To know the quantity and the value of the inventory with out stocktaking.
- To prepare accurate materials budget.

The most widely used method of valuation of inventory is:

a. first in, first out method (FIFO)
b. Last in, first out method (LIFO)
c. Weighted average method.

2.7.1 First in, first out method (FIFO)

The distinguishing characteristics of the FIFO method are that, the oldest purchase cost are transferred to the cost of good sold, while the most recent costs remain in inventory. By assigning lower costs to the CGS, FIFO usually causes a business to report some what higher profit its then would be reported under the other inventory valuation method. Some companies fever the FIFOmethd for financial reporting purposes, because their goal is to report the highest not income possible. For income tax purpose, however reporting more income than necessary results is paying more income taxes than necessary.

Under this method it is assumed that the material or goods first received are first to be issued (sold). According to this method, the inventory on a particular data is presumed to be composed of the items, which have been acquired most recently.

The FIFO method of valuation of inventory is particular suitable in the following circumstances:

1. The material is perishable in nature.
2. The frequency of purchase is not large.
3. There are only moderate fluctuations in the prices of material or goods purchased.
4. Material is easily identifiable as belonging to particular purchase.

2.7.2 Last in, first out method (LIFO)

This method assumes a flow of inventory costs based on the assumption that the most recently purchased good are sold first, because current costs are incurred to make current sales and to maintain adequate inventories on hand.

Under this view, the latest costs are most closely associated with current revenue; thus the matching principal of income measurement is carried out. This assumption is not in accordance with the physical flow of merchandise in most business. Yet, there are strong logical arguments in support of the LIFO method in addition to income tax consideration supporters of this LIFO method contend that the measurement of income should be based on current market conditions. Thus current revenue should be off set by the current cost of the merchandise sold by the LIFO method the costs assigned to the cost of good sold are relatively as the system form the most recent purchase.

In the common situation of rising prices, these most recent cost is also the highest costs. By reporting a higher cost of goods sold than result from other inventory valuation method, the LIFO method usual result in lower taxable income. In short, inventory costs rising, a company can reduce the amount of its income tax obligation by using the LIFO method in its income tax return.

Advantages

- It takes in to account the current market conditions while valuing material issued to different job or calculating the CGS.
- The method is used on cost and there fore, no unrealized profit of loss is made on account use of this method.
- The method is most suitable for materials that are of bulky and non-perishable type.

2.7.3 Weighted average method

This assumption values all merchandise units sold and units remaining in inventory at the average per unit cost. (IN effect, the average cost method assumes tat units are with drawn from the inventory in random order).

Weighted average prices method is very popular account of its being on the total quantity and value of material purchased besides reducing number of calculations.

2.7.4 Specific Identification

This method is best suited to inventories of high priced, low volume items. This is the only method that exactly parallels the physical flow of the merchandise if each item in the inventory is unique as in the case of valuable painting, custom jewelry and most real state. The specific identification method has an intuitive appeal, because it assigns actual purchase costs to the specific units of merchandise sold or in inventory. However when units in inventory are identical, the specific identification method may produce misleading results by implying differences in value that under current market conditions do exist.(Edmonds,2003:189)

2.8 Inventory cost structure

The management of inventory is part to provide the roles of inventory one the one hand, and control the cost of inventory on the other. One important perquisite to under take this task understanding the make up and structure of the associated costs of the inventory investment. These are discusses below.

2.8.1. **Cost of an item**

Concerned the cost of buying or producing the individual item held in inventory. volume often reflect on the cost of an item as quantity discount can be secured for purchased items and services and also non variable cost such as over heads which can be spread over the great number of items produced.

2.8.2. **Ordering and set up costs**

Costs related to the ordering and provision of a given quantity. Any costs associated with arranging and providing products and services fall in to this category. They include order preparation and placement, monitoring the order, transport, receiving and invoice reconciliation and payment.

2.8.3. **Carrying costs**

Concern the costs of holding inventor. these includes the cost of the investment itself, the storage costs including space and insurance and the cost of deterioration, obsolescence, and losses that occur during the period in which the inventory is held awaiting its use in the process or scale to a customer.

2.**8**.4. **Stock out costs**

Reflects the economic consequence of running out of stock. This concerns the lost profit on a particular sale and any loss of customer good will occasioned by the later or no delivery of a product or service (Terry Hill; 2000:295).

2.9. Inventory Control Techniques

There are number of techniques which play an important role in the inventory control program. These techniques are very helpful in rationalization of inventory control approach and assists in formulation of inventory control policies. Some of these techniques forming part the inventory control program are:-

i. Economic order quantity
ii. ABC analysis

2.9.1 Economic order quantity(EOQ)

The economic order quantity “Q” is quantity, which minimize the sum of the acquisition cost and the inventory currying cost that is related to the minimum “variable costs”. The economic order quantity minimizes the total amount cost.

2.9.1.1 Determining Economic Order Quantity (EOQ)

The economic order quantity "Q" is the quantity, which minimize the sum of the acquisition cost and inventory, currying cost that is the quantity related to the minimum "variable costs" the economic order quantity equation minimize the amount costs.

Variable Costs

Both acquisition costs and inventory carrying cost vary according to quantity ordered.

There are number of factor which influences the acquisition cost and inventory carrying cost.

Both these discusses in the following sections.

A) Acquisition cost

Inventory acquisition cost is the cost of procuring inventory procurement and procurement policies. Issuing large number of orders involves a lot of effect and adds to cost. Consolidation of requirement results in less number of orders and therefore reduces acquisition cost.

- The various elements of the acquisition cost can be listed
- Cost of building for the purchase department and its maintains cost
- Cost of paperwork
- Cost of utilities such as computer terminals, type writers, photo copying machines, etc.

B) Inventory-Carrying cost

Carrying cost of inventory is an important element of production activity, various elements of inventory-carrying cost are:

- Interest on the inventory investment
- Overhead wages for the storage space
- Cost of handling in stores division
- Obsolescence cost
- Insurance cost for the material stored
- Depreciation
- Taxes (Saxena;2008:212-214)

2.9.2 ABC Analysis

The ABC approach is a simple approach to inventory management in the basis idea is to divide in to three or more groups, a big organization has a very large number of items, Sometimes 5,000 to 10,000. All items cannot be given equal attention. It is essential to determine the items or group of items that deserve the maximum control. One of the most important considerations for control is the value of annual consumption of inventory items. It has been observed that a small number of inventory items consume very large number share consumption during the year. Further, a litter larger share of inventory items covers a moderate share of annual inventory consumption, going the year. This brought out of the concept of ABC analysis. Various studies have shown that only 10% of items have 70% of annual inventory consumption (Saxena, 2003:245-247).

2.10 Internal control

Internal control has different definition. However, Jain, (2002) states as the efficiencies of the organization to safeguard its assets; check the accuracy and reliability of its accounting data. So, the further elaborates that internal controls not only internal check and internal audit, but the whole system of controls, financial and otherwise formed by the management so as to carry on the business of the company, and search accuracy as much as possible and reliability of records. In sharing this idea, AICPA (American institutes for certificates of public accounts) says, internal control as a coordinated method and measures with in accompany used to safeguard assets, check the reliability and accuracy of accounting data, facilitate operational efficiency and encourage commitment to suggest managerial policy so, internal control enables the organization to check how activites, assets, and financial the position of performance of the organization. This function provides basic information on what needs to be purchased or ordered at any given time. The use of EOQ (Economic Order Quantity) will be determined by the inventory policy, which governs the investment inventory at any given period. An inventory policy may be influenced by financial resource of the firm, future plans, current market conditions and lead-time in the purchase of materials. (Donald W.Dobler, 2003:110)

COMPANY-WIDE IMPLICATION OF INVENTOR CONTROL

There is a general need for training, production and purchasing department personnel need to understand some of the fundamental inventory control techniques that have been developed over the years.

These techniques help to answer questions like:-

- When do you place and order?
- How much should you order?

2.12 Provisioning of materials

The maintenance of material and spare parts cover all kind of supplies, which are necessary to keep equipment operating satisfactorily and to keep production at the desired Quantity and quality levels.

- Because of variation in the frequency and rate of consumption of common use items, tend to level over a number of consuming points and more time can be spent on the speculation of option ordering quantites, stock level for each individual item.
- The role of replenish of items is to ensure the steady and efficient functioning of the operation needs.
- There should not be a trial and error policy in replenishment of stock items
- Probabilities of running out of stock with different level have to be taken into be taken into account. The issued stock has to be replaced by fresh arrivals to achieve the desired aim.
- To act systematically, the stock control, fixes the following different level:-
    - Maximum level
    - Minimum level
    - Reorder level
    - Hastening action level and buffer stock level

Maximum stock level

Maximum level represents the level, wich the stock at hand is not allowed to exceed the quantity level. The maximum quantity to be held in stock is not being more than three years consumption.

Minimum stock level

Minimum level represents the level, which the stock at hand is not allowed to exceed the set quantity level. The maximum quantity to be held in stock is not being more than three years consumption.

Re-order level

The reorder level is fixed between the maximum and minimum level of stock. Re-order level is usually a little higher than the minimum to protect an abnormal usage of materials.

Hastening action level

When the quantity is below the minimum, it is the stage at which emergency and immediate steps have to be taken for getting the stock replenished. The quantity may not exceed three quarter of lead-time consumption.

Buffer stock level

It is additional stock kept on hand as reserve, to avoid temporary out of stock situation. The quantity on hand at this stage is to be issued based on priority of emergency or rationing. The quantity on hand is not more than the consumption of one quarter of the lead-time.

CHAPTER-THREE

DATA PRESENTATION, ANALYSTS AND DISCUSSION

3.1 Background Information of store Keepers

These parts of the study present and discuss the data collected on inventory management system of the central ware house at Kirkos sub City in Addis Ababa. As mentioned in the methodology part of this study different tools of data collection were used. Thus, questionnaire was prepared for storekeeper and interview for Head of the central warehouse and store supervisor. On top of these, the central warehouse and audit documents were observed.

The questionnaires are presented and analyzed starting from storekeeper's background.

Primary data

Table I: Store Keepers Profile

Background Information		Total number	Percentage (%)
Sex	**Female**	**6**	**33.33**
	Male	**12**	**66.66**
	Total	**18**	**100**
Qualification	**12 complete**	**6**	**33.33**
	Diploma	**6**	**33.33**
	1st Degree	**6**	**33.33**
	Total	**18**	**100**
Experience	**3-6 Year s**	**12**	**66.66**
	6-20 Years	**6**	**33.33**
	Total	**18**	**100**
Age	**20-23 Years**	**8**	**44.44**
	25-50 Years	**10**	**55.55**
	Total	**18**	**100**

Source: from ETC Human resource Department

Since the size of the workers are manageable questionnaire were distributed to all of them, which are 18 in number. Among the total population female respondent accounts 6(33.33%) and 12 (66.66%) are males. And, regarding their educational back ground 6(33.33%) have first degree, 6(33.33%) have diploma and 6(33.33%) secondary education complete (Department of HRM in central ware house).

The other point of discussion, which has impact on carrying inventory management in the warehouse, is the experience of workers in the area. Hence, 15(83.33%) of them have a total service of 3-6 years while one of them has above 20 years. Meanwhile, the other question asked was to know their stay in the central warehouse. They all replied that they have a service of 4-6 years.

Thus, the background of the respondents showed that they have enough experience and good academic qualification to actualized good inventory system in the central warehouse.

Table II: Inventory system used in the corporation

Description	**Periodic**	**Perpetual**	**Any other**
Over all inventory system	**18**	**-**	**-**
Total	**18**	**-**	**-**
Percentage (%)	**100**	**-**	**-**

Theoretically, as it stated in the literature part, there are two types of inventory accounting systems; periodic and perpetual. Of the two inventory systems, 18(100%) of the respondents replied that Ethiopia Telecommunication Corporation in the central warehouse uses the periodic inventory system to determine the amount of ending inventory and inventory sold during the period.

To make the supplies available the corporation prepares schedule of shortage and overage at the end of each year. Each store may show a significant different between the physical count and the store record in a bin card, because a number of reasons stated by the finance department as follows:

√ Poor internal control system.

√ Absence of sufficient employee each store

√ Poor storage it self

For instance, based on the observation made by the researcher in the telephone store, the warehouse has a total physical inventory for recovery telephone that show 8432 units but the bin card balance shows 8418 high shortage and overage difference on the same inventory items observed.

Table III. Coding system

	Descriptions	**No. of respondents**	**Percentage (%)**
How is the coding system of inventory in the central warehouse?	Excellent	6	33.33
	Good	-	-
	To some extent good	9	50
	Fair	3	16.67
	Bad	-	-
	Total	18	100

As it is shown in the table III, 9(50%) of the respondents that the over all coding system of the central warehouse is to some extent good, 6(33.33%) said that the coding system is excellent and 3(16.66%) replied that it is fair, Thus, it can be said that the coding system in the central warehouse of the corporation is not efficient.

On top of closed end questions, open were prepared so as the respondents can say their free idea on the issue of inventory management system of the central warehouse. Thus, their feedbacks are summarized as follows.

Regarding whether there is a maximum budget limit on annual basis for purchase of goods and equipment: 15 (83.33%) of them said that they do not know and added that it is not their duty and responsibility.

The second question forwarded was who is responsible to ask for purchase of goods? The majority of participants 12(66.66%) revealed that the question is forwarded from different sections and department of the corporation. Since, their question is not cross check with the stock there is a possibility of purchase of over number of goods. In addition, since the employees of the central warehouse do not participate at the time of budget allocation unnecessary and additional budget may be allocated and on the contrary shortage of budget (goods) may also happen.

The third open end question was whether there is division of responsibility and duty among them on inventory management system and who will handle the control that will do what. All the respondents responded that there is no any division of labor among them. And they did not mention who will control store persons activities. How ever, there is a store supervisor and that of head, sub division of the central warehouse. It seems that there should be division of labor to efficiently and effectively utilizes the central warehouse goods and minimize duplication of efforts and employees to be accountable to their work.

The fifth open-end issue was whether there induction to new employees about their duties and responsibilities or nor. All participants reflected that there such tradition. On the other hand, 12(66.66%) of them said that there is on job training to practice modern inventory management system in the central warehouse. This indicates that except informing new corners how to carry their duties enough attention is not given to practice modern store management in the warehouse.

The last two open-end questions were to forward the most challenging things to shoulder their responsibility properly and the solutions for them.

As to the most challenging problems in their priority order, 15(83.33%) of them responded that, there is a problem of space and too much collection of (used) goods. And, suggested that there should be additional store and to discard the used goods by forming task force. The second problem they mentioned is that the inventory management does

not take the price of goods in to consideration and shortage of workers to properly handle the inventory activity. This indicates that modern inventory system is not applied and also the numbers of workers are not enough. The other problems forwarded are: no timely inventory system and it will not be completed; there is a damage of goods due to rain and rust; and no new inventory management mechanism. For the above-mentioned problem participants replied that for shortage of space and manpower searching for additional space and workers. In addition, they suggested that there should be modem (computerized) Store inventory management system. For old and used goods their respected place is also suggested to solve storage problem central warehouse and for timely usage of goods.

Table IV: Inventory cost assumption

Description	**FIFO**	**LIFO**	**Other**
Inventory cost method	18	----------	----------
Total	18	----------	----------
Percentage (%)	100	----------	----------

As table V shows all 18(100%) of storekeepers replied that the central warehouse uses only the FIFO method. This response was also confirmed by the document analysis and interview discussion that the ETC user's first-in-first-out method to assign values to finished products of the corporation by mentioning the reasons why they use as follows:

- It is simple to employees
- It is comparatively inexpensive
- It approximates the current replacement cost of inventory on the balance sheet, particularly when inventory turnover is rapid and most of the costs assigned by ending inventory are very recent.
- A system of FIFO is followed where deterioration may result from holding materials for an extensive period

- To determine the value of finished products as the corporation normally attempts to sale the oldest goods first.

Table V. Availability of Resources

Descriptions	Enough		Partially Enough		Not Enough		Total	
	Total	%	Total	%	Total	%	Total	%
1. Space for Storage of goods	-	-	6	33.33	12	66.66	18	100
2. Man power	-	-	3	16.67	15	83.33	18	100

As shown in the tables V the responses of 12(66.66%) indicate that there is a problem of space in the central warehouse to store goods and 6(33.33%) said that the problem of space partially enough. Hence, if there is no enough space for storage it is also difficult to smoothly and efficiently perform the inventory management.

As to the second question of availability manpower, 15(83.33%) of participants reveal there are shortage workers and 3(16.66%) replied that partially enough. So, in the absence of enough manpower and space it will be difficult to carry out efficient and effective controlling mechanism in the central warehouse of the corporation.

Table VI. Controlling System of inventory

Description	On Daily Basis		On Program		Occasionally		As need Be		I do n't know	
	Total	%	Total	%	Total	%	Total	%	Total	%
a. Over all control activity in the ware house	-	-	15	83.33	-	-	3	16.67	-	-
b. Control system of incoming and out going of inventory	3	16.67	6	33.33	6	33.33	3	16.67	-	-
c. Reporting of check up and storage system	-	-	6	33.33	3	16.67	9	50	-	-
d. How frequent the inventory of goods done?	-	-	18	100	-	-	-		-	-

Table VI indicates that 15(83.33%) of the respondents replied that there is a programmed control mechanism in the central warehouse. But, the question of how the inventory management is actualized for incoming and out going goods, 6(33.33%) it is done as need comes. It can be said from the above table that incoming and out going goods rather than nearly half of the respondents to suggest occasionally. As to the frequency of the inventory system all participants said that it is done on program i.e. on annual basis. However, will it be manageable to finalize the control and check up activity on manual bases is the issue to be raised.

Among the objectives of the study one is to Asses the inventory management system that currently exists in the corporation. However, the corporation doesn't have any method that is adapted. Thus, all those inventory management techniques stated in the literature including the economic order quantity system, and ABC system are not applied at all by the corporation. But what is practiced in the store management initiates the question of order of goods. Because at the beginning of every physical year there is a budget plan for this department. So, they only try to use that budget for the inventory management. It can be said that the warehouse management systems has no clear inventory mechanisms except the clearly stated procedures for purchasing goods and supplies.

The other tool of data collection was interview questions, which is discussed with store supervisor and material inventories management and control in the central warehouse. The supervisor answered that though there is space problem there is material control gave a different idea to this question. S/he replied that it can be generalized there is no systematic and appropriate material control practice in central warehouse. And added that there are situations where by the purchased goods will be forgotten to be taken by the requested people, divisions, and sections. On top of these, there are time where by purchased goods from abroad will be damaged and unused. S/he also added that there are situations where by they write letters and phone the concerned body to take purchased goods from the warehouse. However, there is not action taken.

System of stores they also added that there is high shortage of manpower since the workload is too much.

In their response to the question whether is programmed inventory management system in the central ware house, store supervisor points that there is once in a year and it will take from two – three months to finalize the task. S/he also added that there is no systematic way of checking goods rather the storekeeper's start from one end to the other. As to the question asked whether there is checking mechanism that the requested goods will be given to the right centers, divisions, offices, etc. the store supervisor states that particularly they do not know whether the project goods are sent to the project area or not.

With regard to material control, local purchase goods will be observed and inspected by the concerned body and if they want it they will use it if not it will be stored. On the other hand, foreign purchase will be checked by professional and if the goods are damaged, not the appropriate type of goods, and it their number is not full we will report to the concerned body. On top of this, if foreign purchased goods are damaged, this claim report to be filled and feedback is expected from companies, which sold the goods. However, except filling the claim report, there is no follow up and reaction taken based on the feedback.

3.2 Functions of Warehousing

a) The materials received by stores shall be checked for proper quantity
b) The safety of all stored materials from damages shall be ensured.
c) Storing aid delivering the materials shall be in the most economic manner.
d) Issues and receipt shall be made on the basis of duty authorized documents.
e) Complete records of receipts, issues and stock balance shall be maintained.
f) List of disposable materials shall be prepared as per the stores management policy and government regulation.

3.3 Receiving Materials

(a) Receiving shall include all those activities involved in accepting materials to be stored, whether materials come from suppliers through inspection office or other sources within the corporation.

(b) Prompt and accurate processing of receipts shall be the primary objective of the receiving function.

(c) Due cares shall he given at the stage of the receiving activity that the whole operation warehousing service begins.

(d) It shall be ensured that it is at the receiving point that the purchase order or other relevant document shoulders meet the physical materials themselves.

(e) Receiving personnel shall be capable of handling the receipts and issues as well.

3.4. Receiving Voucher Preparation

A. Receiving voucher shall he prepared in four copies.

B. The preparation of the receiving voucher in the warehouse shall be done by typewriter.

C. The preparation of the receiving voucher shall take place promptly after receipt of the materials.

D. Receiving voucher shall be prepared for any materials received by the storehouse.

E. The preparation of the receiving voucher shall be done serially pre-numbered and order until automation is fully effected.

F. Every information required on the receiving voucher shall be filled accordingly.

G. Copy of the receiving voucher shall not be circulated among the storehouses.

Authorization

Receiving voucher shall be authorized as per the delegation of authority stipulated in the "Delegation of Authority Manual"

- By concerned Team Leader in the central warehouse

- ❖ By human resource and supply deputy division manager in case of SBU
- ❖ By respective deputy division manager incase of zone and region.
- ❖ By senior area manager in case of senior areas.

Distribution

a. Foreign Purchase

- Original and second copy of receiving voucher shall be promptly handled over to materials accounts upon dispatcher book.
- Third copy shall be forwarded to follow and transit team.
- Last copy retained by the storehouse.

b. Local purchase

- Original of the receiving voucher shall be forwarded to local purchase to enable timely payment to the supplier.
- Third copy, which is blue in color, shall be sent to the concerned employee in the warehouse who approved the receiving voucher
- Last copy retained by the storehouse.

Issue of Materials

a) For receipts of materials receiving voucher should be prepared.

b) Materials shall be issued against the signature of the recipient on the issuing voucher form.

c) The same quantity, description and date of issue shall be posted on materials card and the requestor signs for them.

d) The issued quantity should be deducted from the respective bin card and be posted.

3.5 Issuing Voucher Preparation

a. All issues of materials shall be made against pre-numbered issuing voucher, duly completed by the storekeeper and approved by an authorized signatory.

b. The issuing voucher shall be filled properly and immediately giving full data

taken from the materials requisition.

c. The recipient and the storekeeper shall sign on the entire prepared issuing voucher.

d. If all requisitioned materials are issued accordingly the team leader shall approves the issuing voucher, and returns back to the storehouse.

e. The receiver of the materials, when on issuing voucher, shells indicate his name and the date of issue at the place provided.

Authorization

Issuing voucher shall be authorized as per the delegation of authority stipulated in the "Delegation of Authority Manual"

- By concerned Team Leader in the central warehouse
- By human resource and supply deputy division manager in case of SBU.
- By respective deputy division manger incase of zone and region.
- By-Senior area manager in case senior areas.

Distribution

a) The issuing voucher forms shall be consecutive number.
b) Prepared in four copies with different color.
c) Original shall be forwarded to the accounts in numerical and in date order and without delay,
d) Second copy shall be sent to the employee, who approves the vouchers.
e) Third copy shall be retained by the storehouse.
f) If in any case the issuing voucher needs to be cancelled, the cancelled voucher must be forwarded promptly to the concerned office.
g) The authorization of issuing voucher shall be according to the delegation of authority manual.

3.6 Existing Provisioning Activities – Stock Items

1. Stock Control Team (SCT) initiates the purchase request for stock items when the stock reaches are-order level.

2. The purchase request is routed to the stock and materials control deputy division manager for completeness and verification of the above request.
3. The purchase request is routed to the Budget and Disbursement Deputy (BDD) for budget clearance.
4. Once the confirmation is secured from BDD, the PR is forwarded to the materials management division (MDD) for approval.
5. The approved PR is sent back to SCT where it retains the third copy and sends the original and the second copy to the Local/Foreign procurement Deputy Division (L/FPDD).
6. SCT gets a copy of PO from L/FPDD as means of notifying that appropriate action has been taken. Accordingly the SCT makes regular follow-up to know the status of the ordered items until they are delivered to the Central warehouse.
7. SCT adjusts its stock balance on the basis of the store documents (in card, Receiving, and issuing report).
8. Material Control Activity
    - ❖ Materials delivered to materials control team
    - ❖ The Team Leader (FL) assigns materials control team.
    - ❖ Material controller checks materials by signing on the PO (Domestic purchase) or Invoice (Foreign purchase) for physical count with out unpacking the shipment and recorded on' material inward book'.
    - ❖ The TL forwards notification for the requesting unit for technical inspection when necessary.
    - ❖ Inspected and accepted materials with the signed PO or Invoice + other relevant documents (Temporary Delivery Note) are forwarded to central warehouse by the controller or technical assistant.

3.7 Central Warehouse Activities

- ❖ Central Warehouse receives inspected Materials together with relevant documents from Materials Control Team.
- ❖ Draft receiving report will be prepared by central warehouse learn Leader.
- ❖ Proofread, signed, and forwarded to the Central Warehouse Team Leader.

- TL counter signs the receiving report and forwards to dispatch clerk
- Receiving report dispatched to Materials Account Team, Follow-up and transit Team, and Banking and documentation Team. Operational/Project Material Team.

When damaged or faulty or short materials found:

- Materials Controller reports to Materials Control Team Leader (MCTL) the occurrence of damaged or faulty or short materials
- Team Leader signs claim report and sends to the PD for damaged or faulty or short materials. MCTL follows up settlement of claim until the case is finalized. When replacement is in order the processes under materials control and warehouse follow.

CHAPTER –FOUR

SUMMARY, CONCLUSIONS, AND RECOMMENDATIONS

In this chapter a summary of senior essay is given the main result of this paper are explained and measure conclusion of senior essay are provided.

4.1 Summary of Findings

The major purpose of this study is to bring light on the practice of inventory management system of ETC warehouses' |Thus, it is geared to observe and reflect how goods and supplies are managed in the ware house.

In order to achieve the objectives of the study four basic issues were treated to assess the practice. Hence, in the study all workers were participated due to their manageable size and documents were analyzed. Thus, questionnaire, interview question were developed.

The study raveled that:

- 83.33% of the respondents are males while the rest participants are females.
- 83.33% of the workers have three and above years experiences in the ware house.
- Regarding the inventory system of the central warehouse, it was found that 100% of them said it is periodic.
- 66.66% of the participants reflected that the coding system of the central ware house is good and some what good.
- As to the availability of enough space, 66.66% replied that there is no enough space for storage. They also added that, 83.33% of them suggested that there is shortage of man power to shoulder the duties properly.
- Inventory management system is one point on the study, and found that it has no any method that is adapted.
- Regarding human resource development, except induction, there is no any training given to workers.
- Both coordinators and store keepers replied that, it is difficult to properly inventory management manually.

4.2 Conclusions

Proper inventory management plays a great role to effectively and efficiently utilize goods and supplies in the central warehouse. Hence, based on the findings of this study and the summary given, it can be concluded that:

The inventory system of the central warehouse is totally periodic and the coding system of the central warehouse is not excellent, rather good to some extent. Mean while a great majority of participants replied that there is a problem of enough space and shortage of man power.

The study also revealed that the warehouse uses only the FIFO method for all inventory management. Thus, the interview feed back, questionnaire response and document analysis confirms that there is not so much efficient and effective inventory management system in the central warehouses.

4.3 Recommendations

On the basis of the findings obtained and the conclusions reached, the following suggestions forwarded:

- The inventory system of the warehouse should be perpetual so as to know the status of goods and supplies and act accordingly. On top of this, periodic inventory system can be used to clearly know the annual status of the warehouse.
- It is found that old and used goods are stored in the central warehouse, which created shortage of space and proper management of goods and supplies. Thus, old and used materials have to be disposed by assigning task force.
- The corporation is handling big tasks. So, instead of manual store management, modern (computerized) store management should be practiced for best performance of inventory management.

Store-keepers and coordinators did not get the necessary training. So, on the job appropriate training and experience sharing should be given which enables them to properly handle their duties.

REFERENCES

- David, J Piasecki (March 2009) " Inventory Management explained ", OPS publishing

- Donald W. Dobler, David N.Bart (1984). "Purchasing and Supply Management ", (6th edition). Tata MC Grow-Hill.

- Donald W.Dobler, Lamar Lee Jr, David N.Burt, (1984). "Purchasing and Supply Management", (Fourth Edition). Tata MC Graw-Hill.

- Edmonds (2003) " Costumer relation management and inventory management"

- Jon Schreibfeder (2008) " Effective inventory management"

- Max Moyer (Junawary 28, 2003) Esstntials of inventory Management.

- Saxena, J.P (2003). "Warehouse Management and Inventory Management" Vikas Publishing House PVT.LTD, New Delhi.

- Simons (1977) " Inventory control in a multiple warehouse system"

- Smith (1977) "A computational model for Inventory management and planning"

- Smith (1197) " The use of formal inventory control model"

- Steven A. Melayk. David R. Denzler (1997). "Operations Management", William schoof.

- Terry Hill (2000) "Manufacturing strategy: Text and cases", (3rd edition). Boston: Irwin McGraw-Hill.

Appendix A

St. Mary's University College

Management department

Inventory management System questionnaires

The questionnaire is prepared by study of St. Mary University College as a requirement of partial fulfillment of the Bachelor of Arts Degree in management. Hence the data for enquiring will be used to prepare senior essay on inventory management system, which is Ethiopian Telecommunications Corporations.

1. Sex

   Male ☐ Female ☐

2. Educational background

   12^{th} complete ☐ Advance Certificate ☐ Diploma ☐ Degree ☐

3. Service Year

   Less than one year ☐ 1-3 Year ☐ above three year ☐

4. What type of inventory system used in central warehouse?

   Perpetual system ☐ Periodic system ☐

   If any other specify _____.

5. Does the physical count and store record in bin card the same?

   Yes ☐ No ☐

6. How is the coding system of inventory in the central warehouse?

   Excellent ☐ Good ☐ To some extent good ☐ Fair ☐

7. How is responsible to ask for purchase of goods.
8. Is there a maximum budget limit on annual basis for purchase of goods and equipment.
9. Is there cross check for purchase of goods?

   Yes ☐ No ☐

10. Is a division of responsibility and duty among them on inventory management system?
11. Is there an introduction to new employees about their duty and responsibilities or not?
12. Is there training to practice modern inventory management system on old employees?

Yes ☐ No ☐

13. Is there enough space to put used material?

Yes ☐ No ☐

14. Is there enough manpower in central warehouse?

Partiality enough ☐ Not enough ☐

15. Is there timely inventory system.

On program ☐ Occasional ☐ As need be ☐

16. What kind of organization manual has?

Computerized (modern) ☐ Paper based ☐

17. What kind of inventory cost assumption used in central where house

FIFO ☐ LIFO ☐ WAM ☐

18. The inventory management system in central warehouse is:-

Programmed ☐ As need be ☐

Appendix B

Interview

The aim of this interview is to gather data and information for research work on inventory management of Ethiopian Telecommunications Corporation.

1. Do you have enough space for goods?
2. Is there systematical and appropriate material control in central warehouse?
3. Is there a responsible body for purchased goods?
4. Is there enough man power in central warehouse?
5. Is there a programmed inventory management system?
6. Is there systematical way of checking goods?

Appendix C

Observation

Observation use to gather data about Inventory management system for central warehouse of Ethiopian Telecommunications Corporation.

1. Function of warehousing
2. Receiving material
3. Receiving of prepared voucher
4. Issuing of prepared voucher
5. Provision existing activities- stock items

Declaration

I the undersigned, declare that the senior essay is my original prepared under the guidance of Ato Messelu Fanta. All resource of material used for the manuscript have been duly acknowledge.

Name Rekik Mistiru

Sign. _____

Place of submission: St. Mary's University College Addis Ababa.

Date of submission: July, 2010

Submission Approval Sheet

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

Name Ato Messelu Fanta.
Sign. _____
Date of submission: July, 2010

Appendix B

•••• ••• •••• (Observation)

•••• ••• ••••• •••• •••• •••• ••• •• •••• •••••• •••• ••• •••• ••••

- ••••• •• •• ••• •••• •••••
- ••••• •••••
- •••••• •••• ••• •••
- ••• •• ••• ••••
- ••••• ••••• •••• •••

•••• ••• •••• /••••/ •••• (Document Analysis)

- •• •• •••• •• ••••
- ••• ••••• •••••
- •••• •••
- ••••• ••••• •••• ••••• ••••••
- •••• ••••

Appendix D

••••• •••• ••• ••• •••••• •••• ••• ••

••••

(Material control store supervisor, division head

1. ••• ••• •• ••• ••••• •• •••••?
2. •••• ••••• •••• ••• •••••• •••• •••• ••?••••• •••• •••••• ••• •••••• •••• •••• ••?
3. ••••• •••• •••• ••••• ••••• ••••• •••• •• (Interdiction) •••••••• •••• •••• ••?
4. •••• •••• ••••• ••• ••• •• ••••••?•••• •• ••••••? ••••• ••••• •••• •••••• ••••• •••••• ••• •••?
5. •• •• •••• ••••• •••••• •••••
    1. ----------
    2. ----------
    3. ----------
    4. ----------
    5. ----------
    6. ----------

Appendix C

•••• •••• (Focus Group Discussion)

1. ••• ••• •••• ••••••• •••• •• •••••• ••••••• ••
   •• •••• •• ••••& ••••• •••& •••• •••• ••• •• •••••••? ••••
   ••••• ••••• •• ••••• •••• •• ••?
2. ••••• •••• •••• ••• •••• ••• •••• •• •••••• ••
   •••• ••••••• •• ••••• •• •••••?
3. ••• •••• ••• •••• ••• •• ••••• ••• ••• ••• •••
   •• ••••••• •••• ••••••? ••• •••• •• •••• ••• ••
   ••••••
4. ••• ••• •••• ••••• •••••••• •••• •••• ••• ••
   •••• ••••? ••••• •••• •••• •••• •• •••• •• •• •••
   •• ••••••
5. ••••• ••••• •• (••••) •••• ••?
6. •••• ••••• ••••• •••• ••••••• •••••• •••• •••
   •• ••?
7. •• •• •••• •••• ••• ••••• •••••• •••• •• ••••
   ••••• ••••• •••••

Appendix A

•••• •••• •••••• ••• ••• •••• ••/• •••

•••••• •••• ••••

••• •••• •••• •• ••• •••••• •••••••• •••••• ••• •• ••• •• ••••••• ••••• •••• •••• •••••• •••••• ••• •••• •••• •••• ••••• ••••••& ••••••• •• •• ••••• ••••• ••••• •••••• •••••• ••••

••••• ••• ••• •••• •••••••• ••• ••• •••• ••••• •••••• ••• ••• •••• ••••• ••• •••••••• •••• •••• •••• •••• ••••• ••••• •••••• ••••• ••• •••••••••

•••••

1. •••• ••• •••• ••••• ••••• •• ••• •••••• ••• #
   √;•••• ••••••
2. •• •• •••••• ••••• •••• ••••• •••••
3. •• ••• •••••••••
4. ••••• •••• ••••••

•••••••••

••• •••& ••••• •••

1. •• ☐ ☐ ••
2. •••••• ••• 1-4 ☐ 5-8 ☐ 9-10 ☐ ☐ 11-12
3. •••• ••••••• ••• ----------
4. ••/•/•/•• •••• ••• •••••••?
5. ••••• •• ----------

••• ••• ••• ••• •••• •••••• •••••• •••

1. •••• ••• •• •••• ••••• •••&
   •. •• ••• ••••• ••••• •• ☐ •. •••• ••••• ••••• •• ☐
   •. •••• ••••• ••••• •• ☐ •. ••• ••• ••••• ••••• •• ☐
   •. •••••• ☐
2. •••• ••••• •••• ••• •••• (••) •••••••
   •. •• ••• ☐ •. ••••• ☐ •. •••• ☐ •. ••••• ☐

•. •••••• ▭

3. ••• ••• ••••• •••••• ••• ••• ••••••?

•. •••••• ▭ •. •••••• ▭ •.••••••••• ▭ •. •••••• ▭

4. ••.•. 3 •••••• ••• •••• #•; ••• ••• •••• ••• •• ••• ••? -------

---

5. ••• •• •• •••• /•••••/ •• ••• ••••••• ••••••

---

6. ••••• /••• ••/ •• •••••••

•. •• ▭ •. ••• ▭

7. ••.•. 6 •••••• ••• •••• #••; ••• •••••••• ••• ••••?

---

8. ••••• /••• •••••/ ••• ••••• •••••• ••• •••• ••• •••

•• •••& ••••• •••••• ••••• •••• ••?

•. •• ▭ •. ••• ▭

9. ••.•. •••• #••; ••• ••••• ••••• ••••••• ••• ••••••

---

10. ••••• •••• •••••?

•. •••••• ••••• ▭ •. ••• ••• ••••• ▭ •. •••••• ••••• ▭

11. ••.• 10 •••• # ••••• ; ••• •••• •• •••••?

---

12. •••• •• ••• ••• ••• ••• •• •••••••& ••••••• •• •••••

••••

••••

•. •• ••• ••••• ▭ •. •••••• ••••• ▭ •. ••• ••• ▭

•••••

•. •••••••••• ••••• ▭ •. •••••• ▭

13. •••••• ••••• •••• •••• ••• ••••• •••• •••••• •••

•. •••• •••• ▭ •. •••••••• •••• ▭ •. ••• •••

••••

•. ••••• ▭ •. •• ▭

14. ••.•. 13 •••• #•••• ••••; ••• •• ••• •• •••••?

---

15. ••• ••• •••• ••••• ••••••

•. •• ••• •• •• •. •••• •• •• •. •• •••••

•. •• ----------

16. •••• ••• ••• •• •• •••• ••• ••• /•••/

•. •• ••• •. •••• •• •• •. •• •••••

•. •• ----------

17. •••• ••• •••• ••••• •••• •••• •••• ••••••• ••••

•. •••• •. •••••

18. •••• ••• •• ••••• •••••• •••• •••• ••••• •••••• ••••

•. •••••• •••• •. ••• ••• •••• •. ••••

•••••

19. ••.• 18 •••••• ••• •••• #•••• ••••• ;••• ••• ••• •••• ••

•••• ••••?

---

20. ••••• •• ••• ••• •••••?

•. •••• ••• •. •••• ••• •. ••• •••

•. •••• •. •• ----------