INVENTORY CONTROL AND ECONOMIC ORDER QUANTITY IN NATIONAL ELECTRIC POWER AUTHORITY (NEPA)

BY

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DECLARATION

I Abdulmumini Yusuf, do hereby declare that this dissertation is my own composition and where the works of other persons have been used or referred to, such sources have been duly acknowledged.

Abdulmumini Yusuf

APPROVAL

This is to certify that this research study was carried out under strict supervision and has been approved for submission to the St Clements University, in partial fulfilment of the requirements for the award of the Degree of Doctor of Philosophy, in Management.

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DEDICATION

This work is dedicated to the almighty God for his mercy, guidance and protection, for seeing me through this programme, most successfully.

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My special thanks go to the almighty Allah, who in his infinite mercy, gave me the grace, strength, health, endurance and foresight to undertake this project and complete it to the satisfaction of St Clements University.

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ABSTRACT

This project is primarily concerned with the analysis of management of stock in public utility companies with particular reference to the Distribution and Marketing department of the National Electric Power Authority (NEPA). In doing this, the researcher briefly explain some of the general problems facing the stores control functions in many organizations and went on to touch on the background of the subject matter where some of the activities of the organization were highlighted.

Some of the problem facing stores control systems were highlighted to include the dearth of qualified stores personnel, overstock and sometimes under stocking, pilferages, deterioration, obsolence and insufficient store materials.

The research work further reviewed related literature on the subject matter to sample the opinions of various authors on the subject. The review of related literatures centred on inventory control, stock control, problems in accounting for stocks, products procurement and management, reasons for holding stock, stores control, stock taking and stock checking, cyclical provisioning, stock record system, among others.

The researcher noted there was a consensus among the authors on these matters as mentioned above.

The study employed drafted questionnaires, personal interviews, physical observation and the use of secondary data as the major instrument for gathering information. The data gathered was analysed based on frequency distribution of respondent opinions and shown in contingency tables and ranked in percentages. Based on the major findings from the analysis of data, conclusions were drawn and recommendations made on how to ensure effective management of stocks, not only in public utilities but also in all business organizations in the country to forestall either stock out, over stocking or under stockings.

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CHAPTER ONE

INTRODUCTION

5.1 BACKGROUND INFORMATION:

National Electric Power Authority (NEPA) is a government owned business organisation set up by Decree with the main aim of maximising public welfare. Services usually provided by NEPA are essential. To ensure even distribution of facilities and social services, the government establishes NEPA. NEPA helps to control private monopoly of power and helps to combat the unhealthy rural – urban drift of the population.

Store control is an important functional branch of NEPA as an organization and needs more attention that it is actually being presently given. It has been viewed in some quarters as an unnecessary activity that really costs money while in some other quarters is regarded as being vital, and a sophisticated method of control is adopted to protect the inventories.

There are organizations where the buying department do not have responsibility for the stores or even the stock control function. Despite this, the role of buying is still linked with both functions. All organisations have some stock, which must be cared for, because they represent money.

In a manufacturing organisation where large unit items are produced daily for instance, large quantities of materials and component parts have to be provided daily as well.
This obviously means a lot of money and it is therefore to organize store function so that investment cost is kept to the specific standard system of stores control, which can be universally recommended or applied, but in the course of time, certain principles and practises of more or less general application have been evolved.

Materials as used in this write-up has the same meaning as inventory or stock. It is necessary to bring out the points at this stage because in Financial Accounting, material is often known as stock or inventory. As on accounting category, material stock is a current asset represented by goods owned by the business at a particular point in time and help for the purpose of future sale or for the manufacturing of goods for sale.

Materials management is concerned basically with planning and control of materials. Control is a process by which events are made to conform to a plan. Therefore to control materials, there must be a store, where to buy, when to buy, and how much to buy. The items to be stored will be dictated by the basic functions of the firm and the customers it serves. The suppliers to be selected will be influenced by such factors as the ability of the supplier to supply the quantity of the right quality at the right time and at the right price (right from the point of view of the purchaser).

Continuous stock checking is the checking by counting of physical quantities of materials in stores regularly, a few at a time, until items are checked at least once a year.

The figures so obtained by continuous stock takings are compared with the corresponding figures on the bin card and stores ledger cards. The exercise is should not be aware of the balances on the bin cards or stores ledger card before the exercise.

Government plays an important part with the total amount invested, with the central government, state government, local authorities and public corporations for high part. Profit is not the main determinant, but political and social factors. Although, costs-benefit analysis is used to evaluate the differing projects which a government might consider. Government have used public work as a means to expand or restrain the economy and the commitment of full employment.

For the private sector industrialist, the factor that determines investment is the profitability or rather anticipated profitability of the project. The profitability can be said to depend on the expected future returns obtained from the purchase of the equipment. The later is known before a decision is taken, while the former can be thought as nothing more than a calculated or inspires guess.

However, whether it is a private or public sector, the acquisition, storage, issuance, and usage of stock in the running of the business must be involved. For effectiveness, efficiency and

productivity of the business, therefore, functional machinery should be put in place for the proper control of stock or inventory of the organisation.

5.2 STATEMENT OF PROBLEM:

The problem of stores control has bee existing for too long. This problem is still with us to date and is a universal rather than a peculiar problem. Thus, it is not limited to a single organisation but all business for a. it is not only limited to the private sector with its background motive of profit maximisation's, but also to the public sector organisation such as NEPA, even with its background principles of non-profit but social service maximisation.

Many business organisations the world over have not give stock control the prominence it deserves in spite of its varied importance. However, stock control began to gain recognition as a result of the industrial revelation that swept the advance countries of America and Europe in the 1930s. The revolutions resulted into the scarcity of materials. Industrialist, therefore, had to learn how to control and manage the few available materials. In spite of this effort, and even with abundance of resources (materials), many business organizations are still having the problems of proper management and control of the large stock of inventory held in their stores.

The problem of stock control may be attributable to the failure, on the part of the top management officials, to give a deserved attention to the function of stores as well as their inability to employ

the services of as well qualified stores officer to take charge of stores supervision and management. Added to this problem is the issue of the dearth of storage facilities and the habit of stores procedure violation by the top, the middle, and the junior cadre personnel's in the organisation.

The National Electric Power Authority (NEPA) does not exist in isolation. The same problem as faced by other organizations both public and private is what NEPA is facing. More so, being a government organisation which is not grounded on the principles of profit maximisation, the neglect as well as the improper care, control and management of stock can be more terrible than required.

5.3 RESEARCH QUESTION

In order to facilitate data collection so as to arrive at the correct conclusion, the following hypothesis will be used to guide this study:

1. Effective stores control does not create any room for effective utilization of materials in the store.

2. It is not of any use of any importance to apply proper documentation of stock or inventory in any organisation.

3. NEPA being a government baby, which does not operate on profit motive does not require stock control and materials management procedure.

4. Personnel's in an organisation can obtain stock from the store without using the stores requisition form. This habit does not have any effect on management of stock.

5.4 THE PURPOSE OF THE STUDY:

Every body sees a public property as a national cake, which belongs to all and which body must benefit from whether or not they have authority to use. Besides, public property does not belong to anybody. Thus, there exist the laissez-faire and lackadaisical attitude towards public property. Coupled with this there is also the problem of proper management and control of stock. These are some of the problems confronting the economies of the world.

It is therefore the intension of this research work.

(1) To examine the nature and usage of stock control measures applied by NEPA;

(2) To determine the viability of such stock control measures.

(3) To determine the nature and extent of problems affecting management of stock in the public sector organizations with particular reference to NEPA; and

(4) To attempt to provide alternative strategies on effective management of stock, where necessary.

5.5 SIGNIFICANCE OF THE STUDY:

The issue of management of stock is of vital importance to the success of any organisation and is one of the serious determinants of the continuity and efficient productivity of the organisation.

As the study is significant because it is hoped that on the completion, the study will provide further insights into the understanding of stock control measures.

Through using NEPA as a reference point, the study will make an interesting contribution to the understanding of the general and specific effects of stores control in other public utilities.

Also, the study will further justify the need to strengthen management and control of stock with anticipated benefit in view. In addition to helping the public utility sector in taking serious decisions on management of stock, it will also serve the interest of the private sector business organisations as well as the general public as a source of enlightenment since it will enlarge the existing literature on management of stock.

5.6 SCOPE AND LIMITATIONS OF THE STUDY

The research project intends to look into the management of stock in public utilities with particular reference to the Distribution and Marketing sector of NEPA. The study will cover NEPA activities that sum up the role of effective store control, store procedure and various control mechanisms.

The public sector is wide and complex, and this work is basically expository. Though relevant references maybe made to other areas, the basic area of focus remains the National Electric Power Authority (NEPA).

A Research work is never an easy task to overcome. There are occasions when the research would encounter problems, which are basic and unavoidable. This research work is not an exception.

Considering the magnitude of time and finance involved in the study and considering also the difficulties of data collection from other public utilities, the study will only be limited to NEPA.

It deserves mentioning that there are several other facts that would have been included in this research work but which will not be possible since it is not a standard textbook.

The lat but not the least limitation is intellectual in nature since no work can be above the intellectual ability of its writer.

5.7 RESEARCH METHODOLOGY

This research work will be basically expository and explanatory. The Research methodology will include the collection of data both from primary and secondary sources. The sources will basically include the review of literature from textbooks, other reference materials, and lecture literatures.

The data so collected will be analysed using tables and percentages and based on the outcome of the analysis, conclusion will be made and recommendations given.

CHAPTER TWO

REVIEW OF RELATED LITERATURE

2.1 INTRODUCTION

The researcher is concerned with the effective store control in a public utility company. Store control is very important functional branch of an organisation and it needs more attention than it is actually being presently given.

It has been viewed in some quarters as an unnecessary activity that really costs money while in some other quarters it is regarded as being vital and a sophisticated method of control is adapted to protect the inventories.

There are organisations where the buying department does not have responsibility for the stores or even the stock control function.

Despite this, the role of buying is still linked with both functions. All organisations have some stock, which must be cared for, because they represent money.

In a manufacturing organisation where large units are produced daily for instance, large quantities of materials and component parts to be provided daily as well. This obviously means a lot of money and it is therefore necessary to organize the store function so that the investment cost is kept to barest minimum.

In this case therefore, there is no specific standard system of stores control, which can be universally recommended or applied but in the course of time, certain principles and practises of more or less general application have been evolved.

2.2 STOCK OR INVENTORY

The American Institute of Accountants defined the term inventory as “the aggregate of those items of tangible property which (1) are held for sale in the ordinary course of business, (2) are in process of production for such sale or (3) are to be available for ‘sale’. In Nigeria, inventory is usually referred to as stock-in-trade or work-in-progress. Stock may consist of (i) Raw materials and supplies to be consumed in production (ii) work-in-progress, or partly manufactured goods, (ii) Finished stock or goods ready for sale.

Stocks are valued in a fundamentally different way from fixed assets; the latter are usually valued at cost less accumulated depreciation.

No method of stock valuation is suitable foe all types of business in all circumstances. Stock is valued at cost less any part of cost, which needs to be written off when net realizable value or the replacement price is lower than cost.

2.2.1 INVENTORY CONTROL

‘Donald and Lamarlee (P.350-351) says “No matter how diligently a store keeper performs the custodial job or how carefully an inventory control clerk maintains records (computerized or

manually), some discrepancies between the actual and the balance of inventories is bound to occur. The system is operated by people, and people occasionally make mistakes.

For this reason, every inventory item should be physically counted and checked against its book balance at least once a year. The books are subsequently adjusted to match the actual count.
Most companies create an inventory-short, and over account to absorb such discrepancies.

This account is eventually closed into the manufacturing overhead account. Another author, Glautier 1980, P.123 said “an inventory control is to provide means of exercising a closed control over the flow of materials or goods into inventory and the flow of inventory into production or sales, thereby only preventing loss but also ensuring that adequate inventory levels are maintained. The purpose of this is to focus on the procedures applied to the control of inventory on daily basis. It should be noted that inventory valuation depends upon a physical stocktaking combined with a valuation base, such as unit cost ot unit market value.

2.2.2. INVENTORY CONTROL TERMINOLOGY

Brief definitions of common inventory control terms are give below:

(i) Lead or Procurement time: The period of time, expressed in days, months, etc between ordering (either externally or internally) and replenish, i.e. when the goods are available for use.

(ii) Demand: The amount required by sales, productions etc. usually expressed as a rate of demand per week, month, etc. estimates of the rate of demand during the lead-time are critical factors in inventory control systems.

(iii) Economic Ordering Quantity (EOQ) or Economic Batch Quantity (EBQ): This is a calculated ordering quantity, which minimize the balance of costs between inventory holding cost and re-order cost.

(iv) Physical Stock: The number or items physically in stock at a given time.

(v) Free Stock: Physical stock plus outstanding replenishment orders minus unfulfilled requirements.

(vi) Buffer Stock or Minimum Stock or Safety Stock: A stock allowance to cover errors in forecasting the lead-time or the demand during the lead-time.

(vii) Maximum Stock: A stock level selected as the maximum desirable which is used as indicator to show when stock have risen too high.

(viii) Re-order Level: The level of stock of which a further replenishment order should be placed. The re-order level is

dependent upon the lead-time and the demand during the lead-time.

(ix) Re-order Quantity: the quantity of the replenishment order, in some types of inventory control systems this is the EOQ, but in some other systems a different value is used.

2.2.3 THE FUNCTIONS OF INVENTORY

Inventories perform a number of vital functions in the operations of a system, which in turn makes them critical to the production sector as well. Without inventories, organisations could not hope to achieve smooth production flow, obtain reasonable utilization of machines and reasonable handling cost or expects to give reasonable service to customers.

The basic function of inventories whether they are raw materials, work-in-progress or finished goods is that of decoupling the operations involved in converting inputs into outputs. This allows the successive stages in the purchasing, manufacturing and distribution process to operate reliance on the schedule of output, of prior activities in the production process. Furthermore, the decoupling function allows both time and spatial separation between production and consumption of products in the operating system.

Lastly, inventories can also be used for other purposes apart from the decoupling functions. For example, when inventories are displayed, they serve as promotional investment. Raw materials

and finished inventories are frequently accumulated to wedge against price rises, inflation and strikes. Inventories also serve to smooth out irregularities in supply.

In essence, inventories act to decouple organizational activities, thereby achieving lower costs of operations. Inventories act to reduce procurement costs, and inventories act to provide good customer service and smooth production flow by providing one-time delivery and avoiding costly stock shortages. Inventories ordered in large quantities can result in lower freight charges and price discounts.

On the other hand, inventory requires tying up capital that would otherwise be invested elsewhere. Inventory also requires costly storage space; and such costs as insurance, spoilage, obsolesce, pilferage and taxes must be incurred as a result of maintaining inventory. Hence, there is an appropriate opportunity cost associated with their value.

It is therefore, the duty of the Management to seek decision rules that will actually balance these controversies of costs for a given system. It is in response to this management quest for guidance in handling inventory decision situations that a number of techniques (models) have been developed to serve as aid to management in achieving optimal inventory solutions.

2.2.4. INVENTORY COST:

The cost a firm incurs as a result of established inventory levels can be grouped into three categories, namely: ordering cost, carrying cost and shortage cost:

2.3 STOCK CONTROL

5.7.1 INTRODUCTION

Stock control is defined as the means by which materials of the correct quantity and quality are made available as and when required, with due regard to economy in storage and ordering costs, purchase prices and working capitals.

The modern stores have a wide variety of functions that they have to perform as efficiently as possible. The way in which stores management carries out these tasks will be reflected in the overall efficiency of the organisation. The efficiency of the stores function has become more significant at the period of Structural Adjustment Programme (SAP) when the purchasing power at acquiring materials was weak, especially in Nigeria and some other developing countries.

The materials in the stores are said to represent cash, because of the inflationary situation we are experiencing. The materials purchased and stored seven years ago at the cots of five thousand (N5, 000.00) and of a high quality cannot be obtained now at the cost of Twenty Thousand Naira (N20, 000.00). This is one of the

factors why most management and store managers have to enhance efficiency of the control of these stocks.

5.7.1.1 The Primary concern in the management of stock control must be to provide the right goods in the right condition at the right price in the right place at the right time.

This means that control procedures should:-

(i) Retain stock at appropriate levels.

(ii) Safeguard stock against loss or misuse

(iii) Ensure that stock is properly used in business operations

(iv) Ensure that stock is duly accounted for

Management must control the procedures for purchasing and controlling sock in such a way that an optimum balance is obtained between efficient control and economy. Such a system must be designed in the light of the individual needs of the business.

From the accounting point of view the criteria to be borne in mind are the value of the stock, its susceptibility to misappropriation and the usable life.

5.7.1.2 An adequate system of control must aim at achieving the following objectives:

(i) Elimination of the Delivery of incorrect stock, as regards type, quantity or quality. All deliveries of goods should be checked against the copy order, which they are received and discrepancies noted. The person ordering the goods is responsible for certifying that they are up to standard.

(ii) The reduction or elimination of pilfering.

The key factor here is the relationship between unit bulk and bulk. If goods are easily portable, of small bulk and of high value then they should be more vulnerable to misappropriation.

Greater security may be exercised on the issue of goods, which fall within this category. Where goods are of high bulk and of little value, free access to their use may be allowed. A physical check of stock may be made at random and at irregular intervals to provide a moral check in pilfering of stock in the same way as the audit may present pilfering of cash.

(iii) Control of movement showing sales per product. Regular analysis of sales and purchases will indicate charges in demand. If excess stocks are begin ordered, this can be checked. Excessive analysis

should be avoided and a periodic check made to see whether information produced is being used.

(iv) Avoiding holding slow-moving stock.

This can be obtained by marking on each of the stock record cards a minimum and a maximum quantity. The minimum is the lowest quantity, which the particular line should be allowed to drop if deliveries are to be maintained. On arriving at this figure the factors to be considered are the speed at which it is used or sold, the length of time required for delivery on the part of the suppliers and the possibility of late delivery or abnormal usage. The maximum is the figure above which it may be considered an excessive stock is being carried, and according to the particular business or article may represent several months' stock. Where stock moves more rapidly or more slowly, the store or stock keeper is responsible for reporting immediately for the necessary action on the part of the purchasing department. If stock is moving more rapidly, the quantity ordered or put into production can be increased to maintain the stock. Conversely, the purchasing can be reduced and when necessary the stock disposed of as a clearance line.

2.3.1.3. The factors to be considered in fixing the maximum and the rate of consumption; time for delivery; the amount and cost of capital tied up; the risks of determination and obsolescence; the cost of

storage; price fluctuation; fire hazards and the economic order quantities.

These factors are:

(i) Increase facilities for taking a physical stock at short periods. For the purpose of preparing interim trading and profit and loss account, stocks are quite frequently estimated. However, it is obvious that a correct stock taking is the ideal at which to aim at. If the system of recording stock is kept up to date with the monetary value shown against the balances, stock sheets of books can be quickly prepared.

(ii) Provision of a check on over – ordering when demand may fall off. The minimum and maximum stocks must be revised periodically. This can be done by the regular inspection of groups of stock cards when attractions can be made.

(iii) Prevention of the passing of invoices for payment without the receipt of the relative goods. This is particularly important when regular deliveries are received of the same goods and in the same quantities. One satisfactory method of attaining to this is to allot letters to the various sections of the stores or stocks and a number to each delivery note being attended to.

(iv) Prevention of goods being charged at incorrect prices. This can only be done by insisting that every invoice is checked

against the corresponding order or quotation and that orders issued always have prices inserted.

5.1.1 IMPORTANCE OF AN EFFECTIVE STOCK CONTROL SYSTEM

Because the stock held by an organisation represents money, the control of that has serious financial implications for the organisation. If the stock is controlled inefficiently it can cause high storage cost, obsolescence and reduction in working capital. Therefore, stock control is very much concerned with ensuring that stock is controlled very carefully. In many situations, the actual level of profit earned by an organisation will depend on the success of stock control.

It has been emphasized that service is the principal objectives of the store function, but it is obviously desirable to provide that services economically. The most important consideration here is to maintain the value of the inventory at the lowest practicable level at all times in order to economize in the use of working capital and to minimize the costs of storage. It will be readily understood that there is some conflict between the need to give a good service and the need to economize in stockholding. On the one hand, the more stock held the easier it is to have required items readily available on demand. On the other hand, the more stocks held the greater the cost incurred.

It is necessary to seek, find and operate a satisfactory compromise between these two opposing forces and, in addition, to see that the stores organisation itself is economically worked

and co-operates with other functions securing savings in material and other cost where ever practicable.

5.1.2 QUALITIES OF A GOOD STOCK CONTROL SYSTEM

From the points outlined previously we can see just how vital good stock control is to any organisation that holds stocks. Serious operational and financial break down can result if a good stock control system is not operated by the stores.

Every stock control must be designed to meet the particular needs of the organisation. However, as a general rule, stock control system should have the following qualities:-

(i) Accuracy and speed of reaction to stock situations.

(ii) Good channel of communications with the other major department involved.

(iii) Economy in its operation and its demand upon capital and human resources.

(iv) The ability to be run by various members of staff.

All relevant information must be readily accessible in order to reduce the risk of serious problem if the stock control manager absent.

5.1.3 ABC CONCEPT

Pareto's curve relating income to population can be used in the context of stock control. The stock controller must divide his total stock holding into three groups.

GROUP A: Items that account for 10 percent of total volume, but account for 60 percent of total stock value.

GROUP B: Items that account for 30 percent of stock volume and account for 30 percent of stock value.

GROUP C: Items that account for 60 percent of total stock volume but only account for 10 percent of total stock value.

The segregation of stock into volume/value group enables the stock controller and the stores Manager to allocate their resources in relation to relevant group as to minimise the impact on total cost.

5.1.4 IMPROVING THE CONTROL OF STOCK

In view of the vital importance of stock control, even to the point of organisational survival, improvements in the control of stocks must constantly be sought. Lara Jameism in modern purchasing (September 1982) put forward a number of ideas to improve the control of stocks:

(i) Overall reduction of stocks:

The removal of obsolete stocks, avoidance of “bargain buy”, and standardization of general stocks will assist in reducing the total stocks held. The key to stock reduction is to be ruthless with non-working stocks. There is a tendency for stock for which no immediate use to accumulate.

(ii) Staff involvement:

It is vital that all members of the organisation from the managers/cleaners to management understands and appreciates the implications of poor stock control.

(iii) Low cost Computers:

The store manager and stock controller must ensure that maximum use is being made of low cost computers in relation to stock control operation.

(iv) Stock Levels:

The Stock controller must ensure that stock levels are maintained at the lowest possible level encouraging suppliers to hold stocks is one strategy for holding down stock levels.

(v) Co-operation:

The stock controller, purchasing manager and supplier must co-operate to ensure effective control of stocks, thus improving efficiency and growth.

(vi) Forecasting:

The use of modern forecasting techniques to accurately establish future stock levels.

(vii) Materials Management:

A system of materials management could enable the whole materials system to be more controlled, thus reducing overall stock levels.

5.1.5 STOCK CONTROL SYSTEM

Stock control which is described as the operation of continuously arranging receipts and issues to ensure that stock balances are adequate to support the current rate of consumption with due regard to economy.

It involves the related process of provisioning, which is the means whereby instructions are given for placing of orders. In some industrial concerns the production Central department may take a large share in provisioning, at least as far as production materials are concerned. Provisioning is the process of determining in advance requirement of materials taking into consideration existing stocks delivery times and rates of consumption so that the amount of stock in hand at any time will be in accordance with the stock control policy.

The two major questions arising in any provisions activities are:

(i) When to order

(ii) How much to order

When the questions have been decided in respect of any particular commodity, the provisioner usually prepares a provision demand document, showing the quality and delivery required and passes this to the purchasing office to take the appropriate action. Having decided to carry stocks and provide storage facilities, the next problem is to control the stocks. The term stock control does not mean stock records or store ledgers – these documents are required by some system for controlling stock but are not required by others.

The basic methods of controlling stock by quantity is by means of fixing for each commodity, stock levels which are noted on the stock record, and subsequently use as a means of indicating when some action is necessary. There are various kinds of stock levels, but the fundamental controls are minimum, ordering, hastening and maximum levels. It does not follow that all these are necessary or even desirable for every item, and they should be employed with discretion, because the fixing of two many levels makes the work of provisioning unduly complicated.

5.1.6 STOCK LEVELS:

The stock level deals with quantitative models for materials planning and control. There are four pre-determined critical levels for each item of material in the store. These are maximum level, minimum level, re-order level and the re-order quantity.

5.1.6.1 MAXIMUM LEVEL:

The maximum stock level is that level above which stock should not normally be allowed to rise.

It is set by:

(i) The rate of consumption of material.

(ii) Lead-time or time necessary to obtain new deliveries.

(iii) Re-order level of the material.

(iv) Re-order quantity of the material

(v) The capital available and the opportunity to acquire items at low prices.

(vi) The cost of storage and the availability of storage space.

(vii) The risk of obsolescence and deterioration.

(viii) Insurance costs.

5.1.6.2 MINIMUM LEVEL

This refers to the ordering point or flag point at which a new order should be placed to replenish used stock. The minimum stock level of an item is set so that stock will not be depleted

during the lead-time required for the new order to be processed in manufacturing or with a vendor, as the case may be. When the minimum is reached, sufficient materials is generally ordered to bring the stock up to a maximum stock level. The minimum and maximum are usually stated in terms of number of units, as a minimum if 30 pieces and a maximum of 100 pieces.

5.1.6.3 RE-ORDER LEVEL

This is the stock-level at which new order for materials should be placed. It lies between the minimum level and the maximum level.

It is set after considering:

(i) Carrying costs of the material, which include interest on capital, used cost of deterioration and risk, insurance cost and cost of storage.

(ii) Ordering costs of preparing purchase order, cost pf preparing purchase order, cost of receiving and inspecting materials and postage cost.

5.1.7 REASONS FOR HOLDING STOCK

Marrison (P. 100-101) says in practise, every industrial concern or public undertaking has store houses and finds it necessary to keep stocks in stores for one or more of the following reasons:-

(i) Delivery cannot be exactly matched with usage day by day.

(ii) Discounts or improved prices for bulk purchases more than offset the cost of storage.

(iii) Operational risks or possible charges in programme require the holding of stock as a precaution against serious breakdown or interruption of production or other activities.

(iv) The cost of storage is outweighed by the saving in production of quantities in excess of immediate requirements, as in the case of piece parts i.e. production in economic batches.

(v) For work in progress where a completely balanced production flow is impracticable.

(vi) For finished products where the holding of a buffer stock between the manufacturer and customer is essential.

(vii) Some items appreciate in value during the time of storage, e.g. Wines. The weight to be given depends upon circumstances of individual business organisation.

Burton, 1979, p.152 an author on effective warehouse also examine the reasons for holding stock. He thus said that logical classification of stock control problem is very difficult, because factors vary considerable from industry to industry.

Even within one industry, the problems can be diverse, e.g. the food industry, where the demand for liquid milk is virtually constant for day to day, whilst the demand for ice cream varies wildly according to the weather. However, the common factor in every stock problem is that, stock serves to bridge gaps between successive operation in the process stock will enable a product to be made at a distance from the customer or will make it unnecessary to gear production directly to sales.

Therefore, two possible reasons exist for this bridging operation:-

(a) Stocks are held because time is required to complete an operation or to have the product from one stage to another (Process and movement stocks).

(b) Stocks are required for organisational reasons, to enable two departments to schedule operations independently.

Thus in a sense the Company can buy organisation, and the stocks can only be reduced at the expense of more organization in order to reduce production problems.

5.1.1 PROBLEMS IN ACCOUNTING FOR STOCK

Problems in determining the value of stock held may arises because of:

(i) Discrepancies between physical stock and a stock records. The differences are usually but not invariably unfavourable.

(ii) Differences in the timing of receipts of stock and the timing of receipts of documentation, e.g. invoices may not have been received.

(iii) Errors in accounting or stocktaking.

(iv) Failure to complete stocktaking at the accounting at the accounting period. In this case, the stock can only be calculated by adjusting for subsequent receipts and issues.

5.1.2 STOCK COSTS

Whether as a result of deliberate policy or not, stock represents an investment the organization. As with any other investment, the cost of holding stock must be related to the benefits to be gained. To do this effectively, the costs must be

identified. There are four categories: - costs of holding stock, cost of obtaining stock out costs, and the cost of the stock itself.

5.1.3 PRODUCT PROCUREMENT AND MANAGEMENT

Raw materials suppliers and capital goods (Machinery and equipment) must be available before production can begin, and all of them must be replaced continually. The must be ordered, realised, stored, controlled, and dispensed repeatedly.

Normally a purchasing officer is placed in charge of procuring all type of needed materials and equipment. The agent and his or her top assistants develop needed purchasing polices related to quality standards requisition and buying procedures and inventory maintenance and control.

In recent years the materials management function in some business has been extended to include the purchasing of energy. The current emphasis in materials management rather than marketing point of view.

Management must maintain a balance among the several factors: having sufficient stocks on hand to keep up a normal work flow, buying in quantities large enough to afford attractive prices, and keeping the capital investment in materials and supplies to a minimum.

The decision that management faces is to determine at what level goods should be allowed to accumulate, and to what level they should be permitted to full, setting the upper and lower limits. These control limits are partially determined by the forecast sides value. The more accurate the sales forecast, the most economical the management of the inventory.

Thus all demonstrates again the importance of all components of marketing together. The question of how much inventory to maintain is closely related to the regular flow of finished goods, to promptness in handling goods by transportation agents, to the time required to process orders, and to the sales forecast. Inventory maintenance must be determined by the types of products not by total volume of sales.

The second logistical concern of management is making finished goods available to customers. This includes the management of finished-goods inventories and the movement of goods to customer locations. There are number of interrelated parts in the logistics plan: production scheduling, inventory size and control, storage, transportation, size control, storage, transportation, size of shipments, and materials handling. The management of the total physical, distribution mix is complex. In some cases even the interval components are in opposition to one another. For example, the production department may want to have a long

production run, to keep the unit cost low, marketing may want a large inventory on items that are different hence.

Sort runs to fill deliveries fully and promptly; and finance may want small inventories, to minimize the amount of capital tied up in unsold goods.

The task of marketing management is to design a “mix” of the marketing functions that is compatible with the buying environment. To do this marketing people must plan their market strategies carefully. Those in management who make basic marketing decisions are influenced by two group of forces. The first group consists of forces within the business. The second group consists of forces outside the business and beyond the influence of management.

5.2 STORE CONTROL

5.2.1 INTRODUCTION:

Mills and Standing Ford (1978, p.212) defines it ás the process which ensures that only the right loads of goods are held in stock and further, that the right goods are available when they are required.

It also states that “Goods need to be held in a suitable store and under a responsible store keeper who should see that they are kept in good condition, and particularly valuable stores and those subject to pilferage should be kept in a separate room or cages which can be locked.

Brown and Owler (1974 p.35) in their work defines it as a method of recording stores balances after every receipt and issue of materials, so that the balance of stock at any time can be ascertained immediately.

Another writer, Burbridge (1978, p.34) says in his work that the term store control describes “a system of orders, in which the release of buying and production orders in regulated by the level of stock in the stores”.

Marison (1981, p.99) refers to it as the process of ensuring that stock held by the organisation (User department) bearing in mind the factors of time, quantity and quality is made available as and costs, purchase prices and working capital”.

5.2.2 STORAGE

LIGHT (1968, P.42-43, 47-48) suggests that in a preliminary consideration of storage, it is necessary to divide the subject into two parts:

(i) The control of stores records

(ii) The control of physical process of storing

5.2.2.1 CONTROL OF STORES RECORDS

The objective aimed at in the control of stores records is to record. Among other things, the receipts, issue, balance and value of the materials concerned. The stock record card, which may be in the form of a card, a loose-leaf ledger sheet or machine posting record, is the basis of stock control. Well-designed cards in suitable filling strays or cabinets, properly group with guide cards, are usually found to be quite efficient in operation.

5.2.2.2 CONTROL PHYSICAL PROCESS OF STORING

The responsibility for the physical situation and condition of the materials and issuing when required lies with the store man and his department. Storage facilities must be adopted to suit types of material handled and will include racks, bins, shelves, trays, plat-forms, and floor space. Materials are designed to locations and each item always in the specified place.

The arrangement following as closely a possible the same order as arrangement facilitates both the actual handling of the stock when storing and when issuing.

5.2.3 CENTRAL STORES

According to Marison “O. P. Cit (p. 215) central store is generally recognized as one which act “wholesale” supplier to

other unit department or sub-stores operating on retail basis issuing goods directly to users.

5.2.4 MATERIAL CONTROL

Buyer et al 1981 p.25 defines it as the system that ensures the provision of required quality at the time with the minimum amount of capital tied up.

It also said that by ordering the right quantity and quality materials at the most favourable price and by ensuring that it arrives at the right time, the efficient buyer is able to make a valuable contributions as to the success of the business.

5.2.5 MATERIALS MANAGEMENT

Donald and Lanor-Lee 1977, p.20 describes material management a practised in business today “as a confederacy of traditional materials activities bound by a common idea – the idea of an integrated management approach to planning, acquisition, conversion, flow, and distribution of production material from the raw-materials state to the finished product state.

Another author says in his book on warehousing that materials management is concerned with many other aspects of the use of materials in an organisation such as yield, conversion, products, the use of scrap and waste handling, physical and financial control of raw materials, research and development amongst others.

A writer on purchasing said in his own contribution that materials managemen is that aspect of inbdustrial management which is concerned with all the activities involved in the acquisition, handling, storage and use of all materials employed in production of finished product and in the same cases even the storing and distribution of finished product and in some cases even the storing and distribution of finished goods. These activities, he went further to say, may include production control, inventory, purchasing expending, traffic, material handling, warehousing, receiving, shipping, scrap and surplus disposition and customers services.

5.2.6 STOCK ORDERING

Light suggests that to maintain effective control of stock, it is necessary determine what should be the, maximum and minimum stocks, what may be regarded as a standard order for a particular commodity and the point of which a further supply should be ordered. Maximum stock is the largest of quantity which in the interest of economy, should be carried whist minimum stock is the lowest quantity below which the stock should not be allowed to fall.

The standard is the quantity to be purchase at any one time and is the amount calculated to be the most economical.

Ordering level is the point at which the re-ordering system comes into operation. It is the minimum stock permissible plus the estimated consumption during the period, which must elapse between the placing of an order and the delivery of the goods. In times of shortage, this period must fluctuate considerably and must be closely watched.

2.4.7 THE ECONOMIC ORDER QUANTITY (E.O.Q.)

Is that which can be secured at what is known as “the least unit cost”. It is not necessarily correct to buy materials at the lowest price obtainable. The object of effective store control is to purchase materials to the amount which secures an uninterrupted supply of the commodity at the least ultimate costs. It is the cost of the materials issued to the using department which is of prime importance, not the actual cost of the goods when received from the supplier.

5.1.1 CYCLICAL PROVISIONING

It will be appreciated that under the stock-level method of provisioning, commodities are ordered at unspecified intervals from day to day as and when ordering levels are reached. This means that orders can only be placed usually for one item at a time and this may not produce the best purchase prices. Very often it is possible to obtain discount or more favourable prices for large quantity purchase and the normal stock-level method or control does not lend itself to this practise. Where a range of similar commodities can be

ordered at one time the value of individual orders will be mush greater and the possibility of lower prices more likely.

5.1.2 STOCK TAKING AND STOCK CHECKING

5.1.2.1 STOCK TAKING

For effective stock control, there should be stock taking and stock checking.

In some books taking and stock checking are often regarded as meaning the same thing, but for the purpose of this study they will be separately defined.

“Stock taking” is defined as the complete process of verifying the quantity balance of the entire range of items held in stock.

5.1.2.2 TYPES OF STOCK TAKING

(i) Periodic Stock Taking: Is the method of stock taking, where the whole of the stock is covered at the same time at a given period; usually at the end of the financial year.

(ii) Continuous Stock Taking: Is the method by which stock is taken continuously through out the year in accordance with the pre-determined programme that each time stock is physically verified at least once in the course of the year, or more frequently if required. It can only be done if a complete detailed stock records are

kept showing receipts, issues and balance on hand (i.e. if there is a perpetual inventory).

5.1.1.1 STOCK CHECKING

This is defined as any other check on physical quantities, which may be applied either regularly or intermittently.

2.4.9.4 TYPES OF STOCK CHECKING

(i) Checking Receipts – Receipts into store are normally checked (or either by weighing, counting or measuring). If this is done properly, it provides a good foundation for all subsequent operation by ensuring, that the quantities are correct in the first instances.

(ii) Checking /Issues – It should be a matter of routine for the store house staff to check the quantities and descriptions of all issues made before they are handed over. It is also common practise to expect the recipient to counter-check the quantity received and to sign for it. This provides a reasonable assurance that quantities taken off stores are correct.

(iii) Spot Checking – Spot-checking is the practise of making random checks of some items at irregular and unspecified intervals.

It is often done by senior stores officers in course of their supervisory duties, but can also operated in paralleled with the stocktaking programme, irrespective of whether the periodic or continuous method is in use. Where the main stocktaking is carried out annually on a periodic basis, spot checking throughout the year is the best safe guard against malpractice during the period between stock takings.

5.1.2 PURCHASING

Aljian defined it “as the term used in industry and management to denote the act of and the functional responsibility for purchasing materials, supplies and services”. In a narrow sense, the term purchasing simply describes the process of buying. However, in a broader sense, the term involves determining the need, selecting the supplier, arriving at proper price, terms and following up to ensure proper delivery. In simple terms, the basic element involved in performing the purchasing are obtaining the proper equipment, material, suppliers, and services in the right price, and the right source.

5.1.3 STORE HOUSE LAYOUT

Burton p. 61-62 writes – “a states house which is not fully utilized is wasting the capital expended upon it, but one which holds too much is wasteful of time and labour”. We have already discovered that speed of response is essential to

economic warehouse operations, since time is money and each day of delay involves holding a further word of stock.

If stores are packed too tight on the ground, access becomes impossible and the same applies if stores are stocked too high. Concentration rises at the expense of access and vice versa.

The crux of the matter is to identify the highest degree of concentration for the lowest acceptable degree of access.

In this, we are aiming at the maintenance of the work flow through the warehouse so that they can operate in a continuous manner hindrance caused by the closing of gang-ways or blocking of access.

We must therefore, examine the nature of the flows themselves. We have already identified four work subjects:

a. Good inwards – Receipt inspection – storage

b. Picking – Goods Outwards

c. Stock – taking

d. Stock maintenance – stock turn over – periodic inspection

e. Maintenance re-binning. These are the essence of a warehouse usage. To these, we must add storage maintenance, which involves re-planning storage and moving stores for efficient operation and every delivery to customers.

Each task has its own flow, either beginning or ending with the location in which stocks are held. It is necessary to ensure that no one of these operations interfere with any of the others. Since all are concerned with the location, we must also consider the nature of the storage being used. This is related to the bulk and weight of items being stored and their fragility. We might expect to find binning for small items, racking for large items or for boxes stocks acting as reserve for items held in bins, block-stocked boxes perhaps on pallets and heavy or awkward items in special storage.

Items in any of these storage, groups may have quickly at a medium pace or slowly. Clearly, we need to place the faster moving items preferentially in relation to other types of stocks for access purposes.

2.5. INVENTORY RELATED COST

2.5.1. CARRYING COST

Adam and Ebert state that “carrying or holding cost is the real out of pocket cost associated with having inventory on hand”. The cost is directly proportional to quantity per order.

This can be seen under Fig 2.1

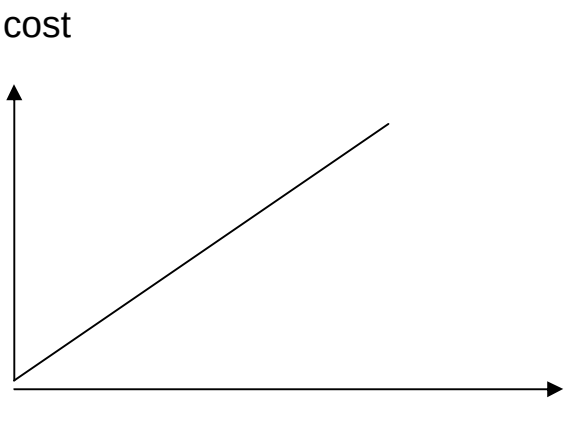

Fig 2.1: A sketch of carrying quantity per-order cost against quantity/order.

Carrying / Holding cost can be expressed as: Carrying Cost – (Average inventory quantity) (Cost of unit) Inventory carrying cost percentage)

Carrying cost contains cost that are quantity and time dependent such as cost of storage, space, light, heat maintenance, rent, pilferage, deterioration, spoilage, handling & packages. It also has cost that are value and time dependent such as capital cost, insurance cost and cost of obsolescence and depreciation. Carrying cost for mot organisations is normally between 20% to 25%.

5.1.1 SHORTAGE COST

Adam and Ebert said “shortage or Stock out cost is cost associated with demand when stocks have been deplete. They take the form of lost sales, cost or back order costs”. When demand of inventory is greater than supply of

inventory, then shortage takes place. It is the cost of not having inventory.

The cost of shortage include payment of overtime due to stock-outs, special administrative expenses due to stock-outs, loss of sales and loss of goodwill. It should be noted that stock-out result in decreased customer service level, less efficient production shortage cost can be expressed as:-

Shortage cost =	Cost of being short of 1 unit per unit time		Average amount of shortage per unit time

Where

Average amount Of shortage Per unit time	=	Minimum Shortage during circle	+ Maximum Shortage during circle

The check list below should be followed when measuring shortage or stock-outs cost:-

(i) List all the alternative sections, which are likely from a stock out.

(ii) Estimate the cost of each.

(iii) Estimate the probability of each

(iv) Multiply (ii) by (ii) for each alternative

(v) Add the separate products from (iv)

(vi) The sum is the shortage or stock put cost.

5.1.2 REPLENISHING / ORDERING COST

Adam and Ebert remarked procurement or Replenishment (Ordering) costs are those incurred by placing a purchase order. They include: issuing the purchase order, flow-up, receiving the goods, quality control, placing them into inventory and paying vendors. Internal Replenishment incurs cost of set-up of equipment, which is known as the set-up cost.

This can be expressed as:-
(Set-up cost) = (Cost per set-up) (Set-up per unit time).

Set-up cost include:- Cost of clearing and adjusting production equipment, cost of inspection of equipment.

External Replenishment includes cost of requisition, mailing and Telephone costs, follow-up cost, Receiving and storing cost, External Replenishment ca be expressed as:-

$$\text{External Replenishment} = \frac{\text{Total Demand}}{\text{Lot size quantity (LSQ)}}$$

In general, Replenishment cost has an inverse relationship with order size. This is shown in Fig 2.2

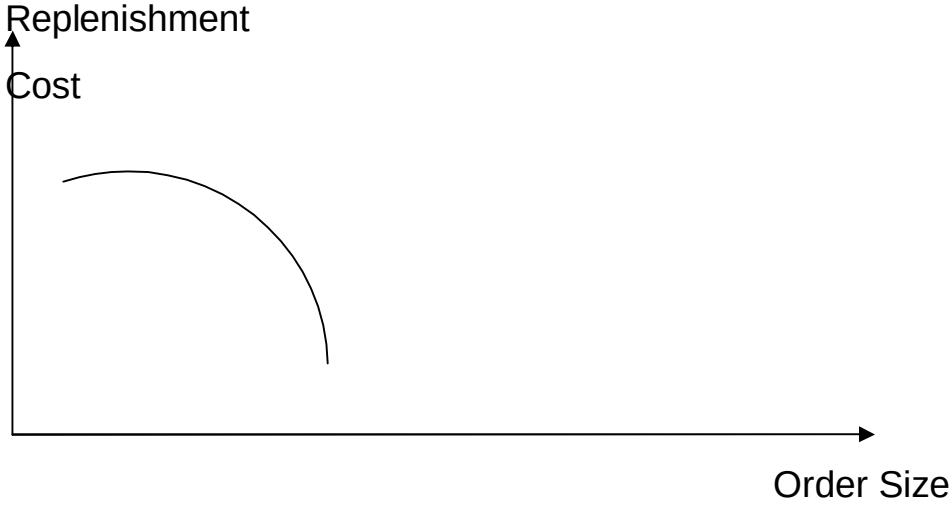

Fig 2.2: A sketch of Replenishment cost against order size

5.1.3 COST OF PURCHASE

According to Adam and Ebert, “The Cost of purchase or value of the item is the sum paid to the supplier for item received. It can be expressed as:-

Cost of purchase = (unit price of inventory) (Total quantity of inventory)

5.1.4 TOTAL INVENTORY COST

Furthermore, Adam and Ebert opined that, “Our objective in inventory control is to find the minimum cost operating horizon. To find the minimum cost, we need to add all relevant costs.

Total inventory cost is the summation of Holding cost, shortage cost, replenishment cost and purchase cost.
This can be expressed as:-
(Total inventory cost) = (Holding cost) + (shortage cost) + (Replenishment cost) + (Purchase cost)

Total marginal inventory cost is that incremental inventory cost which is affected by inventory decisions.

Total marginal cost is Holding/Carrying cost plus ordering/Replenishment cost.
This can be expressed as:-

Total Marginal Cost = Holding/Carrying cost) + (ordering/Replenishment cost)

5.1.5 THE CLASSIC EOQ MODEL

The EOQ model is the best known and most fundamental inventory decision model. Although this model is too over simplified to represent most real world situation, it is nevertheless, an excellent starting point from which to develop complex and more realistic inventory decision models, as is the case with all models, the validity of EOQ model depends on a number of assumption are as follows:-

(i) Inventory is replenished when the inventory is exactly equal to zero (no shortage).

(ii) Demand (usage) rate is known as constant.

(iii) Lead time, the interval between the order is placed and the time it is received, is known and constant.

(iv) Carrying cost is linear throughout the entire inventory and varies with average inventory.

(v) Price of the product does not depend on the quantity purchased.

(vi) Ordering of the products is independent of ordering other products.

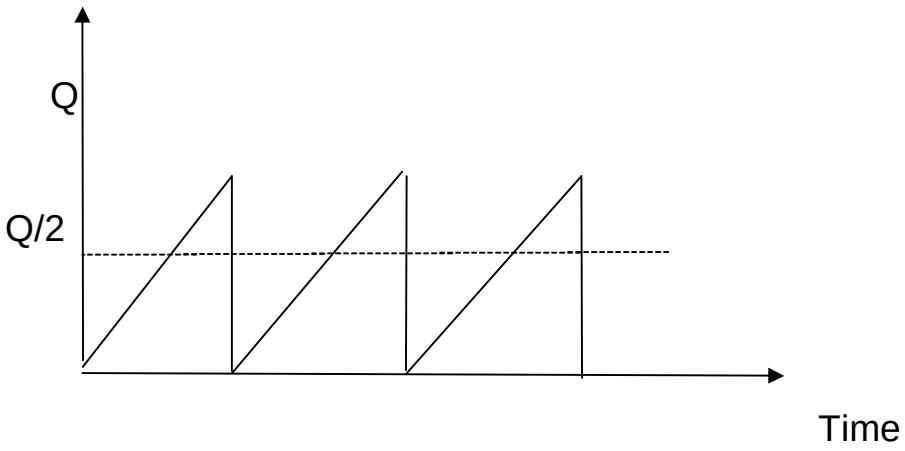

Fig 2.3 SKETCH OF VARIATION OF INVENTORY LEVEL OVER TIME.

The above graph illustrates the variation of the inventory level over time for the classic EOQ model. The down ward sloping

curve indicates that the inventory level is being reduced at a constant rate over consumption time. Inventory level equal to Q when each new order is physically received into store.

Furthermore, the inventory is gradually depleted until it reaches zero just at the point when the new order is received.

The average inventory (Q/2) is, thus, equal to one – half number of this within the same period.

5.1.6 THE MODEL FORMULATION

The first step in constructing the inventory model is to define its variable and parameters.

Let:

Q = Economic ordering Quantity or Economic lot size

S = Ordering cost per order or set-up cost per run.

I = Inventory carrying cost (percentage)

CR = Cost value of one unit

R = Annual demand requirements

T/c = Total inventory associated costs

Having defined the notations to be used the next step s to express the total inventory costs in terms of the variables and parameters defined.

Total Inventory associated cost (TIC) can be expressed as:

$$TIC = \text{(Inventory holding cost)} + \text{(order cost)}$$

$$= \frac{Q}{2} CrI + \frac{RS}{Q}$$

In order to determine the EOQ model, TIC is differentiated and set to zero and the result is:-

$$Q2 = \frac{2RS}{CrI}$$

Taking the square root of both sides, we have:-

$$Q = EOQ = \sqrt{\frac{2RS}{CrI}}$$

The optimum number of order or manufacturing runs per year (N) can be expressed as:

$$N = \frac{R}{Q}$$

Also cycle time (T) is given as:-

$$T = \frac{1}{N} = \frac{Q}{R}$$

Re-order point (R) can be stated as:-

R = (Lead time) (Utilization per day)

The classical model of EOQ has been formulated with Q being expressed as:-

$$Q = \sqrt{\frac{2RS}{CrI}}$$

The total optimal cost (TOC) can then be stated as:-

$$TOC = \sqrt{2RSCrI}$$

5.1.6.1 EOQ MODEL WITH SHORTAGES PERMITTED

One of the assumptions of the classic EOQ model that hardly holds in real life inventory situation is that an order is received precisely at the time when the inventory level falls to zero. Hence, the classic model does not allow for shortage, and consequently cost is ignored.

When shortages are permitted, the optimum level of inventory to stock becomes the function of both the inventory carrying

cost and the cost of stock out. We should ignore the derivation and simply state the formulae as:

$$Qs = \sqrt{\frac{2RS}{CrI}} \sqrt{\frac{CrI + Cs}{Cs}}$$

And

$$TICs = \sqrt{2RcrI} \sqrt{\frac{CrI}{CrI + Cs}}$$

Where

Qs = EOQ with shortage

Cs = Cost of shortage

TICs = Total cost with shortage included.

5.1.6.2 EOQ MODEL WITH QUANTITY DISCOUNT

Furthermore the classical model of EOQ does not take into consideration the factor of quantity discount. However, it is common business practise for suppliers to offer quantity discount to purchaser so as to provide incentives for purchasing large quantities by offering lower unit cost. There are there basic approaches that could be used to evaluate discount quantity. They include:- Cost comparison approach, price change approach and price break approach.

Whichever method used, the purchase cost should be added to total inventory cost i.e.:-

Tic = (Holding cost) + (Purchase Cost)

2.5.8 OTHER APPROACHES OF DETERMINING EOQ.

The Algebraic approach of determining EOQ was discussed on pages 50 and 51 of this submission. In view of this only the remaining three approaches would be discussed here.

They include: Graphic approach, Differentiation approach and Tabular approach.

5.1.1.1 DIFFERENTIATION APPROACH

Total inventory cost (TIC) can be expressed as:-

$$TIC = \frac{Q}{2} CrI + \frac{RS}{Q}$$

Differentiating this equation will produce the slope of the equation (in other words the rate pr change of the equation).

$$\frac{d\,(TIC)}{dQ} = \frac{CrI}{2} - \frac{RS}{Q2}$$

To determine where the rate of change of the total cost equals to zero, we set

$$\frac{d}{dQ}(TIC) = O$$

i.e.

$$\frac{CrI}{2} = \frac{Rs}{Q2}$$

$$Q2 = \frac{2RS}{CrI}$$

Hence

$$Q = \sqrt{\frac{2RS}{CrI}}$$

5.1.1.1 TABULAR APPROACH

This can be best illustrated using an example as stipulated below:

A motor Dealer order motor cars in sets from a motor distributor at N4,000.00 per car.

Other information include:-

Annual demand is 5,000 cars at 20 unit per order per week Rent, Insurance return on inventory investment is Derived annual Return on inventory investment is 10% x N(4000) cost per purchase order, i.e. cyclical cost, stationery, postage, telephone etc = N200,000.00

SOLUTION.

Carrying cost = N500.00

Ordering cost = N1000.00

Batches	50	100	200	500	1000
Average stock	50	50	100	250	500
No of orders	100	50	25	10	5
Carrying costs per Annum	12500	25000	50000	125000	250000
Ordering/Replenishment etc.	200000	100000	50000	20000	10000
Total cost	212500	125000	100000	145000	260000

From the table above, the lowest total cost is N100,000 and this falls under the column with 200 batch.

Hence Q = EOQ = 200

5.1.1.1 GRAPHICAL APPROACH

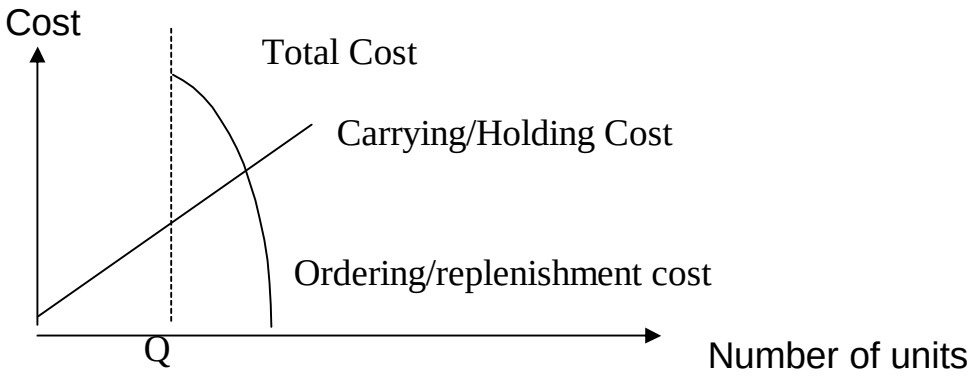

Fig 2:4 A SKETCH OF TOTAL INVENTORY COST AGAINST NUMBER OF UNIT

Under this approach, EOQ or ELS is determined at the point where the carrying/holding cost srve and the ordering/replenishment cost curve intersect and where the total cost is a minimal. From the sketch under Fig 2.4. above this happened when Q = EOQ = ELS

CHAPTER THREE

METHODOLOGY

5.1 INTRODUCTION

The preoccupation of this research work is to investigate the Management of stock in a public utility Company, a case study of the Distribution and Marketing sector of the National Electric Power Authority (NEPA).

The study was aimed at finding out:-

(a) Whether NEPA as a public utility apply the technique of stock management in acquiring, distributing and usage of material;

(b) The nature of stock management and control measures applied by NEPA in management its stock;

(c) The extent to which stock management has been effective in NEPA to ensure the smooth running of the organization. For the above reason, necessary data was collected through questionnaires; Personal (oral) interviews were also carried out as supplementary sources. Secondary data were also used requiring the review of available and relevant literature and textbooks. This Chapter, therefore, highlights the method and procedures used in carrying-out the research.

3.2. THE RESEARCH POPULATION:

The term population means the total number or aggregate of concern which by virtue of a common characteristics may lead to the obtainances of relevant information.

The study examined the management of stock in public utility with particular reference to the Distributing and Marketing sector of the National Electric Power Authority (NEPA).

The population of this research work, therefore, embraces all public utilities in Nigeria.

A sample is a group of items taken from the population so that the needed information can be obtained for the purpose of analysis. Considering the largeness of the population involved in this study, the researcher had selected a sample from the population upon which the study was conducted and generalization made based on the assumption that sample is the representative of the whole population.

Since a good sample must be as nearly as representative of the entire population as possible, care was taken in this research to make sample size relatively large in order to convey a measure of credibility to the outcome of the study. Care was also taken to choose of the subject is left to chance, the possibility of bias entering selection of sample is reduced.

To facilitate easy administration and collection of questionnaires, National Electric Power Authority (NEPA),

Zaria and Kaduna were selected out of which a total number of fifty (50) respondents were chosen based on capacity as follows:

NEPA, Kaduna	-	30
NEPA, Zaria	-	20
Total	-	50

The questionnaires were administered on simple randomly selected members of the category.

5.1 DESCRIPTION OF INSTRUMENTS USED

In order to facilitate this research work, data was collected through primary and secondary sources. Data from questionnaires forms the primary data while secondary data were drawn from inventory control textbooks, lecture packs, and other publications relevant to the research. The questionnaires were framed on the basis of the research questions.

The major set of questionnaires was for the stores personal. A total of fifty (50) questionnaires were designed for response and administered out of which all were retrieved. Both open and close ended questionnaires were designed to facilitate easy responses and allow for a considerable degree of expression from the respondents.

Personal interviews were also employed along with the questionnaires. It helped in clarifying the questions since there was no pre-coded answers in the questionnaires for the respondents to pick easily in respect of the open ended questions.

5.2 STATISTICAL TECHNIQUE USED

The statistical technique used in analysing the data is qualitative method technique, using the tables and percentage to illustrate and analysis the data. All the tabulation made in analysing the data collected by means of questionnaires are also in percentage. The researcher found the technique to be more convenient and appropriate.

3.5.0 CORPORATE BACKGROUND

The National Electric Power Authority (NEPA) was established by the Decree No 24 of 1st April, 1972. with the amalgamation of Electricity Corporation of Nigeria (ECN) and Niger Dams Authority (NDA). NEPA was empowered to maintain an efficient, co-ordinated and economic system of electricity supply to all the nooks and crannies of the nation.

It started with a humble but steady beginning with only four major power stations namely: Ijora, Delta and Afam Thermal Power stations and Kainji Hydro Power Station serving more than two million customers nationwide. This propelled the nations technological and industrial growth. NEPA has become the fastest and biggest growing electricity industry in Africa and indeed the developing world with a customer population of about five million. The table below is a

comparative status of the electricity supply systems from the inception of NEPA of the electricity supply system from the inception of NEPA in 1972 and 1997.

3.5.1 ELECTRICITY SUPPLY SYSTEM:	1972	1997
Total installed generating capacity	536.6MW	5,958MW
Nation's Peak demand	390MW	2,446MW
Length of 330KV Lines	1,262KM	5,000KM
Length of 132KV Lines	1,012KM	6,000KM
415 Volts Net-Work	15,000KM	55,143KM

With impending conditions like ever-rising consumer debts, vandalisation of NEPA's installation, high cost of maintenance, inadequate gas supply, low water level at the hydropower stations, high cost of foreign exchange and the abysmally low tariff regime, NEPA has always striven to meet its distribution and marketing of stable electricity to its numerous residential, commercial and industrial customers against all odds. In spite of some of its familiar operational shortcomings, NEPA has made giant strides in the production and marketing of the electricity to the nation and beyond.

A principal beneficiary of NEPA's extended electricity programme is the republic of Niger under agreement with NIGERLEC (NIGER Electric Company) that country's electricity monopoly.

Similarly, in September 1996, an undertaking was signed between NATIONAL ELECTRIC POWER AUTHORITY (NEPA) and Communuate Electrique Du Benin (CEB), which are responsible for the production and transportation of electric energy in the Republic of Benin and Togo.

3.52 **KAINJI HYDRO POWER STATION**

The genesis of the Kainji Hydro Power Station dates back to 1951 when the demand for electricity was at the time rising faster than supply due to the growth of industries and rapid urbanisation. In order to meet the increasing demand for electricity and consequent upon the realization that bulk supply of electricity could be cheaper through the utilisation of hydropower technology, the erstwhile electricity cooperation of Nigeria (ECN) began the exploitation of the water resources of river Niger, upstream of Jebba.

A series of meetings and resources between 1955 and 1961 and their subsequent acceptance and approval by the federal Government in 1962 led to the commencement of construction work of Kainji, Niger State, the first hydro power station in Nigeria. Physical construction of structure and installation of machine in Kainji began in 1964 and was concluded on schedule in December 1968. The construction of the Kainji Hydro Electric Power Station in Kainji, Niger State, marked the turning point in the deliberate and sustained effort of the River Niger to the advantage of the whole country.

At the commencement of operations in 1968, only four generating units of 80 megawatts (MV) each was installed. So, it had a total installed capacity of 320MW. However, in 1970, two generating units of 100MW each was installed and commissioned. Two additional generating units of 120MW each were in 1978 installed and commissioned. On the whole, the total installed capacity of Kainji Hydro Electric Power is 760MW.

The Kainji Hydro Electric Power Station cost approximately N175 million to construct.

3.5.8 JEBBA HYDRO ELECTRIC POWER STATION

In order to fully exploit the potentials of river Niger, the Electricity Corporation of Nigeria in 1951 embarked on an in-depth tour and examination of possible sites for the development of hydroelectric power. In 1958, Balfour Beatly and company limited and a consortium of Engineering consultants from the Netherlands intensified their operational study of the dam sites. The acceptance of their recommendations later formed the basis for the construction of the Jebba Hydro Electric Power Station.

Monaco of Canada, a consulting engineering firm, was largely responsible for the overall design and supervision of the power station, Marubeni of Japan, Fougerole Nigeria Limited and Escher Wyss of Switzerland and also played important roles throughout the construction of the power station.

Jebba Hydro Electric Power Station is made up of six turbines of 90MW each. At full firing, he station can produce 578.4MW of electricity.

The power station was built at the cost of over N600 million.

Former Head of State, Commander-in-Chief of the Armed forces Major general Muhammadu Buhari (Rtd) commissioned the Jebba Hydro Electric Power Station in April 1985. the colourful ceremony attracted eminent personalities from all walks of life.

5.1.1.1 SHIRORO HYDRO ELECTRIC POWER STATION

The Shiroro Hydro Electric Power Station is one of the newly commissioned power stations owned by the National Electric Power Authority. It is the only hydro power station not on River Niger, for it is strategically located on high point of Shiroro Gorge on the Kaduna River, some sixty kilometres from Minna, Niger State.

The Shiroro Hydro Electruc Power Station is capable of generating 600Mw of electricity at full utilization. The power station is euipped with switchyard facilities, which enhance the necessary step down, and subsequent exportation of generated electricity into the national grid. Shiroro Power Station is built with specifications to match the current trend of technological development in the electricity industry worldwide. It has modern control room where the operations of the power station are monitored and regulated on daily basis.

Following its strategic importance, a supplementary National Control centre (next only to NCC, Oshogbo) is being established at the station.

When construction work started in the early 80s, the cost of building the station was a little over N300 million. However, on completion and commissioning in May, 1990, the cost had gone up to over N800 million. The astronomical rise in cost necessitating the review was due to the galloping global inflationary trend.

The then President, General Ibrahim Badamasi Babangida, Commissioned the Power station on May 20, 1990. The 600Mw of electricity being generated by the station boosts the national grid and contributes in no small measure in stabilizing the supply of electricity to the whole nation.

3.5.5 AFAM THERMAL POWER STATION:

Afam Thermal Station located in Afam outskirts of Port-Harcourt, Rivers State is one of the earliest power stations built and managed by the National Electric Power Authority. It has buolt in 1963 and it usese natural gas. Afam, the location of the thermal power station was chosen because of the relatively chesp and available natural gas in te region. Natural gas is a major input to the thermally generated electricity.

In 1963 when the power station was built, it had capacity of only 210MW. Today the installed capacity has risen to 696MW following three extensive expansions of the power station to AFAM II, AFAM III, AFAM IV.

5.1.1 LAGOS THERMAL POWER STATION, EGBIN

The Lagos Thermal Power Station was built at a time of unprecedented demand for electricity by consumers nationwide. The desire to meet the appreciated increase in demand for electricity by residential, commercial and industrial consumers informed the conception and construction of this power station, which later turned out to be an enviable and significant achievement for the Authority.

Monaco, a sister company of Shaw mount Limited of Montreal, in Canada, served as the consulting engineers of the station. Mitsubishi of Japan and other contractors from the united kingdom contributed immensely to the construction work.

The Lagos Power Station has a generating capacity of 1320 MW. It consists of six fuel reheat units with normal rating of 220MW each.

The Lagos Thermal Power Station is equipped with a central room, which has both manual and the automatic devices for regulating the operational activities of the various units. There is also a switch yard control panel located in the centre of the power station. Protection devices have been specially built into

the plant so that the plant and its switchyard are isolated from the rest of the system in case of severe disturbances in the national grid. The plant is fortified with sprinkles and hydrant systems supplied from the nearby lagoon to ensure adequate protection against fire. Lagos Thermal Power Station is not only one of the most modern power stations; it is also the biggest in the West Africa sub-region.

5.1.2 DELTA THERMAL POWER STATION:

The power station is located in Ughelli, Delta State. After a detailed feasibility study, the construction contract was awarded to the consortium of General Electric of United States and Masrubeni of Japan in December, 1985, to update and beef-up the already Existing power station of Delta I, Delta II and Delta III built in the early 70s.

The main construction started in 1988 and it took them 24 months to deliver the turnkey project. The resolve to construct the Power Station in Ughelli was to meet the rising demand for electricity in and around Warri where heavy industries like the Aladja Steel Complex and the Nigerian National Petroleum Corporation is located. It was also to reduce the demand on the national grid. Another factor that enhanced the choice of Ughelli was the availability of cheap natural gas, which the thermal power station is fired on. The power station consists of 6 x 100MW gas turbine generators.

The station cost the authority approximately N2.2billion to construct.

The Delta IV Power Station was commissioned on March 12, 1991, by the then President, General Ibrahim Babangida. The station is one of the most modern power stations in the country. With its commissioning, NEPA has continued to demonstrate its local commitment towards regular supply of electricity to all consumers.

5.1 SAPELE THERMAL POWER STATION

The conception and construction of Sapele Thermal Power Station, Ogorode, Delta State, was the outcome of series of studies conducted in the 80s.

In fact, the necessity to construct the power plant was to enable Nigeria meet as much a possible, the rising demand for electricity, a peculiar characteristic of growing and developing nations. Shawmant Limited, a firm of consulting engineer was responsible for the overall design and management of the Power Station. Preliminary construction work of site clearance and initial power supply were executed in 1976.

The power station consists of 6 x 120MW steam turbines capable of producing 720MW at full firing. The Power Station utilized fuel gas as supplied by Nigerian Gas Company, Ogorode. Also, in 1984, 4 x 75MW gas fired turbines with capacity of 300MW were installed to utilize in full the potential of the natural gas that is available in the area.

The commissioning of these units boosted the installed capacity of Sapele Power Station from 720MW in 1980 to 1020MW in 1985.

5.2 SIGNIFICANCE OF NEPA

NEPA, one of the most important Sectors of economic activity is believe to be a keystone of civilization. It is a widely accepted fact that the development process of any society depends to a large extent on the efficiency of the power-generating network in existence in that society.

The success of our daily economic activities depends on electricity supply. Every manufactured product must have used power for it production.

Again, because NEPA facilitates industrial processes, it is a basic foundation of economic development. This is due to the spread of production, trade and ideas, (communication) and the economic ascendancy of man depends upon the ability to use light (electricity) during the night and other functions it provide.

Specifically, power generation system and enables inter-country (Nigeria-Niger) contacts and as such promotes social and political unity of a society for purposes of development. Therefore, it is rational for developing countries to devote a substantial proportion of their total public expenditure of investment in power generation. Large-scale production is very necessary for economic

development. This is cannot be possible without efficient and relatively cheap power supply.

Thus the significance of electricity is manifested in provision of foundation upon which economic growth of a nation develops. Since electricity is an important absorber of scarce resources, ill-timed, misdirected, or misplaced investment in this sector can have a serious impact upon the whole economy. Most of the investment in power generation is large, indivisible, long lasting; hence it can tie up vast amounts of resources for long period of time.

5.3 MOTIVES FOR INVESTMENT IN NEPA

Naturally, one expects that money (or resources) is ventured into a capital project only when there is a possibility of earning a prospective yield, in the future, form that project, i..e. when profits is expected to be earned on the project.

Theoretically, according to Keynes (1936), the inducement to invest depends partly on the investment demand schedule and partly on the rate of interest, and the scale of investment, on the other hand, depends on the relation between the rate of interest and the schedule of marginal efficiency of capital assets and its prospective yield. To this extent, therefore, we can say that investment depends on rate of returns expected to be obtained on money if it were invested. Arguing from the cost-benefit point of view, usually investment must take into account present cost and future needs.

Thus power generation or electricity development is economically justifiable if total benefit exceeds costs. What is worth knowing is that investment on the power system in Nigeria is not profit oriented rather it is intended to support the growth and development of important sector of the economy such as agriculture, commerce and industry, from which prospective yields are expected to be earned.

5.4 SALE OF ELECTRICITY

Sale of electricity is the activity whereby customers are appropriately billed for electricity used. NEPA expects the customers to report promptly any power interruption.

Accordingly, all cases of Vandalization and theft of NEPA installation and/or equipment should be reported to the nearest NEPA office or any law enforcement agent.

Again, cases of illegal connection and over loading of NEPA power system should be reported to the nearest NEPA office NEPA extends its services to its customers through Zones, Districts, under-taking and service centers nationwide. A services center is the smallest service unit set up to enable NEPA reach its grassroots customers. The distribution and marketing sector at corporate headquarters look after this.

NEPA has three main categories of customers.

There are: - Residential, commercial and industrial customers.

RESIDENTIAL Customer are domestic customers who use their premises and electricity strictly for residential purposes.

COMMERCIAL Customers are customer who use their premises for purposes other than residential e,g, as a small factory for manufacturing goods, while

the INDUSTRIAL Customers are those who use their premises for purely heavy industrial purposes.

There are basically three types of metre used by NEPA.
There are:- Single Phase, Three Phase and Maximum Demand Meters.

The Single-phase metre is the most popular and it is mainly used by the residential customers.

Three-phase metre is used mainly by commercial and small-scale industrialist.

The maximum demand metre is used mainly by the big time industrialists and Commercialist.

5.5 POWER FAILURE:

The following are some of the major cause of power failure in Nigeria:-

(i) Bad or poor wiring of houses

(ii) Overloading and local electrical system by customers,

(iii) Careless and reckless motorist running into NEPA installations

(iv) Road construction workers damaging NEPA underground Cables

(v) Theft and vandalization of NEPA equipment by unscrupulous persons.

(vi) Indiscriminate bush burning;

(vii) Lack of gas and low water level;

(viii) Illegal connections; and

(ix) Heavy thunderstorm.

(x) Planned outage.

(xi) Heavy rainstorm or any similar act of God.

The miscellaneous Offences Decree No 22 of 1986, section 9 provides that “any person who unlawfully disconnects, removes, damages, tamper, middles with or in any way whatsoever interferes with any plan, work, cable, wires or assembly of wire designed or

uses for transforming of converting shall be guilty of an offence and liable on convention to be sentenced to life imprisonment". Section 10 of the same decree provides that any person, who unlawfully disconnects, removes, damages, tampers, meddles with or any way whatsoever interferes with any electric fittings, metre or other applicants, used for generating transforming, converting, supplying of selling electricity, shall be guilty of an offence and liable on conviction to an imprisonment for a term not exceeding 21 years.

CHAPTER FOUR

DATA PRESENTATION AND ANALYSIS

5.1 INTRODUCTION

This chapter deals with the presentation and analysis data collected through the questionnaire from field. The data collected is presented in tabular form and analysed using percentages. For the purpose of clarity, the chapter ids organized into three main section namely:

(i) Presentation and analysis

(ii) Discussion of findings and

(iii) Proof/ Test of hypothesis

5.1 PRESENTATION AND ANALYSIS

The data presented below is based on returned questionnaires.

Kaduna and Zaria stores of NEPA Undertaking were selected for coverage of the Research Study and 30 questionnaires were administered on Kaduna and 20 questionnaires were returned, making the total number of questionnaires 50.

The responses are hereby presented below according to the following Tables.

Question: what form of Inventories do you normally handle?

Table (4.1) Responses on types of Inventory

RESPONSES	NO OF RESPONDENTS	PERCENTAGE
Production Inventories	-	-
Maintenance, Repairs,	-	-
Operating Supplies.	-	-
In process Inventories	-	-
Finished good	-	-
All of the above	50	100
None of the above	-	-
TOTAL	50	100

SOURCE: Questionnaire

Table 4.1 Indicates that stocks handled by the Distribution and Marketing sector of NEPA range from Production, Maintenance, Repairs, Operating in process and finished goods inventories. All the 50 respondents, representing 100 percent (%) are of this opinion.

Does (NEPA) embark on any form of forecasting of its inventory requirements?

TABLE (4.2): Response on forecasting

RESPONSES	NO OF RESPONDENTS	PERCENTAGE
Yes	50	100
No	-	-
TOTAL	50	100

SOURCE: QUESTIONNAIRE

From Table 4.2 above it is clear that NEPA embarks on inventory forecasting. All the 50 respondents which is 100% of responses agree it's this practice.

Question: What are your Sources of Inventories

TABLE (4.3): Response on Sources of Inventories

RESPONSES	NO OF RESPONDENTS	PERCENTAGE
Direct Imports.	-	-
Local Sources.	-	-
Central Depot	-	-
All of the above	50	100
TOTAL	50	100

SOURCE: QUESTIONNAIRE

The information above shows that the Distribution and Marketing sector of NEPA engages in direct imports, Local procurement as well as getting supplies from the company's control depot.

All the 50 respondents agree that this arrangement takes place in the company. This represents 100 percent.

Table (4.4.) below further reveals that this arrangement affects both short and long term planning. The table also has 100% response from the 50 respondents.

Question: How long is the forecasting for inventories?

TABLE (4.4): Response on Range of forecasting

RESPONSES	**NO OF RESPONDENTS**	**PERCENTAGE**
Short-term	-	-
Long-term	-	-
All of the above	50	100
Others (Specify)	-	-
TOTAL	50	100

SOURCE: QUESTIONNAIRE

Question: Do you have budgets for investment?

TABLE (4.5): Response on Budget for Inventory Investment

RESPONSES	NO OF RESPONDENTS	PERCENTAGE
Yes	50	100
No	-	-
TOTAL	50	100

SOURCE: Questionnaire

TABLE (4.5) Shows that there is budget for inventory investment. All the 50 respondents representing 100% are of this opinion. Question: Do you have an inventory control unit: Response on inventory control unit.

Table (4.6): Response on Inventory Control Unit

RESPONSES	NO OF RESPONDENTS	PERCENTAGE
Yes	50	100
No	-	-
Total	50	100

SOURCE: QUESTIONNAIRE

From Table (4.6) it is clear that NEPA has an inventory Unit. All the 50 respondents accept this.

Question: Where does stock control actions originate? Response on stock control action

Table (4.7) Response on the type of system of Inventory Control Used

RESPONSES	NO OF RESPONDENTS	PERCENTAGE
Account Department	-	-
Central Warehouse	10	20
Merchandise Controllers	5	10
Store manager	35	70
Other (specify)	-	-
TOTAL	50	100

SOURCE: QUESTIONNAIRE

Table (4.7) above shows that stock (inventory) control actions originate from stores managers. Out of the 50 respondents 35 of them representing 70 percent are of this opinion, 10 respondents which is 20 percent are however of the view that stock control actions originate from central warehouse. However, 5 respondents are of the belief that it is merchandise controllers that originate stock action

Question: What system of inventory control do you operate? Response on the type of system of inventory control used.

Table (4.8): Response on the type of System of Inventory control used

RESPONSES	NO OF RESPONDENTS	PERCENTAGE
Fixed order system	20	40
Cyclical ordering system	15	30
All of the above	15	30
None of the above	-	-
Other (specify)	-	-
Total	50	100

SOURCE: QUESTIONNAIRE

From the Table (4.8) above 20 respondents representing 40 percent believe they engage in fixed order system of inventory control. 15 respondents each standing for 30 percent have varying opinion on the inventory control; they hold that the organization undertaken cyclical ordering system while another 30 percent argue that the company does both fixed order system and cyclical ordering system.

Question: What cost of carrying inventory do you encounter in your company/unit?

Table (4.9): Response to the type of cost carrying inventory adopted.

RESPONSES	NO OF RESPONDENTS	PERCENTAGE
Storage Costs	-	-
Damages and obsolesce	-	-
Insurance and taxes	-	-
Stock Taking, Reordering and Accounting Costs	-	-
Cost of tied down capital in inventory	-	-
All of the above	50	50
TOTAL	50	100

SOURCE: QUESTIONNAIRE

Table (4.9) above reveals that costs of carrying inventory that the company encounters ranges from storage costs, Breakage's/damages and obsolescence, Insurance and takes, stock taking, reordering and accounting costs, cost of tied down capital in inventory. All the 50 respondent which represents 100 percent of the population share this view.

Question: What ordering costs do you encounter?

TABLE (4.10): response to the type of ordering cost encountered

RESPONSES	NO OF RESPONDENTS	PERCENTAGE
Transportation	20	40
Import Duties	20	40
Administrative Costs	10	20
Others (Specify)	-	-
TOTAL	50	100

SOURCE: QUESTIONNAIRE

Table (4.10) above shows that the ordering cost encountered by the sector for 20 respondents which is 40 percent is transportation, while for another 20 respondents which I still 40 percent believe the major costs is that if import duties.

However 10 respondents representing 20 percent are of the opinion that the costs are administrative in nature. However further verbal questioning revealed that all the cost encountered by the Company include transportation Import Duties as well as administrative costs.

Question: What do you use to maintain effective inventory records?

Table (4.11): Response on the type of tools used in maintaining inventory record.

RESPONSES	NO OF RESPONDENTS	PERCENTAGE
Inventory Records	10	20
Inventory Models	-	-
Computers	15	30
All of the above	25	50
TOTAL	50	100

SOURCE: QUESTIONNAIRE

From the information in Table (4:11) above it can be seen that there are varying shades of opinion in regards to what tool used to maintain effective inventory records.

10 respondents representing 20 percent response are of the view that inventory records are used for effective inventory maintenance 15 respondents representing 30 percent are however, of the opinion that computers are the main tools of instrument used, yet still majority of respondents that is 25 representing 50 percent are of the opinion that inventory models are all for effective inventory records.

Question: Which form of stock taking do you engage in?

TABLE (4.12): Response on the type of stock taking being engaged

RESPONSES	NO OF RESPONDENTS	PERCENTAGE
Continuous	-	-
Periodic	-	-
All of the above	50	100
TOTAL	50	100

SOURCE: QUESTIONNAIRE

The Distribution & Marketing of NEPA employs both the continuous and periodic form of stock taking in the organization.

Question: What is the nature of the stores keeping practice engaged in by NEPA?

TABLE (4.13): Response on the nature of the store keeping practiced

RESPONSES	NO OF RESPONDENTS	PERCENTAGE
Centralized	45	90
Decentralized	5	10
TOTAL	50	100

SOURCE: QUESTIONNAIRE

Table (4.13) indicates that the centralized form of stores keeping is practical or engaged in NEPA 45 out of the 50 respondents which represents 90 percent are of this view, while 5 respondent representing 10 percent of the total response favour or are of the view that NEPA practices a decentralized form of stores keeping

Question: Who is responsible for decision on the issue of quality/quantity and price of the stock to be purchased?

TABLE (4.14) Response on decision making regarding quality/quantity to be purchased?

RESPONSES	**NO OF RESPONDENTS**	**PERCENTAGE**
Stock verifiers	-	-
Purchasing Officer	-	-
Chief Stores Officer	-	-
All of the above	50	100
TOTAL	50	100

SOURCE: QUESTIONNAIRE

From Table (4.14) it is clear that the issue of deciding on quality, quantity and price of the stock is shared by several groups of people. The question involves stock verifier, purchasing officer and stores officers. All the people interviewed on this issue agree and the response represents 100 percent.

Questionnaire: What Purchasing policy does your Department adopt?

TABLE (4.15) Response on the type of purchasing policy used

RESPONSES	NO OF RESPONDENTS	PERCENTAGE
Bulk Purchase	-	-
Unit Purchase	-	-
Pieces Purchase	-	-
All of the above	50	100
TOTAL	50	100

SOURCE: QUESTIONNAIRE

Information in Table (4.15) above reveals that the Sub-Sector engages in bulk purchase, unit purchase and piece purchase. All the 50 respondents are of this view as shown in the table.

Question: What is the nature of stock taking used in your organization?

TABLE (4.16) Response on the nature of stock taking used.

RESPONSES	NO OF RESPONDENTS	PERCENTAGE
Team-Work Stock Taking	-	-
Store-Keeping	25	50
Blind Stock-Taking	-	-
Stock Verifiers	25	50
TOTAL	50	100

SOURCE: QUESTIONNAIRE

The stock-taking used by the Distribution & Sector Marketing of NEPA is either carried out by store keeper which 25 respondents representing 50 percent of the response agree or by stock verifiers which another 25 respondents out of the 50 interviewed also favour.

Question: Who is responsible for effective stores control, stock holding and assessment of goods?

TABLE (4.17) Response on factors responsible for effective stores Control.

RESPONSES	NO OF RESPONDENTS	PERCENTAGE
Higher Store Officer	50	100
Store-Keeping	-	-
Chief Executive	-	-
Purchasing Officer	-	-
Stores Officer	-	-
TOTAL	50	100

SOURCE: QUESTIONNAIRE

Table (4.17) indicates that the responsibility for effective store Control, store-holding and assessment of goods fall on the Higher stores officer of the organization.

However the Chief Executive has the accompanying responsibility of assessing the general stock at his convenience.

Question: What is the mode of requisition adopted in your Department?

TABLE (4.18) Response on the mode of requisition adopted.

RESPONSES	NO OF RESPONDENTS	PERCENTAGE
Verbal instruction	-	-
Routine arrangement	-	-
Requisition form/card	50	100
All of the above	-	-
None of the above	-	-
TOTAL	50	100

SOURCE: QUESTIONNAIRE

The mode of requisition adopted or employed by the Stores and/or Distribution & Marketing Sector of NEPA is that of requisition. 50 respondents all agree on this aspect or arrangement. This represents 100 percent of the total response. This was further explained that, it allow for an efficient and proper records keeping.

Question: Do you keep any store ledger book for proper Accountability?

TABLE (4.19): Response on keeping store ledger.

RESPONSES	NO OF RESPONDENTS	PERCENTAGE
Yes	50	100
No	-	-
Total	50	100

SOURCE: QUESTIONNAIRE

Information above shows that a stores ledger book for proper accountability is kept and maintained by the Distribution & Sector of NEPA.

5.1 DISCUSSION OF FINDINGS

The research findings relating to Management of stock in a Public Utility Company, a case study of distribution and marketing sector of National Electric Power Authority (NEPA) show that to a reasonable level the ethics of store management are adopted by the stores department.

Table (4.1) shows that all the 50 respondents which represent 100 percent of the responses are of the view that they hold different forms of inventories ranging from production inventories, maintenance, repairs, operating suppliers and in process inventories as well as finished goods. Verbal discussion revealed that NEPA holds these different forms of inventories as a result of

the nature of work the organization involved in. The organization enrages in the installation of power equipment's and repairs as well as having a large workforce to contend with which makes the organization to hold these inventories to meet their requirements or needs at the moment the need arises.

Information in Table (4.2) further shows that NEPA embarks on forecasting of its inventory requirements. All the 50 respondents, which represent 100 percent, are of this opinion.

Table (4.3) shows that Distribution & Marketing Sector of NEPA engages in direct import, local procurement as well as receiving supplies from the central depot. All the 50 respondents are of this opinion further Enquirer, indicate that some equipment's used by NEPA are highly technical and cannot be obtained or manufactured within the country, this is why the organization imports some of its goods.

Table (4.4) shows clearly that this involves both short and long-term planning. Infect there is 100 percent responses in this regard.

Table (4.5) also shows that there is budget for inventory investment, since all the 50 respondents representing 100 percent share this view.

NEPA also has an inventory control unit as indicated in Table (4.6).

This unit is used to serve as a watch dog so as to safeguard arbitrary use of goods.

Stock control action as shown in Table (4.7) represents different shades of opinion as 10 respondents which is 20% favour central warehouse, while 5 respondents representing 10% say the responsibility is that of merchandise controllers while 35 respondents which represent 70% are of view that this is the role of store managers.

This different shades of opinion is due to the fact that stores, control warehouse all fall under accounts department and all this actions can not be carried out without approval from the accounts department.

The organization engages in fixed order system of inventory control as well as cyclical ordering system as well. As Table (4.8) shows.

Table (4.6) indicates that the cost of carrying inventory in the organization ranges from storage cost, damages/breakage's and obsolescence, Insurance and taxes, stock-taking, reordering, accounting cost, cost of tied down capital in inventory and so on. All the 50 respondents share this view.

However, Table (4.10) shows that ordering cost encountered by the organization include transportation cost for 20 respondents (40%) while administrative cost has 1 – respondents representing 20 percent of the response.

Information in Table (4.11) reveals that there are varying shades of opinion in respect to what tools are used to maintain effective inventory records. Ten (10) respondents representing 20 percent response are of the view that inventory records are used for effective inventory maintenance, 15 respondent representing 30 percent are however, of the opinion that computer are the main tools or instruments used, however 25 respondents which represents 50 percent are of the view that inventory records, computers and inventory models are all used for effective inventory records.

In this respect the organization engages in both continuous and periodic stock-taking. The reason is that the continuous stock taking is carried out by store-keepers almost on daily basis to be certain of what goes out or remains after each days work, while periodic checks are carried out by stock verifiers which serves as an audit account to check out store keepers.

This information is gathered and analysed all in Table (4.12)

The store keeping practice engaged in by NEPA according to information in Table (4.13) is centralized 45 out of 50 respondents which represents 90% are of this opinion. The reasons advanced by this group are that the organization is allowed to use its bargaining power and resources effectively, since the system allows consideration of quantity discount or rebate.

That the purchasing unit has the incentive of ordering for the whole or a substantial proportion of the organization requirement, which gives rise to cheaper prices in terms of large quantities ordered.

Advantages of specialist ancillary staff may be possible with the purchasing office, possibility of specialist purchasing staff being used for each of the major categories of purchase. This also leads to cheaper administrative cost, good coordination of activity by adopting uniform purchasing policy and procedures, possibility of better control of activity under on umbrella can be obtained, Uniformity of purchases.

Prices obtained by centralized purchasing assists standard costing.

Other reasons given include savings in transportation cost; more efficient inventory control, prices, lead time and materials usage are made possible.

Record keeping duplication is reduced, purchasing, receiving and inspection expense are seriously reduced.

From the foregoing it can be concluded that the reasons given by the 90% of respondents if properly used will lead to effective store control and also create room for effective utilization of resources in the organization.

In Table (4.14) the responsibility of who decides, on the quality, quantity and price of the stock to be purchased is shared amongst

the stock verifiers, purchasing officer and chief stores officer as all the 50 respondent representing 100 percent agree on this point.

However, further investigation through verbal interview showed that mot people favoured the purchasing officer because he maintain the data of prices, sources of supply, past purchase, inspection reports, specifications, statistics concerning research and development of new material in the market and any other information which relates to buying.

The research also revealed that the purchasing officer is empowered by the organization to give the correct prices and quantity to purchase, further investigations uncovered that the purchasing officer studies records of various materials or goods which the department purchases from time to time, observes movement and trend of prices, matches market report, obtains quotations and prices when required, collects prices from financial organization and compiles cost and analysis of various materials and equipment from suppliers for better and effective store control.

The majority of the respondents who favoured this are from the store, accounts, personnel and maintenance departments. Information in Table (4.15) shows that the purchasing policy adopted by NEPA cuts across bulk purchasing, Unit purchase and piece purchase. This was explained to allow for immediate need satisfaction, which will arise at any point during the course of work. All the 50 respondents are of this view.

Stock taking in NEPA is carried out by store-keepers to ascertain the quantity of materials in store while stock verifiers carry out their stock-taking as a means of checking or auditing the store-keepers as indicated in Table (4.16).

The higher store officer is however responsible for effective stores control, stock holding and assessment of goods. Though the chief executive has the responsibility of assessing the general stock at his convenience.

The mode of requisition adopted by NEPA is that of requisition form, which specified the number and quantity required. For effective control of stock, the organization keeps a stores ledger book for proper accountability.

Table (4.19) gives this information and there is a 100 percent response to this question.

4.4 TEST/PROOF OF HYPOTHESIS

In proving the hypotheses Ho will represent the Null hypotheses while H1 will stand for the alternative hypothesis

HYPOTHESIS 1

Ho: Effective store control creates room for effective utilization of materials in the store.

H1: Effective store control does not create any room, for effective utilization of materials in the store.

For the proof of the above hypothesis questionnaire will be used. The responses are tabulated in Table (4.6) as reproduced below.

Question: Do you have an Inventory Control Unit?

TABLE (4.6) Response on Inventory control unit

RESPONSES	NO OF RESPONDENTS	PERCENTAGE
Yes	50	100
No	-	-
Total	50	100

SOURCE: QUESTIONNAIRE

In response to question 7 “DO YOU HAVE AN INVENTORY CONTROL UNIT?” a careful examination of Table (4.6) show that 100 percent of the respondents agree that NEPA has an inventory control unit.

In proving the above hypothesis, it has been established from the findings that effective stores control creates room for effective utilization of materials in the store.

In view of the findings and discussion of same, the null hypothesis (Ho) is therefore accepted and the alternative hypothesis (H1), rejected.

HYPOTHESIS II

Ho: It is not of any use or any importance to apply proper documentation of stock or inventory in any organization.

H1: It is important to apply proper documentation of stock in any organization.

In proving the hypothesis, the response to question 20 of the questionnaire, as tabulated in Table (4.19) as reproduced below will be used.

Question: Do you keep any Stores Ledger book for proper accountability?

TABLE (4.19) Response on keeping store ledger

RESPONSES	**NO OF RESPONDENTS**	**PERCENTAGE**
Yes	50	100
No	-	-
Total	50	100

SOURCE: QUESTIONNAIRE

In response to question 20, all the 50 respondents indicated that NEPA keeps proper documentation of stock or inventory and findings further revealed that proper documentation of stock is important to any organization. Based on the above findings, the Null hypothesis (Ho) is rejected, while the alternative hypothesis (H1) is accepted.

HYPOTHESIS III

Ho: Though NEPA does not operate on profit motives, it requires stock control and materials Management procedures.

H1: NEPA, being a government body, which does not operate on profit motive does not require stock control and materials Management procedure.

In testing the above hypothesis, the response to question 18 as shown in Table (4.17) 'Who is responsible for effective stores control, stock holding and assessment of goods' will be tested.

Question: Who is responsible for effective stores control, stock holding and assessment of goods?

TABLE (4.17) response on factors responsible for effective store control.

RESPONSES	NO OF RESPONDENTS	PERCENTAGE
Higher Stores Offr.	50	100
Stores – Keeper	-	-
Chief Executive	-	-
Purchase Officer	-	-
Stores Officer	-	-
TOTAL	50	100

SOURCE: QUESTIONNAIRE

The responses show that 100 percent of store control and management is in the hands of higher stores officer.

Based on the response above, and the discussion of findings, the Null hypothesis (Ho) is accepted and the alternative hypothesis (H1) is rejected.

HYPOTHESIS IV

Ho: Personnel in an organization can obtain stock from the store without using the stores requisition form.

H1: Personnel in an organization cannot obtain stock from the store without using the stores requisition form.

In appraisal of the above hypothesis question 19 'WHAT IS THE MODE OF REQUISITION ADOPTED YOUR DEPARTMENT?'
As reproduced below from Table (4.18) will be used.

Question: What is the mode of requisition adopted in your department?

TABLE (4.18): Responses on the mode of requisition adopted.

RESPONSES	NO OF RESPONDENTS	PERCENTAGE
Verbal instruction	-	-
Routine arrangement	-	-
Requisition form/card	50	100
All of the above	-	-
None of the above	-	-
TOTAL	50	100

SOURCE: QUESTIONNAIRE

In response to question 19, 50 respondents representing 100 percent indicated that personnel in an organization can not obtain stock from the store without using the store requisition form.

In view of the above findings and discussion of same, the Null hypothesis (Ho) is rejected while the alternative hypothesis (H1) is accepted.

CHAPTER FIVE

SUMMARY, CONCLUSION AND RECOMMENDATIONS

5.1 INTRODUCTION

The basic aim of this study was to investigate into the management of stock in public utility: A case study of the Distribution and Marketing Sector of National Electric Power Authority (NEPA).

The study covered two major NEPA installations in Zaria and Kaduna all in Kaduna State. Out of the two installations covered the population and samples were identified and anonymous questionnaire was used for data collections. In all, a total population of 50 was designated out which all were selected for use through random sampling.

A total of twenty research questions were used for the study while a total of 50 questionnaires were administered of this number, all were retrieved, representing 100% of the respondents

Data derived from the exercise were also analysed based on frequency distribution of respondents' opinions.
This is shown in contingency tables and ranked in percentages as shown in Chapter five of this study.

As a supplement to questionnaires, personal interview was also used to elicit some additional information not covered in the questionnaires.

Related literatures were also reviewed extensively, covering such areas as inventory control, stock control, problems in accounting for stock, stock costs, product procurement and management, reasons for holding stock, stock control, stock taking and stock checking, cyclical provisioning, stock record suppliers, background information on NEPA, significance of NEPA, motives for investment in NEPA, generation of power in Nigeria, and power distribution in Nigeria.

This chapter, therefore, gives a summary of the study based on the data collected and the analysis made.

5.2 SUMMARY

National Electric Power Authority (NEPA) is a government owned business organization. It was set-up by Decree with the main aim of maximizing public welfare. Services usually provided by NEPA is essential and to ensure a more even distribution of facilities and social services, the government steps in to give NEPA legal monopoly to supply electricity in the country

Stores control is a very important functional branch of an organization, which requires a serious attention. Unfortunately, most organization in Nigeria have not given it the attention deserves. The problem of neglect to this vital functional part of an organization is not only peculiar to Nigeria but world wide and ha been in existing from time immemorial.

Stores control measures only started receiving attention in the advance countries of America and Europe only after the industrial Revolution of the 1930s, which resulted in the death of materials. The problem of stores control is not unconnected with the failure of the top management of the organization to accord a high degree of attention to the Stores function as well as their failures to employ a well qualified stores officer to manage and control stock. There is also the problem of lack of storage capacity. The National Electric Power Authority (NEPA) also shares in these and many other problems.

5.3 CONCLUSION

In conclusion, it would be observed that the primary objective of stores function is to provide a service to the operating function and this must be fully appreciated. All other stores activities, although they have their own relative importance, are subordinate to this main responsibility. The service given can be analyzed a follows:

(i) To make available a balanced flow of Raw materials, Components, tool, equipment and any other commodity necessary to meet operational requirements.

(ii) To provide maintenance materials spare part and general stores as required.

(iii) To receive and issue work in progress and finished product.

(iv) To accept and store scrap and other discarded materials as it arise.

(v) To account for all receipts, issue, and good in stock.

Therefore, the organization should see its stores as an important functional branch, which can never be run in isolation as most of items kept in it represent capital which can strangulate an organization and bring it to a halt if not properly catered for.

5.4 RECOMMENDATIONS

Based on the major finding of the research work, the following suggestions and recommendations are made in order to improve upon stores control and create effective stores management. The measure, if adopted, will create room for effective utilization of resource, accountability, and economic use of materials for organization.

(1) For the organization to be sure of the safety of its stock and for proper accountability, a good character, honest and trustworthy Personnel well verse with the Principles of effective store control should be recruited and employed.

(2) The use of shelves as a storage facility by organizations is appropriate but this is not enough. Other storage facilities such a racks and pallets should be employed in the stores. The use of these facilities will ensure maximum security against deterioration and breakages. For other heavy

materials like these used in large electrical installations, stock yield should be provided with adequate pallets and fenced to facilitate control and security. The gates should be well constructed and lockable and a provision of fire prevention in case of any unforeseen contingencies.

(3) Stock levels should be fixed for items and materials purchased and held in stores in order to help provisioning. These levels, (maximum, minimum and re-order levels) could be fixed based on the previous purchasing order and the result adjusted in the light of what is likely to occur in the future.

(4) Supplier's delivery date and time should be fixed for organization's suppliers. They should also be aware of the days and time during which they are expected to make deliveries and when facilities will be available to accept such deliveries. This will curb the system of suppliers delivering materials at will, reduce the burden of store officers and avoid unnecessary delays, stock out and costs.

(5) Employees other than stores officers should not be allowed into the stores unless it is strictly on business. The habit of employees using the store area for their lunch break should be discouraged by organizations.

(6) Stores ledger comprising all items of stock held in various stores located from the physical stock itself should be kept.

The detailed entries of all issues should be reflected in such ledgers. The serves as checks and balances on all the sub-stores, and as a good source for audit purposes.

(7) To avoid duplication of records due to price variance, the FIFO (first in first out) and LIFO (last in first out) system of issues should be adopted. This will ensure the elimination of the need to open several cards for single items because of price variation.

(8) All receipt and issues should be numbered serially and recorded with duplicates and distribution to appropriate section of the organization.

(9) For easy identification of materials in the stores and to reduce fatigue, appropriate coding system should be employed. This can be done by using letters, figures or a combination of both. The system could be based upon the nature of the stores items, the purpose for which items are bought, or on any other basis regarded as suitable for the business.

(10) Stores manual should be made available so that the stores procedures could easily be seen at a glance. This will provide in readily accessible form a complete record of all standing instructions. If all storehouses are operating on the same method, their efficiencies can be compared.

(11) The number of officials signing the requisition form for stores items should be minimized. However, Store operatives should not be allowed to issue out items from the stores on their signatures alone.

(12) The Storekeeper in charge of the main store should be empowered to receive all in-coming materials irrespective of the sub-store they belong. He should always be informed of what he is expected to receive and when it is likely to arrive by giving him a copy of the order form. The exercise should be supervised by a Senior Officer at supervisory level with knowledge of effective store control. These materials, can be dispatched to sub-stores which they belong and to be received by the stores keepers in charge. If this is applied, it will reduce time wasting in receive materials a well a unnecessary delays of suppliers in the absence of a store Officer.

BIBLIOGRAPHY

(1) Ada, U.U et al (1977) Management Development in Nigeria. Ibadan: Caxtom Press (Invest. African) Limited.

(2) Aliyu, M.J. (1986) “Storage and control of Stock” A lecture delivered in Kaduna Polytechnic.

(3) Ayan, G. W. (1998) Purchasing HandBook. Fourth Edition. New York: McGraw-Hall Book Company.

(4) Brown D.C and Owlar, L.W.J. (1974) Wheelman’s Cost Accounting simplified. Fifth Edition. London and Plymouth: Macdonald and Evans limited.

(5) Burbridge, J. L (1998) Principles of Production Control. London and Plymouth. Macdonald and Evans Limited

(6) Burton, J. A. (1979) Effective ware housing. London and Plymouth: Macdonald and Evans Limited.

(7) Buyers, C. I., at al (1981) Principles of Cost Accountancy HandBook. St. Albams; The Dennison Press.

(8) Ekpo, A. H. (1994) Public Expenditure and Economic Growth in Nigeria (160-1992)

(9) Hudson, O. Marketing Research Concepts and practice P49-56.

(10) Lucy, T. (1994) Quantitative Techniques. Great Burtain; The Guernsey Pres Co. Limited, Vale, Quernsey C.I.

(11) Martin, K. S. and Miller, David W. (1990) Inventory Control: Theory and Practice, India; prentice Hall.

(12) Olakadun, F. A. at al (1979) Structure of the Nigeria Economy. London: The Macmillan press Limited.

(13) Stephen F. Love (1971) Inventory Control. U. S. A McGraw – Hill Book Company.

(14) Facts about National Electric Power Authority, NEPA. A Publication of the Public Relations Division Headquarters, Abuja.

(15) Westing J. H. at al (1976) Purchasing Management (Materials in motion). Fourth Edition. Wisconsin: Madison

APPENDIX A

DEPARTMENT OF BUSINESS ADMINISTRATION

AHMADU BELLO UNIVERSITY,

ZARIA, NIGERIA

September, 22, 1998

Dear Respondents,

A LETTER OF INTRODUCTION

I am conducting a research into the Management of stock in Public utilities with particular reference to National Electric Power Authority (NEPA). This questionnaire is therefore, designed in order to elicit information from respondents for the purpose of this study.

In view of the above, it would be very highly appreciated if you would complete the attached questionnaires as appropriate. I guarantee that all information supplied will be treated with the strictest confidence and used, only for the academic purpose for which it is intended.

It may not be necessary that you disclose your name to the researcher.

Thanking you for your cooperation and valuable contribution towards the success of this research work.

Yours faithfully,

ENGR .Y. ABULMUMINI

APPENDIX B. RESEARCH QUESTIONNAIRE

MANAGEMENT OF STOCK IN A PUBLIC UTILITY COMPANY: A CASE STUDY OF DISTRIBUTION AND MARKETING SECTOR OF NATIONAL ELECTRIC POWER AUTHORITY (NEPA)

INSTRUCTION: TICK ONLY ONE OPTION OUT OF THE SEVERAL OPINIONS GIVEN IN EACH QUESTION

(1) PERSONAL PARTICULARS:

NAME:……

DESIGNATION:……

PRINCIPAL Function……

STATION……

(2) What form of inventories do you normally handle?

(i) Production Inventories [ ]

(ii) Maintenance, repairs, Operating supplies [ ]

(iii) In process inventories [ ]

(iv) Finished good [ ]

(v) All of the above [ ]

(vi) Other (Specify)……..

(3) What are your sources of inventories?

(i) Director Imports [ ]

(ii) Local Source [ ]

(iii) Control Depot [ ]

(iv) All of the above [ ]

(4) Does (NEPA) embark on any form of forecasting of its inventory requirements

(i) Yes [ ]

(ii) No [ ]

(5) If yes in No. 4 above, is it

(i) Short term [ ]

(ii) Long term [ ]

(iii) All of the above [ ]

(iv) Other (Specify)…….. [ ]

(6) Do you have budgets for Inventory Investment?

(i) Yes [ ]

(ii) No [ ]

(7) Do you have an Inventory Control Unit?

(i) Yes [ ]

(ii) No [ ]

(8) Where does inventory control actions originate?

(i) Accounts Department [ ]

(ii) Central warehouse [ ]

(iii) Merchandise Controllers [ ]

(iv) Others (Specify)……..

(9) What system of inventory control do you operate?

(i) Fixed Order system [ ]

(ii) Cyclical Ordering System [ ]

(iii) All of the above [ ]

(iv) Name of the above [ ]

(v) Other (Specify) ……

(10) What costs of carrying inventory do you encounter in your company/branch/unit?

(i) Storage costs [ ]

(ii) Breakage's/Damages and Obsolescence [ ]

(iii) Insurance and Taxes [ ]

(iv) Stock taking, Reordering and accounting cost [ ]

(v) Cost of tied down capital in inventory [ ]

(vi) All of the above [ ]

(vii) Other (Specify) ……..

(11) What ordering Costs do you encounter?

(i) Transportation [ ]

(ii) Import duties [ ]

(iii) Administrative costs [ ]

(iv) Others (Specify) …….

(12) What tools do you use to maintain effective inventory records?

(i) Inventory records [ ]

(ii) Inventory models [ ]

(iii) Computer [ ]

(iv) All of the above [ ]

(13) Which form of stock taking do you engage in

(i) Perpetual / Continuous [ ]

(ii) Periodic [ ]

(iii) All of the above [ ]

(14) What is the nature of Stores keeping practice engaged in by NEPA?

(i) Centralized [ ]

(ii) Decentralized [ ]

(15) Who is responsible for decision making on the issue of quality, quantity and price of the stock to be purchased?

(i) Stock verifiers [ ]

(ii) Purchasing Officer [ ]

(iii) Chief Store Officer [ ]

(iv) All of the above [ ]

(16) What purchasing policy does your deeps your department adopt

(i) Bulk purchase [ ]

(ii) Unit purchase [ ]

(iii) Piece, purchase [ ]

(iv) All of the above [ ]

(17) What is the nature of stocktaking used in your Organization?

(i) Team-work stock taking [ ]

(ii) Stock-taking by store- keeper [ ]

(iii) Blind Stock-taking method [ ]

(iv) Stock-taking by stock verifiers [ ]

(18) Who is responsible for effective stores control, stock holding and assessment of goods?

(i) Higher Stores Officer [ ]

(ii) Store Keeper [ ]

(iii) Chief executive [ ]

(iv) Purchasing Officer [ ]

(v) Stores Officer [ ]

(19) What is the mode or requisition adopted in your department?

(i) Verbal Instruction [ ]

(ii) Routine Arrangement [ ]

(iii) Requisition Form/ Card [ ]

(iv) All of the above [ ]

(v) None of the above [ ]

(20) Do you keep any ledger book for proper accountability?

(i) Yes [ ]

(ii) No [ ]

Thank you.