EFFICIENT MATERIALS MANAGEMENT AND LOGISTICS FOR CORPORATE PROFITABILITY-

(A CASE STUDY OF BRITISH AMERICAN TOBACCO LIMITED, NIGERIA, ZARIA).

BY

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DECLARATION

I declare that this research study is the efforts and the results of my findings. As the author of my research findings, all information or the works of other experts consulted have been appropriately acknowledged in this project. I however wish to accept full responsibility for any error or omission therein.

________________	________________	________________
Student	**Signature**	**Date**

CERTIFICATION

This project titled efficient materials management and logistics for corporate profitability a case study of British American Tobacco Company, Zaria by OVOKO OMUYA DAHIRU meets the regulations governing the award of the Master of Business Administration (MBA) of the Ahmadu Bello University, Zaria and approved for its contribution to knowledge.

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Dean of Post-Graduate School	**Signature**	**Date**

DEDICATION

This project work is solely dedicated to my entire family. Hajarat (wife) Mohammed and AbdulRahaman (Children) and a dear friend that cares, Mr. Francis O. Amole

ACKNOWLEDGMENT

First and foremost, I sincerely give my thanks to the Almighty Allah for his infinite mercy and direction given me in writing this project. I also want to place on record my gratitude to my parents. Late Salihu Ovoko (May his Soul rest in peace) and my mother Madam Fatima Salihu, whose tireless efforts and prayers had seen me through till now.

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ABSTRACT

The survival of a business enterprise over a long period of time largely depends on the profit it can make. This is because the profit provides the cash (excess of income over expenditure), which is necessary to keep the organization going. The profit provides the financial resources that are needed to meet expenses as they fall due. The profit level usually provides the parameter for measuring the commercial success of a business within a given time period. It sometimes indicates how effective and efficient the business has been able to utilize given resources. It reveals the trends in the movement of the commercial success measured in monetary/financial terms. The higher the level of profitability, all things being equal, the higher the level of the commercial success of the organization, and the longer the organization can sustain itself. This is why a study of how to improve corporate profitability should be of interest to the owners and managers of business organizations. Effective management of materials and logistics could contribute significantly to improving the corporate profitability of an organization.

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CHAPTER ONE

1.0 Introduction

The success or failure of any organization depends largely on the materials resources used for operations. The efficient sourcing for, and buying well those materials is as important as selling well the end - products. The basic goals of any organization therefore, is the development of suitable sources of materials, for the purpose of converting them into finished goods and services that can be marketed at a profit.

Lammar & Dobler (1977) *purchasing and materials management*. *Text & Cases, page 5 - 6,* observed that generally speaking, materials had not always been so vital, because, Manpower was the first sources of productive Machinery, therefore the initial emphasis was on the Manpower concerns".

The major inducement for the adoption of materials management concepts was due to the economic implication of the two world wars; in which the whole world suffered severe problems in materials supplies shortages, together with the unprecedented development in technology particularly there was scarcity of essential or industrial commodities in Urban centres, prices rose between 50% and 75%.

However, new products and specialized labor and materials distribution becomes more complex, emphasis shifted towards efficient management of materials since it becomes a larger element of costs and so should be managed well.

Materials management therefore is the whole complex of activities that treat the broad range of functions concerned with supplying, moving, storing and handling products from the end of production line to the customers as one functional group to be managed integrally.

Lammer Lee & Dobler have looked at materials management concept as an effort to bring together under one manager, the responsibility for determine manufacturing requirements, scheduling manufacturing process, procuring, securing, disposing materials on time and within allowable costs.

This research study is divided into five chapters. chapter one discuss the objectives, significance and the scope of the study. Chapter two is devoted to various opinions and contribution by the world Renown authors and practitioners alike in the field of materials management, purchasing and supply management; chapter three deals with the research methodology which centers on the actual methods used for data collection, the sources of data and various responses to the questionnaire administered.

Chapter four reveals the materials management approach adopted by the British American Tobacco Nigeria Ltd, Zaria, and the extent to which the company has used the concept to contribute to the profitability of the Company. Chapter five summarizes the entire research study with conclusion drawn and the relevant recommendation made with regards to areas where the researcher feels that BAT can improve on its materials management approach.

1.1 Objective Of The Study

The main aims of the study are :

a) To explore the process and procedures by which the right materials are made available for production of cigarette in British American Tobacco Company, Zaria.

b) To confirm whether the BAT Ltd, has adopted material management concept and to examine and assess the contribution of this concept to company's profitability and the aims and achievement of BAT Ltd, in this regards.

c) To determine the relationship between the people dealing on materials and the other functions of the company on one hand and the external suppliers and vendors on the other hand.

d) To assess the influence of the Nigerian Economy and its fiscal and monetary policies on the materials acquisitions and utilization's.

At the end of this study, the Key factors responsible for low and development in materials management concept would have been identified and discussed.

1.2 Significance Of The Study

Central to the success of every Industrial set up in achieving the overall common objective is the acquisition and effective management of materials. The study is significant especially at this time of economic recession of Nigeria, where most manufacturing sectors have either closed down or working at less than full capacity utilization, mainly due to lack of materials input. Even the newly established ones have not been any different.

As a developing country, Nigeria has many a times reviewed her economic policies; from deregulated economy to regulated one; one national economic development plan or the other have been embarked upon, but yet we are still economically backward. There is still high import intensity for materials input. The study is significant as it will tends to reveal where the secret of industrial growth of the country is locked up (efficient management of our scarce materials).

The study will also serve the British American Tobacco Company Ltd, in particular as a "mirror" which tends to reflect its materials management activities, as viewed by a neutral observer and to effect necessary changes where observations reveals any constructive criticism.

1.3 The Scope And Limitation Of The Study

The scope of this study is limited to the period from 1999 – 2003 and based on Zaria factory of the British American Tobacco Company Ltd, only.

The research is concentrated on the materials management in BAT Ltd, such as the total tasks and functions involved in the transfer of external materials, components and the maintenance and administration of such materials until they are finally consumed up in the production process. Attempts have been made to ensure that major areas that brings about successful functions as outlined above are well researched into. These are areas of purchasing functions and techniques; storage, inventory planning and control, Logistics, Warehousing, Stores, accounting and Value/Engineering analysis.

1.4 The Statement Of The Problem

The right materials and services as we all know are the "life blood" of any organization. But regrettably enough, most organizations have entrusted the functions of materials management in the hands of Mediocre, who had no formal educational background nor the buying techniques required to enhance Company's profitability.

The followings are major problems associated with materials management in industries:

a) High costs of materials and its inadequacy. The complex questions usually asked here are: Can the materials be obtained at the right time ? from the alternative sources of supply, on a continuing basis and that can it be obtained at a competitive prices; or do we change our materials specifications from the ambiguous and rigid type to more simpler and functional ones?

b) Professional jealousies; vested interest of various management groups and irrational reciprocity that frequently generate overwhelming resistance to change for better and which is against the spirit of good materials management. A material manager is always seen as overlord who is never received with enthusiasm.

c) Unethical practices; such as bribery and corruption's and over-invoicing thereby leading to false increase in the cost of production and in turn, very low profit margin for an organization.

d) Finally, it is not an over exaggeration to say that more than half of the total materials, components and other inputs used in most of our Nigerian industries are imported and foreign exchange problems have limited, the material acquisition of industries, which eventually leads to 'slow down' in economic activities, low capacity utilization and accelerated inflation.

1.5 Definition Of Terms:

a) **SOURCING :** Ability to look around for the best seller of product required.

b) **END-PRODUCT** : Finished goods

c) **MAN POWER** : Human labor

d) **MONETARY POLICY** : Deliberate action on the part of monetary authorities (Central Bank and the ministry of finance) to control money supplies and to generate credit; ie interest rate.

e) **FISCAL POLICY**: The institutional framework within which the government undertakes its financial operations in the form of tax or revenue collection, spending and borrowing.

f) **RECESSION :** Poor state of economy and low standard of living.

g) **DEREGULATED ECONOMY** : Economic policy whereby the forces of demand and supply are allowed to play in economic activities.

h) **REGULATED ECONOMY** : A controlled economy with strict government regulations and policies.

i) **IMPORT INTENSITY** : Highly dependent on foreign or overseas materials.

j) **CONSTRUCTIVE CRITICISM** : Criticism that is accompanied with suggested solutions.

k) **LIFE - BLOOD** : The importance of materials is compared to the human blood without which a survival is difficult. As the life-blood the absence of materials means no production.

l) **RECIPROCITY** : The practice of giving preference in buying from the company , that patronize the buyer company.

m) **OVER-INVOICING** : Buyers fraudulent increase of prices of materials with the intention to cheat.

CHAPTER TWO- LITERATURE REVIEW

2.1 Purchasing Functions And Materials Acquisition

Purchasing department in any organization serves as a link between that firm and its external sources of materials. Purchasing is defined "as that function responsible for obtaining by purchase, lease or by legal means, equipment, materials, components and services required by an undertakings for use in production line" (C.K. Lyson; 'Purchasing', page 1 (1981). Production is used here in economic sense of creating utilities , ie goods and services that satisfy human wants.

The main overall objective of the purchasing function is to obtain those materials at the right quantity, from the right source, delivered at the right place at the right time and at the right price (6Rs) However in practice all these 'Rights' may be irriconcible, eg. It may be possible to obtain the right quantity, but not at the right quality, but not at the right price and very often, that the best suppliers are usually the busiest who may be failing in delivery time. Each 'right' therefore, need to be analyzed in the light of the particular organization and balance them according to the overall requirements of the undertakings at a given point in time.

PURCHASING CYCLE

The structure of purchasing department and the procedures that are followed for different kinds of purchases varies considerably from one industry to another. The nature and degree of specialization to make such purchases, determines the organization for purchasing. Also the company policies can guide and decide the procedures for purchases. Sometimes a considerable delegation of power to purchasing department as to buying decision is required; some other time, the top management takes unilateral decision on purchasing matters.

Like every other aspect of management, there is no 'hard and fast' rules as such, but each purchasing set up has to be tailor - made to suit the specific needs of that particular organization. There are some basic elements and steps that are common to all purchasing department in their purchasing cycle as, pointed out by E.O. Giwa Asuju, Practice of purchasing page 8 - 10

Step 1a : User department or store or engineering section usually issue out purchase requisition or traveling requisition or bills of materials as the case may be.

Step 1b : A check is made to see if materials so required are in stock.

Step 2 : Where such item is out of stock or never stocked, the purchasing department then audit requisition against any faulty description, investigate potential sources, negotiate, determine prices and select supplier, and then issue out a purchase order on the suitable supplier.

Step 3 : Vendor acknowledge such order placed on him, to confirm whether he can supply in accordance with the terms and condition of the order.

Step 4 : Expediting or follow up activities is the next step and the method depends on the nature and dictate of the request.

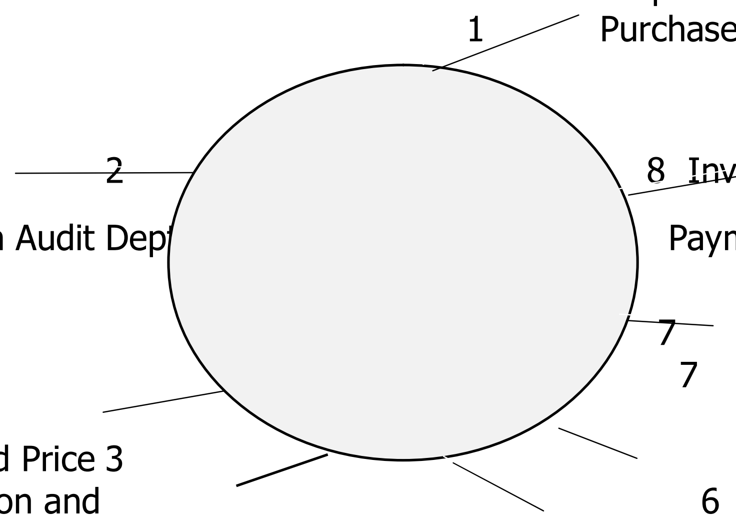
Step 5 : The supplier sends advice note to the buying company and arrange to ship the consignment.

Step 6 : Inspection and receiving section checks materials against packing list and issues receiving report or inspection report (Stores Receipt Voucher)

Step 7 : If accepted, the purchasing department closes the order.

Step 8 : Accounting department receives invoices from the supplier and check against purchase order and stores receipt voucher (SRV) and then issue payment voucher and or cheque for the payment; and the transaction is regarded closed until there is need for request from the end users or store again, and then the cycle begins.

Fig1 : Purchasing cycle; shown stages



source - E. O. Giwa Giwa .A. , Principles And Practice Of Purchasing 1983 page 8 - 10.

Purchasing Negotiation And Techniques

Peter Baily and David Farmer in their book : managing materials in industries have defined negotiation ***"as a form of communications between two or more people towards***

bargaining and discussing to reach a mutual agreement in business transactions". That it is a decision making process, planning, reviewing analysis, used by seller and buyers to reach acceptable compromise, including prices and other terms of the business.

According to David Farmer, in a game like football, only one side win and the other must lose. But however, in successful buying - negotiation, both side win something; the wining however are not always equally divided. They warned that negotiation activities are usually very costly and so should be limited to high Naira value items.

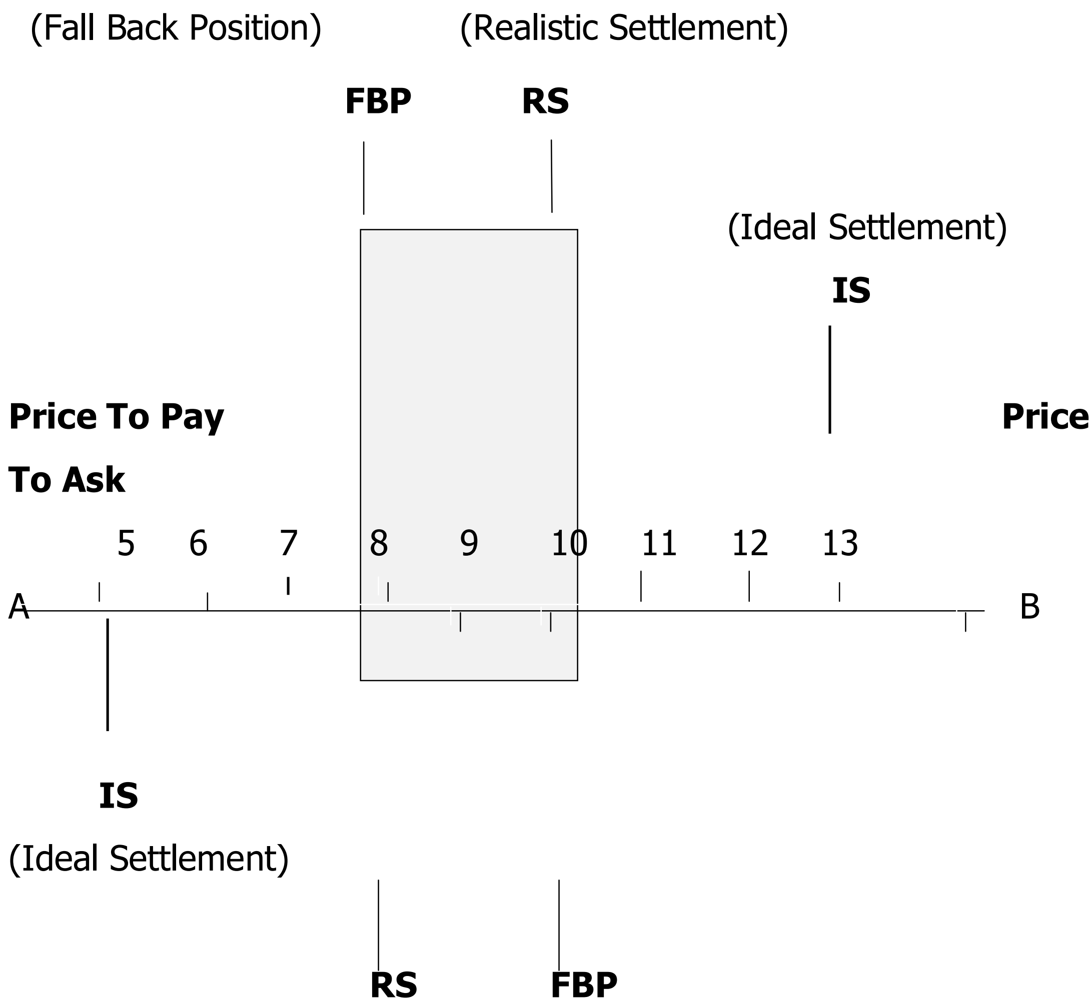
Negotiation Techniques

There are many techniques that buyers can use as working tools to achieve their strategic goals. C.K. Lyson. Purchasing text page 82 suggested the following useful techniques a buyer can adopt in negotiations:

1. Organizing the issues to be negotiated.
2. Buyers should have the knowledge of the authorities under which their opponent is negotiating.

3. Advantages abound for negotiating on home ground (quick access to company records and expert advises are easy and possible).
4. making reasonable concessions and compromises.
5. Diversion techniques should be used especially when temper start to get out of hand in negotiation, as it can be occasionally.
6. Buyers should be good listener.
7. Proper use of questions and answers.
8. Buyers must not loose sight of the objectives of negotiation; and what negotiation is set to achieve.
9. Three positions exist:
   a) Objective position - Negotiations best estimate
   b) Minimum position - Assuming that every required sellers action will turn out satisfactorily with minimum costs.
   c) Maximum position - Assuming that every required actions will turn out not satisfactory and with maximum costs.

Fig 2 NEGOTIATOR'S POSITION;



Source: C.K. Lyson purchasing text. page 82.

Assuming that the matter under negotiation here is price ie ₦ 1 to ₦13. Where: (A - B) represent the positions that the negotiators may take.

(**I S**)below A - B represent the buyers ideal settlement that is most favorable to achieve in negotiating ie ₦5. (**I S**) Above A - B represent the seller ideal settlement ie ₦13.

C.K. Lyson confirm that in most cases, (**I S**) form the basis for starting point the closeness will determine whether in the first place negotiation is necessary. (**R S**) Below A - B is the buyers fall back ie ₦10. This is the price beyond which he must not exceed. He either break off negotiation or develop another alternative.(**FBP**) Above the line is the seller fall back position ie ₦ 8. below which he is not prepared to go.

The shaded area is the 'heart' or essence of negotiation. It is the area of settlement, ie between ₦8 and ₦10 is the main price areas to negotiate. As each party approaches his objectives, negotiation usually becomes difficult. Changes in position in the shaded areas demands a high logical persuasions and sound negotiation still, including further investigation, analysis and reassessment of facts or economic situations.

It is in the area of objective position that a skillful negotiator stands out clearly as he progress by uncovering new facts that makes the seller have a second thought to reduce his price.

2.2 Vendor Rating And Supplier Selection

Peter Baily and David Farmer looks at the activities of vendor rating and supplier selection as big tasks that confronts buyers in their attempts trying to find a seller that will meet his needs in quality, quantity and timing at lowest costs. And that the criteria on which a successful purchaser should be judged is not from his ability to run around for cheap 'buys'. It is a tasks that result from extremely careful decision making following through appraisal of the alternatives before hand and more appraisals even when after the selection has been made. In most cases and for variety of reasons, decisions about suppliers selection tends to be relatively arbitrary.

According to them, after a source has been selected a buyer do not stop there, he is again faced with the critical decision making of whether to maintain one or multiple suppliers. They argued that a buyer runs the risk of monopolistic source by maintaining single vendor; on the other hand, while the multiple sources serves as 'shock absorber' against such problem as materials shortage, fire outbreak, strike action etc.

They conclude that the decision as to going on with single or multiple suppliers must be made after careful considerations of the relevant fact which prevails at the time.

What to look for in evaluating and selection of suitable suppliers:

Clearly, not all sources evaluation are critical; that for example, poor choice of the source of paper clips will have a negligible effects on a company's success. The time spent in appraising vendors should be proportionate and related to the importance of the materials or services required.

The followings are suggested when evaluating potential suppliers: Suppliers technical abilities, production capacity, financial status, quality control, depth of services and industrial relation stability of the vendors are all important. Each of these information can be made available in a format for prospective suppliers to complete. The buyer then ticks the boxes he considered to be relevant on a 4 points scale : Excellent, good, fair and poor.

International Purchasing Or Source Selection

According to Lammar Lee & Dobbler, buying from foreign sources is a situation confronting a growing number of buyers today in Nigeria. That about 60% of all industrial buyers now makes their purchases of raw materials from abroad. The easiest way to buy internationally and dealing with US dollars is to make purchases through an importer, rather than buying directly from an overseas company.

According to them, the questions confronting many foreign buyers are: will such international trade agreement increase or decrease? will the general agreement on trade and tariff(GATT) go up or down? will political stability permits industrial growth ? will the advancing technology increase production ? will government policies reduce trade relations with other countries?

Some companies may decide to limit her sources to domestic buying even when the overseas prices may be substantially lower than domestic ones, and only buy overseas when the technical specification and quality offered in foreign products are much higher than those offered in similar domestic market.

They concludes that no company can long sustain an inflexible policy of overseas buying. The economic progress of under developed countries, the steadily declining international tariffs, all combine to present an ever increasing numbers of foreign buying opportunities.

Post - Selection Appraisal

The problem of appraising suppliers once selected has attracted the attention of many writers in the field of purchasing. Generally speaking the system which have evolved from their discussions are structured around the idea of "deducting points" from suppliers who fail to deliver on time or who have items rejected because of poor quality or to whom a higher price is being paid. Usually weights are given to quality, delivery reliability and price depending on how important each is seen to be by the buyer affected.

It should be noted that once an order or a contracts awarded, the relationship between the buyer and the seller legally becomes a contractual one. Unfortunately, with the passage of time, this situation often induce buyers complacency. In most cases, buyers feels that with a carefully selected supplier, his major task has ended. Because such buyer has the notion that the vendor is legally bound to perform and that when the supplier fail to deliver to using department, he will be dully informed. But in a professional buying, the situation is quite different. The buyer here will feel it an obligation to help the newly selected supplier succeed (supplier success is the buyers). The buyer can ensure this relationship by initiating the new supplier with the research, management and the technical services of his own firm. He get the seller to know his company's buying pattern and special problem. A progressive buyer realize that in his own interest, he has to develop competent suppliers who will be motivated to continue doing business with them over the long term. Suppliers therefore, must not be seen as the seller of only specific products; rather, seller of engineering, production, financial, purchasing, materials management, product application and industrial relation capabilities. Industrial buying has far gone beyond picking "off - the - shelves" commodities to a larger portion of materials purchased to buyer finished specifications that are unique.

In conclusion, therefore, maximum purchasing efficiency results only when buyer and seller inadequate their total material management efforts, including interflow of data and communications.

2.3 Value/Engineering Analysis

The techniques of value Analysis/Engineering represent a potentially powerful set of tools, which can be used by management in controlling material costs. And that the fundamental objective of all value Analysis activities is the procurement or manufacture of materials that can represent the Best Buy terms of function to be performed, and the costs.

During the world war II many critical materials and components were difficult to acquire and most manufacturers were required to specify numerous substitutions in their design and production activities. Harry Erlicher, then the vice president of purchasing for the general electric company observed that many of the required substitution at this time resulted not only in cost reduction but also in functional product improvement. He consequently assigned Mr. L.D. Miles the task of developing a systematic approach to the investigation of the function and costs aspect of existing materials specifications. Mr. Miles met this challenges and subsequently pioneered the scientific procurement concept - general electric called “Value Analysis”. Navy Bureau of ships in 1954 later adopted a modified version of general electric value analysis concepts, in attempt to reduce the cost of ship building and related equipment. The Navy’s main concern was to direct efforts primarily at avoiding costs during the initial engineering design stage and called the program “value engineering”

In an operational sense, the two terms (value/engineering analysis) typically are used synonymously in industries, except for the practical issue of timing and depth of the analysis that they differs.

Engineering Analysis therefore is defined by Lamar Lee as the study of the relationship of design, functions and costs of any products, materials or services with the aim of reducing its costs through modification either externally or internally or possible elimination or incorporation into a related items. The aim could be to reduce material inputs and yet the functional value is still maintained, at an affordable price.

It is normal to see engineering department questioning purchasing practices in the areas of sourcing and contract award decisions based on prices. At the same time purchasing question the engineering specification, especially if such is too ambiguous and rigid in nature, that are likely to affect price decisions.

Most things posses two types of values - **ESTHETIC** value and **FUNCTIONAL** value. A buyer first determine which is more important in the item he is purchasing. The esthetic function looks at materials from the outward appearance, while industrial value analysis focuses on functional value, that is the performance characteristics of such item.

Lammar Lee and Donald Dubler in their purchasing and materials management **TEXT** and cases, pages 256 - 257 spell out value analysis checklist as suggested by the National Association of purchasing management. Among the numerous questions of value analysis are :

1. Can any part be possibly eliminated without impairing the operation of the complete unit?
2. Can the design be changed in order to reduce costly production methods?
3. Can less expensive and equally satisfactory materials be used?
4. If item is not standard, can a more standard item be used?
5. Does the item have a greater capacity than required?
6. Can the weight be reduced
7. Is it cheaper to make the part or buy from outside?
8. Can costs of packing be reduced ?
9. Have you suggested costs reduction to the supplier concerned ?

10. Can the weight of the item be reduced ?

2.4 Make Or Buy Decision

Lamar Lee and Dubler, purchasing and materials management, text and cases, pages 301 - 306 defined make - or - buy decision as whether a part should be manufactured within the factory or purchased from outside suppliers.

They further, analyzed circumstances that leads to make-or-buy investigations:

1. Development of new product and the substantial modification of old ones.
2. Unsatisfactory supplier performance for parts originally purchased.
3. Periods of significant sales growth, sales declines also generate situations that initiate make-or-buy decisions.

They further explained that the objective of make-or-buy decision is that whose composite effects maximize the utilization of its productive, managerial and financial capabilities.

They give among other reason the following factors to consider in make-or-buy decisions:

Argument in favor of making the parts ;

1. When it is less expensive to make the parts.

2. Desire to integrate plant operations.

3. Productive use of excess plant capacity

4. Design secrecy required.

5. Desire to maintain a stable and skill workforce in period of declining sales.

Argument in favor of buying the part.

1. Suppliers research and specialized technical know - how.

2. When it is less expensive to buy the item.

3. When small volume is required and uneconomical to make within.

4. Where there is limited production facilities.

They however warned that a thorough investigation of make or buy can be complicated by the dynamics and the uncertainties of business activities. As pointed out, a changing costs can turn a good decision into a bad one, such variable factors as technological innovation and customer demand, availability of capital, Government policies and taxes, all affects make or buy decisions.

2.5 Inspection, Receipts And Issues Of Materials

Morrison and David; "storage and control of stock", gives proper analysis of issue of material pages 39 - 40: That goods may be received into a storehouse from outside suppliers, from production shops or from other store houses within the organization. And that they may come by hand, by post, by road, rail or air. According to them, in the areas of receipts and issues of materials much emphasis is attached to documentation and that the amount of documents and checking depends to a great extent the nature of goods and management techniques.

J.R. Carter put it clearly that the receiving department is responsible for the expeditious receipts, identification and general inspection of all incoming goods.

In most cases, the store or receiving dept. is notified of an impending shipment by a copy of the order that usually explain and describe the nature of goods and the time of delivery. It is noted that getting the incoming materials correct may mean 50% production success. Inspection and quality control of incoming goods therefore should be conducted on regular basis for the purpose of providing :

- Qualitative measurement of suppliers performance

- Sound business practice

- A guide against dishonest , dubious suppliers e.g. what is known in Nigeria today as "**419**". It is however lest expensive to detect and correct defective materials at the outset than after it has absorbed additional costs of receipts, storage issues, assembly and manufacturing costs.

<u>Issues Of Materials From The Store Houses</u>

J.R. Carter define issue function of stores management in his book. Stores administration page 53. That it is the "process of reacting to the demands of users for goods and services held within the store ". The success of this function he noted, is often taken a measure of efficiency of the whole stores operations. Morrison and David storage and control of stock pages 64 - 66 discuss the different types of issues as: Replacement issues, Impress issues, Loan issues, Allocated issue, General issues and Capital issues of materials.

The control of stocks hold by a company is very important because a great deal of organization Money and resources are involved. The basic principle behind the control of stock is that of 'authorization' that is, a system or procedure that ensure only certain stock is used by certain people for certain operation.

Issuing Cycle And Procedures

In pages 57 - 58, Stores Administration, R.J. Carter explained the issuing cycle and procedures that are common in most organizations:

1. End - user has to decide what he wants from the stores and then prepare a "Issue Note"
2. Authorization : Get the issue note approved by the appropriate officer.
3. Present the issue note to storekeeper.
4. Storekeeper identify the item and issue out in exchange of the requisition.
5. Cost allocation : It is important that once an item is already issued out, both the stock records and stock control accounts are updated accordingly.

2.6 Materials Requirements Planning And Stock Control System

According to Morrison, material requirement planning is based on the notion that stock ranges comprises a number of unrelated items and some times constitute a series of independent demands. Lamer Lee & Dubler look at it as material requirement to achieve a “build programme” and is calculated by means of “Bills of materials”. MRP is most suitable for use by larger manufacturing firms engaged in producing component parts in its own workshops. They reveals that MRP concept can ensure proper cost reduction right from the planning stage; That is, with a well planned requirements, waste and or excess supplies can always be avoided.

Morrison and David defines Inventory/Stock control “as the process of determining in advance the requirements of materials taking into consideration the existing goods, delivery time (lead time) and rate of consumption; so that the amount of stock in hand at any given time will be in accordance with the stock control policy of an organization”.

Their analysis is that by the nature of materials, they are to be held temporarily in a location until needed for operational purpose. They also express an utter dismay and regret that the lack of materials management has created situations in which clerical personnel find themselves making decisions for which they are grossly unqualified; decisions which should be made by analytically oriented operating system and cost picture

Baily and David Farmer says that the rational and systematic planning of the following three issues can be very rewarding in the control exercise:

1. Which things to keep in stock ?
2. When to re-order those things ?
3. What quantities of them to order ?

They also discuss as follows, the consequences of not having materials when they are required and also the consequences of having than when they are not required.

Consequences of not having materials when required (stock out) are:

Production stoppage, which carry along with it other evils, e.g. eventual loss of profit, loss of goodwill and costs of labor who can not produce as a result of stock out and yet they requires salary and wages. ***Consequences of having materials when not required:***

Interest is built up on capital tied up in the form of huge stocks

Other Costs associated with excess stock holdings are : material handling costs, administrative costs, costs of stock maintenance (Certain temperatures are required to sustain the shelve - life of some items e.g. Refrigerator, heating equipment etc.); obsolesce cost stocks security - pilferage; all adding to the cost of storage's.

According to Morrison, and David, storage and control of stocks pages 121 - 131, once the management has determined the quantity of each material that is economical to hold, some forms of control must be established to ensure that the store do not depart seriously from these quantities. They suggested many stock control approaches as follows:

- Action level methods. Maximum, minimum, re-order level and safety levels.
- Visual approach (Two-bin system)
- Programming delivery
- Differential control approaches (ABC Analysis)
- Forecasting demand approach - which is the most difficult method to adopt.

Forecasting itself is not a sure certainty, it only takes a man of vision to forecast and take a decision.

In stem control, a simple average or past quantities demanded can be worked out each time there is need for replenishment.

Example :

Month	**Actual demand**
May	40
June	30
July	80
August	70
September	120
October	140
	480

The forecast for month of November using simple average method :

$$= \frac{\text{Oct.}}{6} + \frac{\text{Sept.}}{6} + \frac{\text{Aug.}}{6} + \frac{\text{July}}{6} + \frac{\text{June}}{6} + \frac{\text{May}}{6}$$

$$= \frac{140}{6} + \frac{120}{6} + \frac{70}{6} + \frac{80}{6} + \frac{30}{6} + \frac{40}{6} = \frac{480}{6} = 80\text{Units}$$

The November, order can be made for 80units.

Details Of Action Level Method

Worked example ; source : Lecture notes by Mr. Adegoke Head of Department and principal lecturer, Kaduna state polytechnic Zaria and fellow, Institute of Chartered Accountants of Nigeria (**ICAN**) 1994.

The following information's were available about Company **xyz Ltd**.

a) Re-order Qty = 4000Units

b) Delivery period = 1Month 2Months 3Months.

c) Months — Budgeted Consumption's In Units

Months	Budgeted Consumption's In Units
January	600
February	600
March	1000
April	1200
May	1600
June	2000
July	2000
August	2000

c , **cont.**,) Months — Budgeted Consumption's In Units

Months	Budgeted Consumption's In Units
September	2000
October	1800
November	1200
December	800

Required to calculate :

1) Maximum Stock level

2) Minimum Stock level

3) Reorder level.

Solutions :

First determine the followings :

i) Total consumption's (Jan. - Dec.) = 16,800

ii) Minimum Qty. (appearing in Jan/Feb.) = 600

iii) Maximum Qty. (appearing in June - Sept.) = 2,000

iv) Average stock level (Total Qty. = 12Months). = 1,400

*Formula for re-order level = Maximum consumption **x** Max. reorder period.*

ie 2000 x 3 = 6000Units (Reorder level)

*Maximum stock level formula = Reorder level + reorder Qty. - (Maximum conspt. **x** Min. Rp)*

= 6000 + 4000 - (600 x 1) = 9400Units (Max. level)

Minimum stock level formula = Reorder level - (Normal consumption x Normal R. Period)

= 6000 - (1300 x 2) = 3400Units (Minimum L).

Determination Of Economic Order Quantity

The quantity which should be ordered of a stock item in regular use should be decided when ever the reorder level is reached. There are broad limits ; order too much, then the risks of obsolescence and deterioration becomes unacceptably high ; order too little and the unit costs is disproportion ally inflated. To provide optimum solution, EOQ formula was developed taking into consideration the annual total usage, expense of ordering and carrying costs. Peter Baily and David Famer defined EOQ "***as a guideline to determine the most advantageous order quantity that can come from analysis of incremental costs associated with order quantity***".

Example : Costs of storage - 15%, costs of annual usage - N350/order ; price per unit - N8/unit, annual usage - 12000 units. Required to find the EOQ.

Solution : EOQ Formula - $Q = \sqrt{\dfrac{2DC_o}{PC_s}}$

Where 2 = constant

D = Annual usage

C_o = Costs of ordering

C_s = Costs of storage

P = Price per unit

Q = Reorder Qty.

$\sqrt{\ }$ = Square root.

$$Q = \sqrt{\frac{2 \times 12{,}000 \times 350}{8 \times 15\%}} = \sqrt{\frac{8{,}400{,}000}{1.2}}$$

$$= \sqrt{7{,}000{,}000} = \mathbf{2646 Units.}$$

Fig. 1 Ideal inventory movement pattern for a given materials

Source : Lamar Lee & D. Dobler : Purchasing and material management Pages 215 - 216.

2.7 Contribution Of Transport And Distribution And Warehousing To Efficient Management Of Materials :

According to Peter R. Attwood in his book - planning a distribution system ; page (xiii) physical transport, distribution and warehouse are economy priority whose importance is increasing daily. That it is that aspect of economic activities which provides for the carriage of goods and services from the place of manufacture to where their economic values are required. He estimate that this activity can account for upwards of 25% of total sales. Management is now devoting greater part of its efforts towards greater economies to be derived from well - planned warehousing and physical distribution. The activities includes the movement of goods an services from the end of production line to a place where they are required ; the movement of supplies (raw materials, components etc) from the market to the beginning of production process and as well includes the internal movements of goods within the organization.

The scope of physical distribution comprises, of freight transportation, warehousing, materials handling equipment, protective packaging, inventory control supply and plant point or locations, market forecast and customer services requirement.

Modes And Factors In Selection Of Mode Of Transportation

There are many ,modes of transports and the various types of transport within the modes ; that are at the disposal of business organizations ; by Air, Water, Road, Rail, In land water ways Sea and pipeline.

Peter Atwood analyzed that when the distribution planning had been completed, the next step is the choice of mode of transport and the acquisition.

He received in his book the likely factors that need to be considered when selecting the suitable mode of transport :

1. Vehicle operating costs, running costs.

2. Delivery distance

3. Vehicle manning and performance factors

4. Vehicle type or size - whether it will make a full - car - load or less than -car load (FCL or LCL)

2.8 Physical Inventory Or Stocktaking

"No matter how diligently a storekeeper performs the custodial job or how carefully an inventory control clerk maintains records, (Computerized or Manual), some discrepancies between the actual and the book balances are bound to occur. The system is operated by people and people occasionally makes mistakes".

This is the general picture presented about stocks held in warehouses by Lamar Lee and Dubler in their book purchasing and materials management, text and cases page 350.

For the reason given above, they are of the opinion that every inventory item should be physically counted and checked against its book balances at least once a year. That the books are subsequently adjusted to match the actual count.

From their analysis, they confirm that physical inventory can be conducted in one of the three followings ways :

1. **Fixed Annual Inventory** - Physical stock checks are made every year at the close of the fiscal period. This may necessitate a complete sit-down of production operation and organizing a special crew for the inventory job.

2. **<u>Continuous or perpetual inventory</u>** - At the beginning of the year, some firms may divide their total inventory into section and these sections are assigned to be physically counted each day or week.

3. **<u>Low-point inventory</u>** - Some companies take physical inventory irregularly, ie at a low stock level of such items.

They however advice that the selection of the most appropriate method depends largely upon the conditions in each individual business. And that a firm should consult the accounting firm that audits its books and must be able to demonstrate to auditing firms, local and Federal tax officials, that the method finally selected is capable of producing accurate inventory reports ; for the purpose of stock valuation.

2:0 LITERATURE REVIEW

The thesis examines some concepts and theories that highlight the application of scientific reasoning into this field of knowledge.

2.1 AN OVERVIEW OF LOGISTICS MANAGEMENT CONCEPT

Logistic is one of the oldest and also one of the newest enterprise activities. Logistic activities: facility location transportation, warehousing, inventory management, materials handling and storage have been performed since the beginning of commercial specialization. It is difficult to visualize any marketing or manufacturing operation that would not require logistical support. The newness of logistics stems from a totally different and integrated approach to management that began to emerge during the 1950's.

There are many definitions of logistics coined by authors, consultants and practitioners. For the purpose of this research study, the definition given by the U.S council of logistics management in 1986 will be adopted. It defines logistic management as "the process of planning, implementing and controlling, the efficient, cost effective flow and storage of raw materials, in-process inventory, finished goods and related information from point of origin to point of final consumption for the purpose of conforming to customer requirements". This definition highlights the key features of logistics:

1. It is concerned with movement and storage of materials.
2. It is concerned with managing the information flow that underpins the flow of materials.
3. Its scope cuts across the whole supply chain from source any of raw materials to delivery of final products to end – user.

4. It requires a single logic to plan and organize this flow of materials through out the supply chain.

5. It has two key objectives:

   i. Achieving appropriate customer service standards, and

   ii. Doing so in a cost effect manner.

One of the features of logistics concept, which emphasis on integrating activities that traditionally have been located in different departments and carried out separately. For example in many organizations responsibility for inventory and transportation maybe vested in the production and distribution function respectively and decisions on one will often be made without regard for the other. The logistics viewpoint however forces the decision maker to recognize the connections and interrelationships between the components elements of the material flow system. Indeed, it encourages comprehensive systems thinking rather than functional tunnel vision.

The objective of logistics is to deliver finished inventory and materials assortments, in correct quantities, when required in useable condition to the location where needed, at the lowest total cost. It is through the logistics function that material flow into the vast manufacturing complex of an industrial nation and products are distributed through channels of distribution for consumption. Logistic activities therefore provide time and place utility, such utility represents an important aspect of business value in the form of truly availability is added to either materials or products as a result of the logistics function. Improve customer service and reduced supply chain costs are the major reasons for logistics support and it is through their achievement of these objectives that logistics contributes to corporate performance.

2.2 DEVELOPMENT OF LOGISTIC MANAGEMENT

Logistics activity is literally thousand of yours old, dating back to the earliest forms of organized trade. As an area of study however, it first began to gain attention in the early 1990s in the distribution of farm products",[2] as a way to support the organization's business strategy and as a way of providing time and place utility"[3].

MILITARY LOGISTICS

Following the clear importance of the contribution of logistics toward the allied victory in would war II logistics began to receive increase recognition and emphasis. Just as in the Persian Gulf War in 1990 – 1991, the ability to efficiently and effectively distribute and store supplies and personnel were key factors in the success of the U.S armed Forces"[4].

The first dedicated logistics text began to appear in the early 1960's which also is the time that Peter Ducker, a noted business expert, author, and consultant stated that logistics was one of the last real frontiers of opportunity for organizations wishing to improve their corporate efficiency"[5]. These factors combined to increase the interest in logistics.

DEREGULATION

To further fuel the focus on logistics, deregulation of the transportation industry in the late 1970s and early 1980s gave organization's many more options and increase the competition within and between transportation modes. As a result, carriers became more creative, flexible, and customer oriented and competitive in order to succeed. Shippers are now faced with many more transportation options. They can focus on negotiation of rates, terms and services, with their overall attention directed toward getting the best transportation buy.

COMPETITIVE PRESSURES

With rising interest rates and increasing energy costs during the 1970's logistics received more attention as a major cost driver. In addition cost became a more critical issue for many organization because of the globalization of industry. This has affected logistics in two primary ways.

First, the growth of world-class competitors from other nations has caused organizations to look for new ways to differentiate their organizations and product offerings logistics is a logical place to look because domestic organizations should be able to provide much more reliable, responsive service to nearby markets than overseas competitors.

Second, as organizations increasingly buy and sell offshore, the supply chain between the organization and those it does business with becomes longer, more costly and more complex. Excellent logistics management is needed to fully leverage global opportunities.

Another factor strongly contributing to the increased emphasis and importance of logistics is a continued and growing emphasis on cost control. A survey of Chief Executive Officers of Fortune 500 manufacturing firms and Fortune 500 service firms indicated that they believe that the most important way to improve company profitability was through cost cutting and cost control"[6]. Thus, despite all the talk and emphasis on other issues such as quality and customer service, which CEOs rated as second and third in importance, cost cutting is still seen as the most important factor.

INFORMATION TECHNOLOGY

At about the same time, information technology really began to explode. This gave organizations the ability to better monitor transaction intensive activities such as the ordering, movement and store availability of computerized quantitative models, this information increased the ability to manage flows to and optimize inventory levels and movements, systems such as material requirement planning, (MPR, MPRII, distribution resource planning (DPR, DPRII) and just in time (JIT) allow organizations to link many materials management activities from order processing to inventory management , ordering from the supplier, forecasting and production scheduling.

Other factors contributing to the growing interest in logistics include advances in information system technology, an increased emphasis on customer service, growing recognition of the systems approach and total cost concept, the profit leverage from logistics and the realization that logistic can be used s a strategic weapon in competing in the market place.

CHANNEL POWER

The shifting of channel power from manufacturers to retailers, wholesalers and distributors has also had a profound impact on logistics, when competition rises in major consumer goods industries, there is a shakeout of many suppliers and manufacturers, remaining are intensely competitive and offer very high quality products. In many cases, the consumer sees all of the leading brands as substitutes for each other. Lower brand name loyalty decreases a manufacturer's power. This increases the retailer's power because sales are determined by what is in stock, not by what particular brands are offered profit leverage.

The profit leverage effect of logistics illustrates that N1.00 saved in logistics cost has a much greater impact on the organization's profitability than a ₦1.00 increase in sales. In most organizations, sales revenue increases are more difficult to achieve than logistics cost reductions. This is particularly true in mature markets, where price cuts are often met by the competition and revenue in the whole industry thus declines. The impact of the profit leverage i.e. shown in the table below"[7]: -

TABLE 2:1 PROFIT LEVERAGE PROVIDED BY LOGISTICS COST REDUCTION IF NET PROFIT ON THE SALES NAIRA IS 2.0 PERCENT, THEN…

Is equivalent to a

A SAVING OF	**SALES INCREASE OF**
0.02	1.00
2.00	100.00
200.00	10,000.00
2,000.00	100.000.00
20,000.00	1000,000.00

There are many costs associated with such a sale such as the costs of good sold and logistics related costs. Thus a ₦1.00 increase in sales does not result in a N1.00 increase in profit. If for example, an organization's net profit margin (sales revenue less costs) is 2 percent, the firm only receives a before tax profit of N0.02 from each sales naira. Yet any naira saved in logistics does not require sales or other costs to generate savings. Therefore, a naira saved in logistics costs is a naira increase in profit. As a result, logistics cost savings have mix move leverage naira for naira than an increase in sales. Thus, the term, the "profit leverage effects of logistics", is relevant.

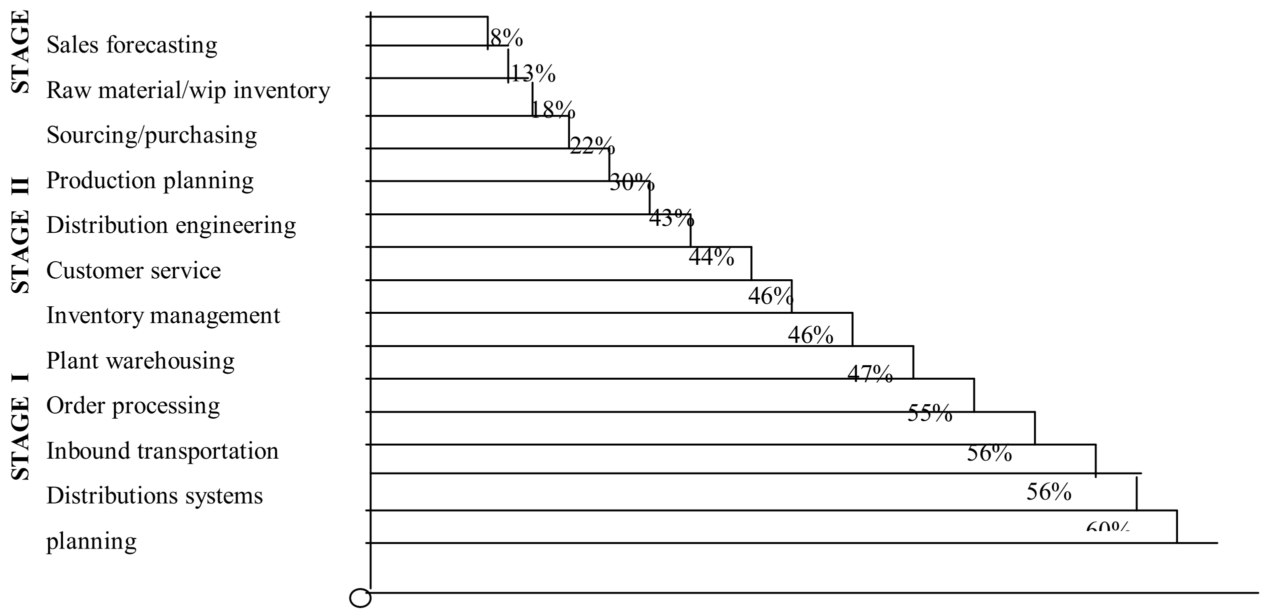
2.3.1 **LOGISTIC ORGANIZATIONAL STRUCTURE**

Business logistics management has grown in importance and complexity over the past two or three decades and its strategic significance will accelerate in the years ahead. Although various factors have prompted companies to focus attention on the logistics process, the resulting awareness of and concern for logistics issues does not translate automatically into enhanced logistics efficiency and effectiveness.

Logistics organizations that can deliver efficient and effective service will be critically important in the years ahead as companies compete more vigourously for the converted preferred supplier status of strategic alliance.

Traditionally logistics activities were scattered throughout the organization, Examples of such activities, which may have been found in form's marketing, finance and accounting and manufacturing organizations. While it may have been the case that certain of these activities were managed effectively, there were no build-in mechanisms to assure their integration and coordination to make truly optional logistics decisions. Compounded by the fact that many companies suffered from the "functional silo syndrome" in which firm wide decision-making was stifled by the vertical flow of organizational authority, it was difficult to achieve any semblance of integrated logistics management. As the move toward formalizing the logistics organization took hold, companies began to think of logistics activities in terms of functional groupings. According to research conducted by the council of logistics management, the growth of logistics organization occurs in three stages. These are indicated in

Fig.1 below.



Percentages of Companies

10 20 30 40 50 60 70

Source: Adapted from A.T. Kearney, Inc, Measuring and improving productivity in physical distribution 1984 (Oak Brook council of logistics management)

EVOLUTION OF LOGISTICS ORGANIZATIONS

Stage I. In this first stage, the principal focus is on the effective management of finished goods transportation and warehousing. Thus, the overall orientation is operational and, with the exception of coordinating these two variables, there is little additional evidence of integration.

Stage II The objective here is to integrate finished goods distribution and to control inbound transportation. Characteristically, this is a managerial orientation, where individual activities are considered to be part of an overall physical distribution process. Decisions warehousing and inventory versus customer service and are frequently coordinated with other areas.

State III This stage suggests a priority on integrating the total logistics process and includes coordinating decision-making throughout the activities associated with physical distribution and materials management. The overall orientation shifts to strategic issues such as the company's overall logistics/marketing/operations strategy, as well as to responding to and anticipating key changes in the external business environment.

Essentially, Stage I initiates opportunities to lower the cost of individual activities but little else. Stage II explicitly integrates activities such as customer service and order processing and facilitates enhancement of the overall service offering. The end result may include increased reviews as a result of increased service. While these profit improvements increase in stage III, This stage is of greater strategic benefit because it involves reduction in current assets such as inventory and account receivable, at the same time that asset productivity and utilization both increase. This has a positive impact on return on investment.

In 1989, the council of logistics management published a study describing the logistics organization, strategy and behaviour of companies on the “leading edge” of business[8]. These leading edge companies have a logistics competency superior to that of other forms and they use logistics as a competitive weapon to gain and maintain customers.

According to the result of this research and other source, the logistics organization of leading edge companies have the following structure and characteristics[9].

- Formal logistics organization
- Officer level executive
- “Fluid’ approach to logistics organization and encouragement for reorganization when appropriate.

- Emphasis on centralized control of logistics
- Management scope that extends beyond traditional logistics line and staff activities.
- Focus on customer satisfaction and creation of logistics value.

2.3.2CORPORATE LOGISTICS ORGANIZATION

Logistics organizations and logistics management consists of the following:[10]

- The senior logistics executive in the business unit
- Line operations management personnel directly involved in the process. This includes the individual responsible for purchasing, production planning, service operations, distribution centers, transportation activities, customer service operations, regardless of where these line organizations report in the corporation and their respective line and staff organization.
- The corporate and divisional logistics staff groups, which may or may not fall under one of the previously mentioned support service groups. These may exist as separate staff groups within the logistics organization or they may be

made up of changing groups of line personnel who devote only a portion of their time to staff projects (for example planning a new distribution center, or designing a new information system.

For any logistics organization to function effectively, a firm must ensure the effective management of logistic responsibilities at each level. Also, there are three requirements that a firm must meet to successfully staff its logistics funciton[11]. First the form must formulate accurate sobdescriptions. Each one should include the job title, reporting relationship, scope of responsibility and performance measure. Second the firm should inventory the skills it needs in the logistics area and assess the extent to which available people meet the skill requirements of the various positions previous experience in the logistics area will often be helpful, but firms regard multifunctional backgrounds and experience as important qualifications for many senior logistics managers who need a breath of thinking and perspective as they attempt to successfully coordinate logistic activities and information flows across functions. A third requirement is that the firm should match people to jobs whenever possible not vice versa. This will require interaction and flexibility in defining the job, inventory skills and adjusting jobs and titles to fit the skills and abilities of available personnel. A firm should consider relocating personnel or adding new personnel only when major gaps or duplications in ability are obvious.

ORGANIZATIONAL DIMENSIONS

According to Thompson[12], structure encompasses an organization's internal pattern of relationships, authority and communication. The two critical components of structure as suggested by Chandler's are formal lines of authority and communication and the information and data that flow along these lines. As a practical matter however, many organizational structure serve to limit rather than facilitate. Thus, the traditional wisdom that "Structure follows strategy" has significant applicability.

Considering the rate of or change in the business environment in general and in the aspects that affect logistics in particular, it is essential for an organization to be as flexible and responsive to change as possible. The fact that these attributes are ones in which third-party suppliers would be expected to have strengths reinforced the potential role of this type of logistics supplier.

ORGANIZATIONAL ORIENTATION

The result of a multiphase research project conducted at Michigan State University suggests that there are three strategic alternatives for structuring a logistics organization'[14]. The findings are based on analysis of questionnaire responses from and personal interviews with corporate logistics officers.

Process Based: - The emphasis in a process based structure is on managing a broad group of logistics activities as a "value added chain: This strategy emphasizes the achievement of efficiency from logistics as an integrated system and was characteristic of appropriately 60 percent of the respondents' organization.

Market Based: - Priorities in a market based structure included (1) making joint product shipments to customers on behalf of various business units or product groups and (2) coordinating sales and logistical efficiencies through the use of a single invoice. In this type of form, there is likely to be organizational profiting between the logistics and sales areas. This strategy was in evidence in 30 percent of the firms represented by respondents.

Channel Based: - The emphasis in a channel-based structure is on the effective management of activities that are conducted jointly with distributors, customers and suppliers. Firms exhibiting this strategy tend to have a significant interest in inventories at either downstream or upstream channel locations. This strategy was characteristic of about 10 percent of the respondents firm.

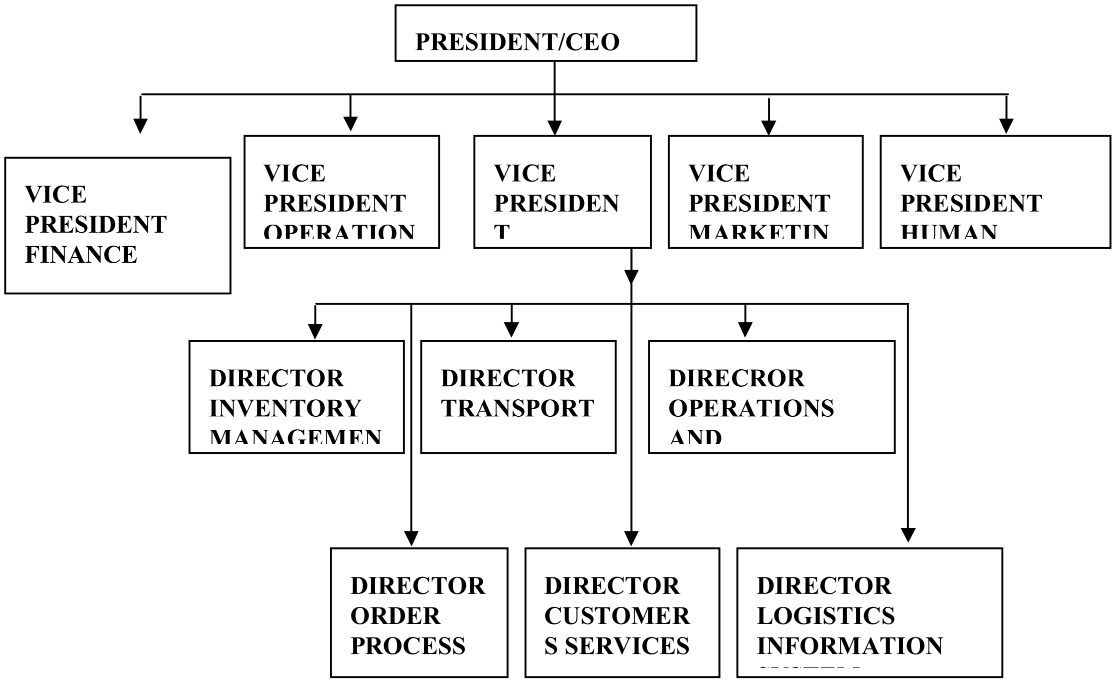
2.3.3TYPES OF LOGISTICS ORGANIZATION

Logistics organization can be characterized in a number of ways. Some of these are functional versus divisional, centralized versus decentralized, activity versus process, staff versus line, large versus small, formal versus informal and so on. In fact, there are so many potential ways to categorize logistics organization that it is impossible to suggest that any single framework is best for the purpose of this study, the following major types of organization have been selected to serve as template for discussion: functional organization, logistics service division and process oriented organization.

Functional Organization: -Table 2.3 shows an example of a functional logistics organization within the context of a single, functionally oriented corporate organization. Several directors of functional activities report to the vice president of logistics and the vice president of logistics reports to the president/CEO. Although it is preferable for the chief logistics executive to report to a vice president or senior vice president of operations or of marketing and sales.

Typically, directors and managers of both line and “staff” activates would report to the vice president of logistics. Line management involves making decisions about matters pertaining to daily logistics operations. Typically line activities might include transportation management, inventory control, order processing, warehousing and packaging. Staff activities support line managers with advice and information to support decision-making. Examples of staff activities include logistics network design and facility location, strategic planning, customer service strategies and cost analysis. Regardless of how the line and staff activities are structured organizationally. It is essential to recognize that to sustain effectiveness, a line operation must have professional guidance and direction setting from a capable staff function. Similarly, the effectiveness of the staff function will be influenced by the quality of coordination with and information provided by line management.

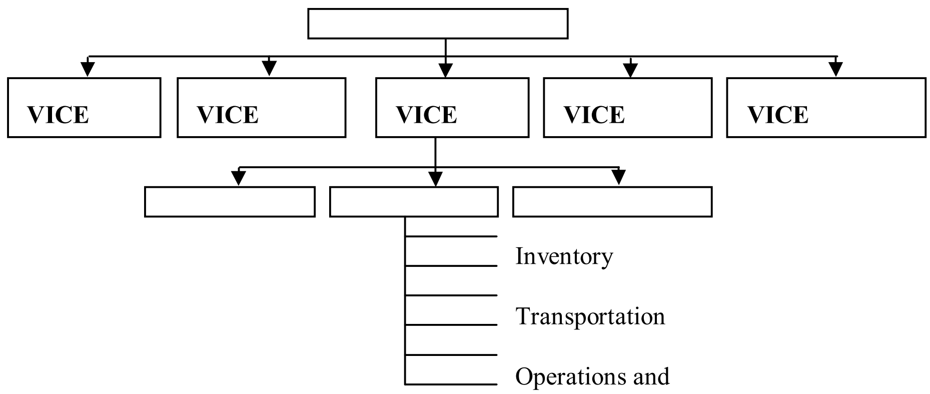
Figure 2. A Functional Logistics Organization



It may be that a firm is divisionalized, perhaps according to major product groupings and that each division has its own logistics function. This example is illustrated in figure 2 where separate logistics organizations support the needs of each of the products divisions. As one might expects, this approach quickly leads to duplication of logistics efforts and motivates the firm to identify appropriate strategies for centralizing relevant centralization of logistics activity is occurring, along with a acknowledgement of the responsible factors and discussed in this study.

Logistics Service Division: - Properly implemented the strategy of creating a separate logistics service division elevates logistics to an importance equal to that of major company product divisions.

Figure 3. Logistics Organization by Division



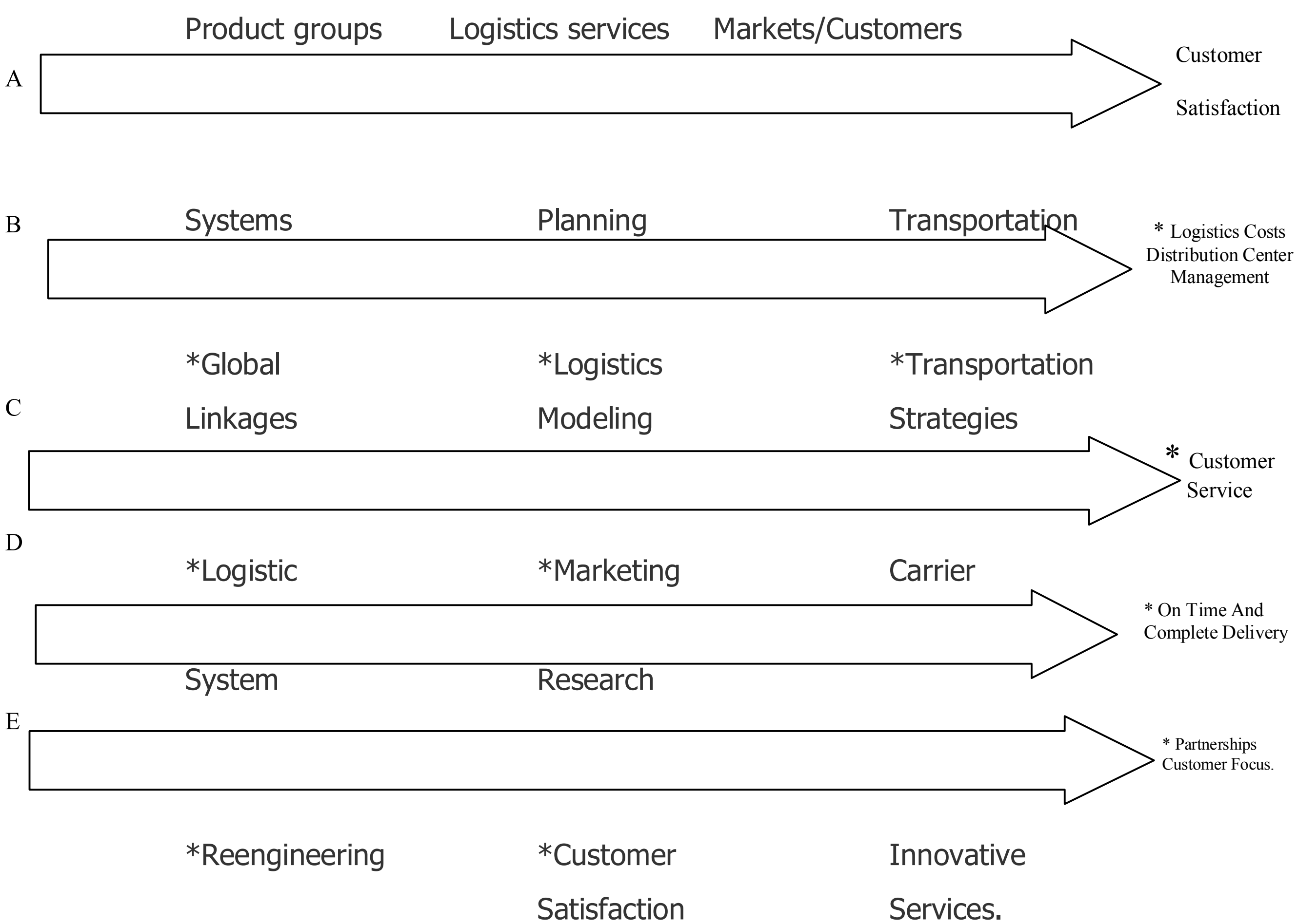
Process Oriented Organization

The overall movement to organizational structures based on key business processes is well documented. In essence, focusing attention on processes helps to avoid the myopic perspective associated with functional and activity-based approaches to organization. In addition, an emphasis on process makes it easier to truly move logistics organization toward integrated logistics and integrated supply chain management. Just as the concept of the logistics service division helps to significantly upgrade the role and positioning of logistics, the attention directed toward process assists emotion and coordination of logistics activities.

There are numerous ways to identify key logistics processes; copacino suggests three that are significant: the order management process the replenishment process, and the process of developing an integrated production and distribution strategy[14], Figure 2.3 is an example of a logistics organization that focuses on processes relating to systems, planning, transportation and operations. The diagram shows elements of each and the relationship to the firm's product groups to be met (customer satisfaction, logistics cost, on time and complete delivery and customer focus).

Movement to a process orientation requires rethinking and reconfiguring traditional organizations. According to Bowersox, Frayer and Schmitz, most experts feel that traditional command and control systems have outlived their usefulness and are being replaced by flatter, more process oriented structures. They (traditional systems) simply are not the best way to operate in an information-based competitive environment.

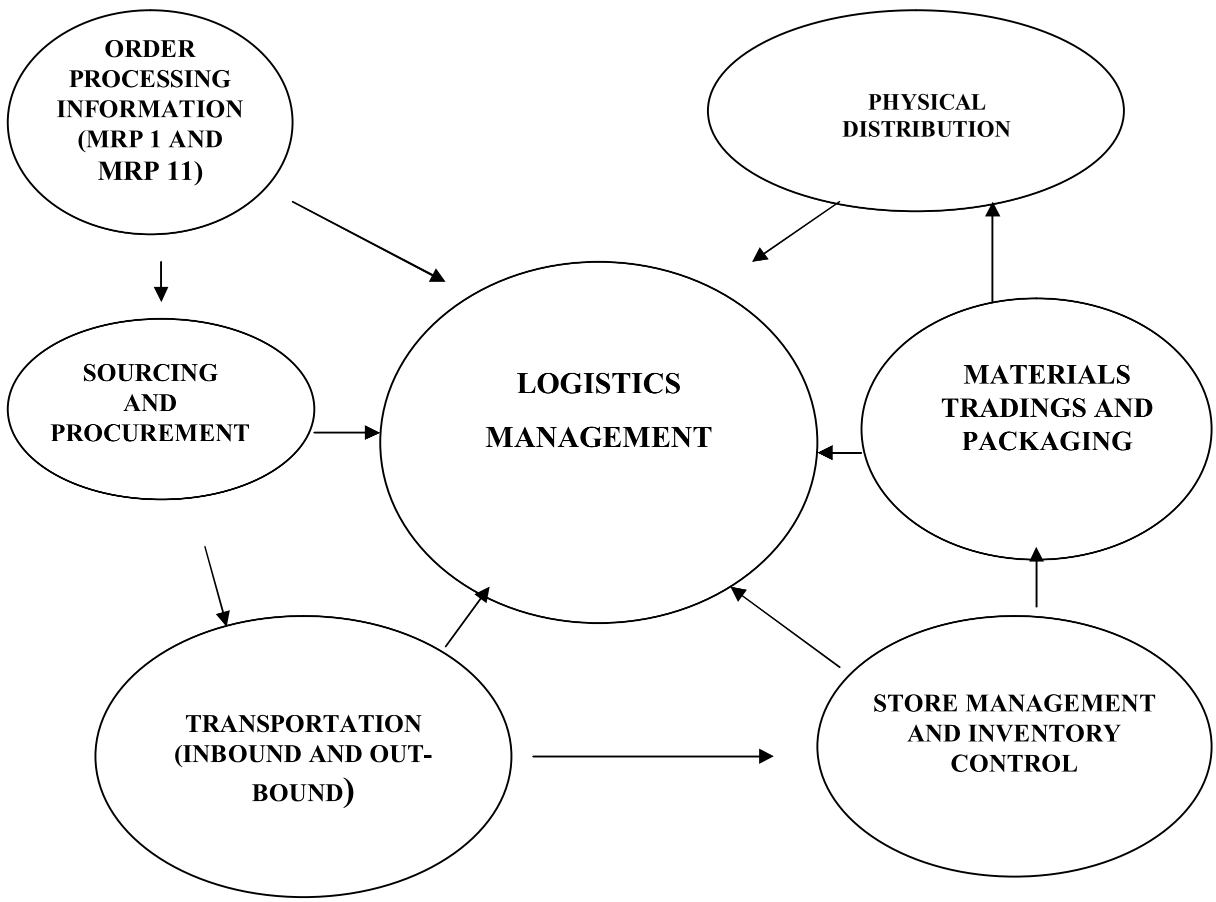
Fig. 4. **Process oriented logistics organization**



2.4. LOGISTICS MIX

The main element of logistics management is summarized below. It takes an overview of the entire supply/physical distribution chain: Upstream to where the raw materials are obtained and downstream to the final point of sale. These entire elements blow might be termed logistics MIX.

Figure: 5 **THE LOGISTICS MIX**



1. **ORDER PROCESSING INFORMATION**

*Design of systems

*Control procedures

*Forecasting (demand and supply)

2. SOURCING AND PROCUREMENT

*Determination of needs

*Define and evaluate user requirements

*Decide whether to make or buy

*Identify type of purchase

*sourcing

*Market analysis

*Identify all possible supplies

*Prescreen all possible Suppliers

*Evaluate Supplier base

*Choose supplier

*Post purchase performance evaluation.

3. TRANSPORTATION

*Type of service/delivery

*Cost of transport

*Mode of transport

*Load planning

*Route schedule

4. STORE MANAGEMENT AND INVENTORY CONTROL

*What to stock?

*Where to stock?

*How much to stock?

5 MATERIALS AND PACKAGING

*planning principle

*System principle

*Material flow

*Simplification

*Space utilization

*Unit size

*Mechanization principle

*Safety principle

6 PHYSICAL DISTRIBUTION

*Unit load

*Protective packaging

*Handling systems

*Internal and external changes

*Distribution chain

*Product demand and product supply

*Distribution cost decisions

*Order processing

*Warehousing

*Inventory

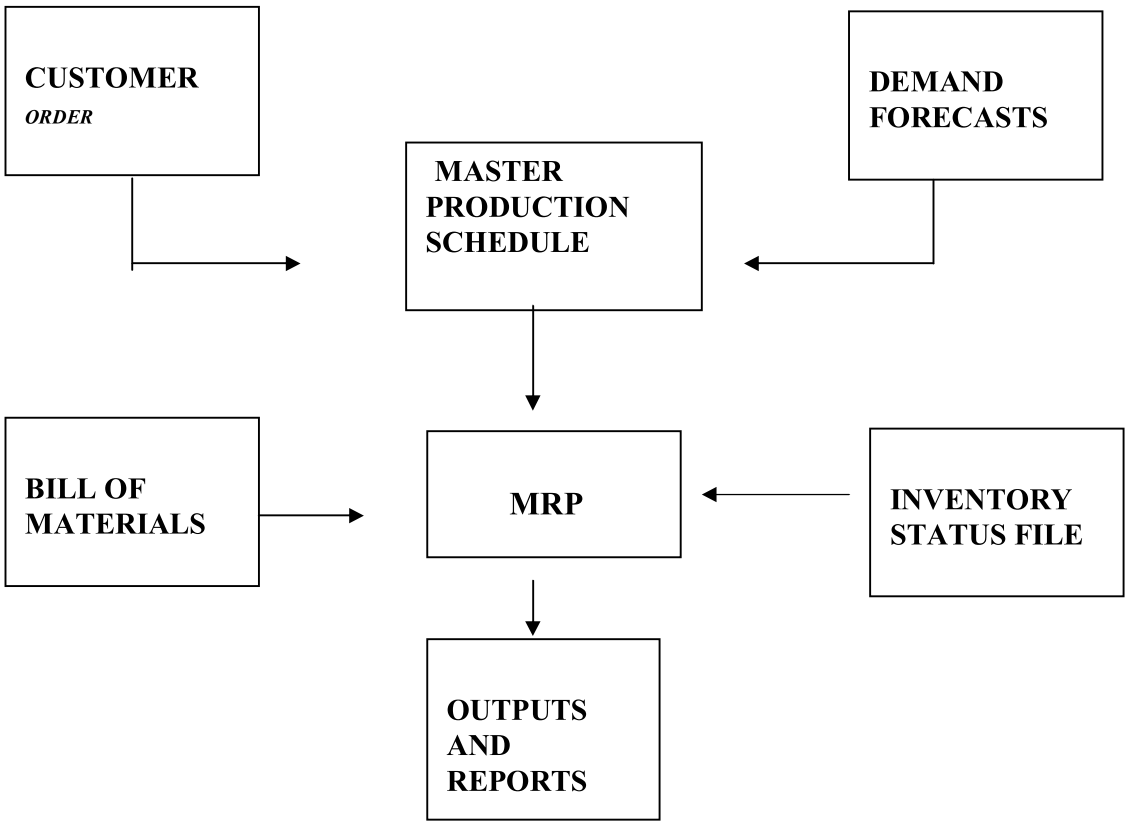
*Transportation

*Distribution intensity

2.4.1 **Materials Requirements Planning I**

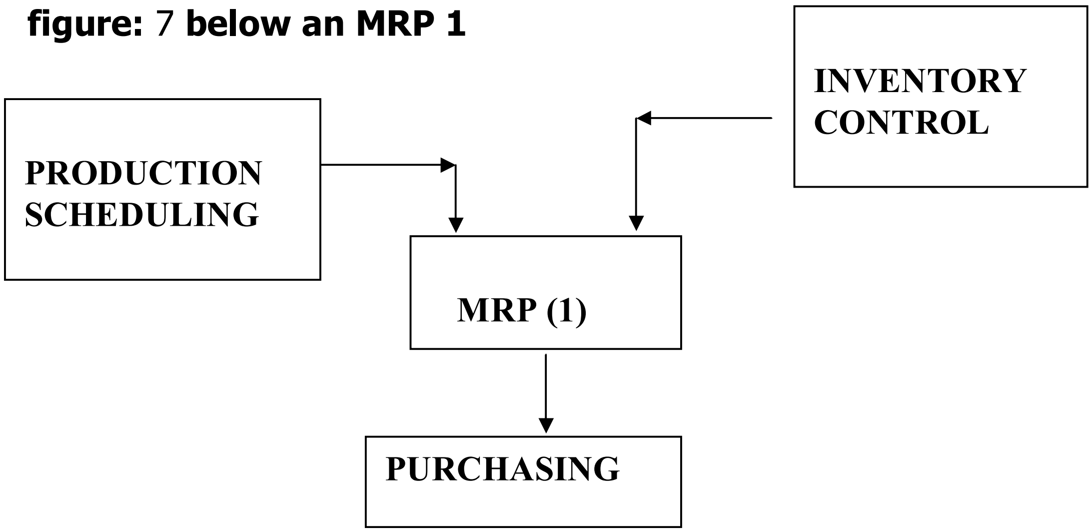
A materials requirements planning (MPR) system consists of a "set of logically related procedures, decision roles and records designed to translate a master production schedule into time-phased network of inventory requirements and the planned coverage of such requirements for each component item needed to implement this schedule. An MRP system plan need requirements and master production schedule, demand inventory status or product composition. MRP systems meet their objectives by computing net requirements for each inventory item, time phasing them and determining their proper coverage.[15]

Figure: 6 below an MRP System.



Thus a system linking the core Inventory control, production scheduling and purchasing with MRP as the Kernel, is depicted in a block diagram from below.

figure: 7 **below an MRP 1**



MRP as above is seen as a coordinator

Source: Adopted from; Howard J. WCISS and E. Gershon 91989)

As above we have stated that MRP is a computer-based approach to coordinate the purchasing and the use of materials with the needs of complex production schedules (created by demand). The kernel (the brain) is a dynamic database system.

The goals of an MPR system are to:

i. Ensure the availability of materials, component and products for planned production and for customer delivery.

ii. Maintain the lowest possible inventory level.

iii. Plan manufacturing activities, delivery schedules and purchasing activities. In so doing the MRP system considers current and planned quantities of parts and inventory products as well as the time used for planning.

MRPI became a popular concept in the 1960^s and 1970^s, from a managerial perspective, MRPI consists of "(1) a computer system, (2) a manufacturing information system, building on inventory production scheduling and administering all inputs to production, and (3) a concept and philosophy of management"[16].

MRPI is a computer based production and control system that attempts to minimize inventories while maintaining adequate materials for the production process. MRPI systems are usually employed when one or more of the following conditions exist.

a. When usage (demand) of the materials is discontinuous or highly unstable during a firm's normal operating cycle. An intermittent manufacturing or job shop operation as opposed to a continuous processing or mass production operation typifies this situation.

b. When demand for materials depends directly on the production of other specified inventory items or finished products MRP (I) can be thought of as primarily a component fabrications planning system in which demand for all parts (materials) is dependent on the demand (production schedule) for the opponent product.

c. When the purchasing department and its suppliers, as well as the firm's own manufacturing units possess the flexibility to handle the order placement or delivery releases on a weekly basis.

MRPI systems offer many advantages over traditional systems, including:

i. Improved business results (i.e. return on investments)
ii. Improved manufacturing performance results.
iii. Better manufacturing control.
iv. More accurate and timely information.
v. Lass inventory.
vi. Time phased ordering of materials
vii. Less material obsolescence.
viii. Higher reliability.
ix. More responsiveness to market demand.
x. Reduced production costs.

Materials requirement planning I does have a number of drawbacks which should be examined by any firm considering adopting the system.

First MRPI does not tend to optimize materials acquisition costs.

Because inventory levels are kept to a minimum, materials must be purchased more frequently and in smaller quantities. This results in increased ordering costs.

Higher transportation bills and higher unit costs are incurred because the firm is less likely to qualify for large volume discounts. The company must weigh the anticipated savings from reduced inventory costs against the greater acquisition costs resulting from smaller and more frequent orders.

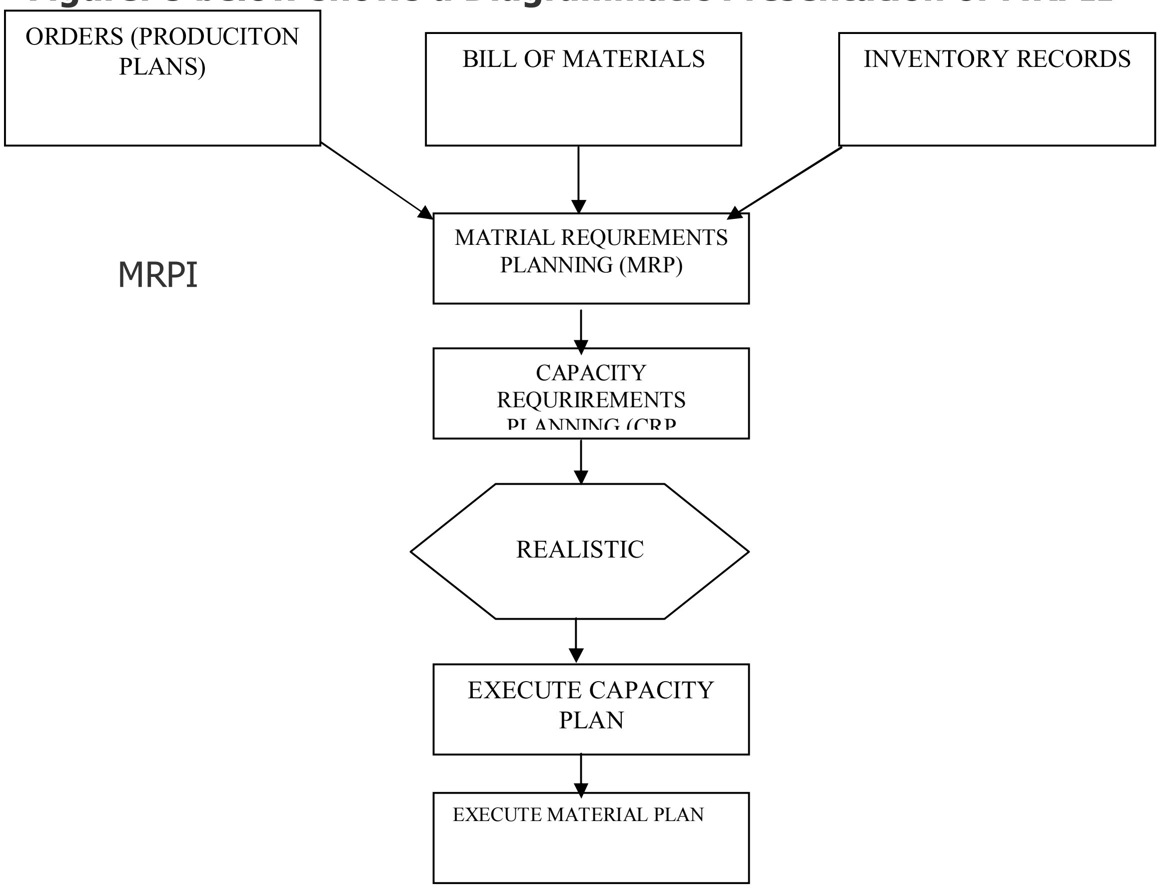
Another disadvantage of MRPI is the potential hazard of a production slowdown or shutdown that many arise because of factors such as unforeseen delivery problems and materials shortages. The availability of safety stock gives production some protection against stock outs of essential material. As safety stocks are reduced, this level of protection is lost.

MANUFACTURING RESOURCE PLANNING (MRP)

MRP has been expanded and updated to include financial, marketing and logistics elements. This newer version is called manufacturing resource Planning or MRPII.

MRP II include the entire set of activities involved in the planning and control of production operations it consists of a variety of functions of modules and includes production planning, resource requirements planning master production scheduling, materials requirement planning (MRPI), shop floor control and purchasing"[17].

Figure: 8 below shows a Diagrammatic Presentation of MRPII



Source: Karl A Hatt: What is the Big Deal – about MRP 11 – Winning Manufacturing 1994 (page 2)

The advantages of MRPII include:

i. Inventory reductions of one fourth to one-third

ii. Higher inventory turnover

iii. Improved consistency in on-time customer delivery

iv Reduction purchasing costs due to fewer expedited shipments

v. Minimization of workforce over time.

These advantages typically results in savings to a firm beyond the initial costs of implementing MRPII costs can easily exceed N750.00 during the first year of set up, although smaller companies many spend as little as N22, 000.00. Therefore the benefits of MRPII must be tangible and sizeable.

2.4.4 **TRANSPORTATION**

A large number of companies are adding transportation (inward and outward) to the responsibilities of the logistics department. This is due to the growing realization of the costs on materials contributed by transportation and the concept of the logistics department being endowed with the overall responsibility of controlling these costs whenever or however they may occur.

It will be seen that the ultimate objective is to obtain goods and to deliver good at the lowest cost commensurate with efficiency. The term efficiency denotes various matters, mainly the safety of the goods i.e. the goods should not be damaged or lost in transit, availability of the transport, regularity of flow, transit time, reliability in term of prompt delivery etc.

The responsibilities of the logistics department in respect of transportation are;

i. Ascertaining rates.
ii. Selecting the carrier
iii. Coordinating with the supplier and the carrier in regard to the date and time of the lifting of goods and communication to both about the arrangements made and terms and conditions involved.
iv. Insurance of the goods transported bills
v. Tracing of overdue or lost shipments
vi. Making claims in respect of lost or damaged goods and getting them settled.
vii. Doing continuous research to find out how best to reduce transportation costs by bunching shipments, by making long-term agreements etc.

These are onerous tasks and require not only considerable knowledge and skills but also the right attitudes towards making an all out-effort towards cost reduction.

For several decades, the railways has been the dominant means of transport in Nigeria for long-haul transportation, for short hauls, lorry transport or bullock can't transport are popular. To protect the railway', a policy of the government has been to impose very heavy taxation on road transport. However, the productivity and efficiency of road transport has been able to reduce the gap between rail and road and provide an effective competition between the two. During the last three decades, there has also been considerable development of the road network within the country and this has given a further spurt to road transportation with rapid industrialization, road transportation has increasingly become more popular, primarily because of the speed and secondly, because it can operate whenever there is a road, unlike the railways.

In deciding the mode of transport, four primary considerations are availability, regularity of flow, transit time and costs.

The importance of transportation as a component of logistics management lies in the fact that it is responsible for between 10% and 15% of the total cost of operation.

In the area of largest expenditure lies the area of greatest savings, therefore transportation should be given a pride of place in logistics management one of the ingredients of an efficient distribution services is the choice of the correct method of transport, or a mix of more than one method. On practical as well as economic ground no company should decide to employ road transport without first given consideration to the available alternatives. Many arguments can be put forward showing the advantages of using each different mode of transport, whether it is air, inland waterways, rail freight or parcel post or even by encouraging customers to collect goods from factory or warehouse by offering a discount. In each case the objective of keeping transport cost at a minimum must be balanced against both customer service requirements and the trade, offs with storage handling or other cost elements within the total logistics costs.

2.4:5 **STORE MANAGEMENT AND INVENTORY CONTROL.**

The term inventory control relates to a set of policies and procedures by which an organization determines which materials it will hold in stock and the quantity of each one of them that it will carry. Inventory control means the same as stock control, although some people make a distinction between the two by including the work using the term 'stock' to refer only to the goods in the stores.

The fundamental objective of inventory control is to satisfy the "customer" whether he is outside the organization and is a real customer who pays for what he gets or is inside the organization, a user of the stores, who may be regarded as a customer. Customer satisfaction results from several things. The one, which particularly concerns the inventory controller, is the service he gets from the stocks i.e. how often he can get what he wants without the delay involved in waiting for a delivery or without resorting to a "special order". A level of service can be quantified and set as a target to achieve. The service level actually achieved can also be measured to evaluate its efficiency or effectiveness and also used for the purpose of increasing the efficiency of performance.

The efficiency of inventory control can be measured in several ways, but the standard of measure of the service level is the percentage of total demand on the stores, which is actually met from stock.

This objective of the inventory controller can, of course, be achieved by piling up bigger and bigger stocks of everything that would conceivably be required to improve the service level. In this process, there is a distinct possibility that he might bring the company to the brink of bankruptcy. It is expensive to carry stocks. With very high stocks, close to 100 per cent service might be achieved but business exists to earn profits and not merely to provide a service.

It is also quite obvious that it is not possible to aim at very low stocks as this might jeopardize the quality of service rendered. Balancing service with the cost of providing the service in the money tied up in stock and the effort employed in handling and controlling stocks is what scientific inventory control is all about.

Generally speaking, four types of inventory control systems are in use:

(1) The cyclical or fixed order interval system,

(2) The JIT approach,

(3) The MRP – type system, and

(4) The order point or fixed order quantity system. Each system monitors and control inventory levels. And each system based on its own unique characteristics provides the inventory manager with information that helps answer the

two basic questions of when to order and how much to order.

2:4:6 **MATERIAL HANDLINGS AND PACKAGING**.

Virtually all-modern warehouse operations. A unit load may depend on the assembly of individual packages, usually of a like kind to permit conviment composite movement. This definition includes both mechanical and manual movements.

The objective behind the creation of units is to form a large unit as is compatible with safe and effective operation of the system. Material handling is a broad area that encompasses virtually all aspects of all movements of raw materials, works in process or finished goods within a plant or warehouse. Because an organization incurs costs without adding value each time an item moves or is moved, a primary objective of materials management is to eliminate handling wherever possible. That includes minimizing travel distance, bottlenecks, inventory levels and loss due to waste, mishandling, pilferages and damage. Thus by carefully analyzing material flows, logistics management can save the organization significant amount of money.

Packaging is an important warehousing and materials management concern, one that is closely tied to warehouse efficiency and effectiveness. The best package increases service, decreased cost and improves handling. Goods packaging can have a positive impact on layout design and overall warehouse productivity.

Packaging serves two basic functions; Marketing provides customers with information about the product and promotes the product through the use of colour and shape.

The package is the silent sales parson," and it is the final inter face between the company and its consumers generally choose to buy from the image they perceive that a product has and what they perceive is heavily influenced by the cues given on the product's packaging brand name, colour and display" 20

From a logistics perspective, the function of packaging is to organize, protect and identify products and materials. In performing this function packaging takes up space and add weights. Industrial users of packaging strict to gain the advantages packaging offers while minimizing the disadvantages such as added space and weight.

More specifically packaging performs six functions:

(i) Containment. Products must be contained before they can be moved from one palace to another. If the package breaks open, the item can be damaged or lost, or contribute to environments pollution if it is a hazardous material.

(ii) Apportionment: - To reduce the output from industrial production to manageable, desirable "consumer" size, that is, translating the large output of manufacturing into smaller quantities of greater use to customers.

(iii) Protection: - To protect the contents of the package from damage or loss from outside environmental effects (e.g. moisture, dust, contamination).

(iv) Unitization: - To permit primary packages to be unitized into secondary packages (e.g. paced inside a corrugated case), the secondary packages are unitized into a stretch wrapped pallet, and ultimately into a container that is loaded with several pallets. This reduces the number of times a product must be handled

(v) Convenience. To allow products to be used conveniently, that is, with little wasted effort by customers (e.g. blister packs, dispensers).

(vi) Communication. The use of unambiguous readily understood symbols such as a UPC (universal Product Code).

The package should be designed to provide the most efficient storage. Good packaging interfaces well with the organization's materials handling equipment and allows efficient utilization of storage space as well as transportation cube and weight constructs.

2:4:7 PHYSICAL DISTRIBUTIONS.

Distribution activities are cost generating activities. The aim of a physical distribution management in a manufacturing industry therefore is to minimize total cost of distribution and service thereby improving on the balance sheet position of the company.

Distribution has over the years gained much attention in marketing oriented firms as it creates place utility.

Rayon (1982) define distribution as "the term employed in manufacturing and commerce to describe the broad range of activities concern with the efficient movement of goods or product from the end of the production line, warehousing, material handling, inventory control, plant, e.c.t."21

Lozo (1977) explains that "physical distribution is the ensure function of getting goods into the hands of consumers. This function includes transportation in the broadest sense and middle men who handle the goods and help to transfer title of the goods."22

During the 1960's and 1970's companies worldwide focused attention upon what was defined as physical distribution or outbound logistics systems. They attempted to systematically manage a set of interrelated activities including transportation, distribution, warehousing, finished goods, inventory levels, packaging and materials handling to ensure the efficient delivery of finished goods to customers.

It was an era of great challenge and change. There were many mitigating factors that caused companies to attempt to manage physical distribution more efficiently includes product line expansion, rate increases, higher valued products.

Recently, physical distribution has been expanded into the broader concept of supply chain management. Supply chain management starts earlier than physical distribution; attempting to produce the right inputs (raw materials, components and capital equipment), convert them efficiently into finished products and dispatch them to the destinations. An even broader perspective calls for studying how the company's suppliers themselves obtain their inputs all the way back to the raw materials. The supply chain perspective can help a company's costs.

Unfortunately, the supply chain view see the markets as the only a destination point. The company would be more effective by considering its target market's requirement first and then designing the supply chain backward from that point. The

Modern view is at the heart of today's market logistics systems, it leads to an examination of the supply chains as the demand chain.

SUMMARY

Every marketing activity requires logistics support and logistics has been defined as the process of processing planning, implementing and controlling the efficient cost effective flow and storage of raw materials, in processing inventory and finished products from point of origin to point of final consumption.

Business logistics measurement has grown in importance and compensatory over the past three decades and its strategic significance.

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CHAPTER THREE

This chapter centrers on the methods and techniques used for data collections and the sources of the data. The approach used in conducting the research are both description and analytical approach. In using this techniques therefore, the researcher had taken time to examine the total activities in the supply function of BAT Ltd, both internal and external.

There are many methods that can be adopted in the collection of relevant data research study of this nature. Such as personal observations, interviewing and questionnaire administration as primary source of data, and other secondary sources of data as well.

However, for the reasons given below, the combination of personal interview and questionnaires have been used in this study as primary sources of data. The secondary sources of data are obtained from BAT library, Journals, Stores manuals, Government official documents and employees hand books.

3.1 Personal Interview

Interview can be described as a conversation with a purpose. The method brings the researcher and the respondent into a face to face contact, which makes it possible for questions to be asked and responses made available immediately ; ie there was instant feed-back of the respondent. There was timeliness and the techniques saved the research the cost of stationaries.

3.2 Questionnaires Drafting And Administration

A close ended questionnaires where used in this research study to supplement the personal interview discussed above. These are written questions aimed at discovering particular information's.

Questionnaires were drafted in two categories : One for the users of materials and the other for the provisions of materials and components. The essence

of categorizing the questionnaires however, is to enable the researcher to reconcile the efficiency of those charged with the acquisition of materials and the management and use of the materials in industrial set up.

The questionnaires were distributed by hand to reach 50 number of workers, mainly in the material function including junior and management personnel, who were not quite readily available for interview, and whose responses requires careful considerations and time. The researcher gave reasonable time to the respondents for proper analysis before drawing their conclusion. Particularly, the respondent had the time to revise and edit their responses before transmitting them, thereby reducing the likely inaccuracies.

CHAPTER FOUR

4.1. HISTORICAL BACKGROUND OF BRITISH AMERICAN TOBACCO

One cannot write about the background of British American Tobacco Company without first looking at Nigerian Tobacco Company the firm that BAT acquired in the year 2000.

BAT as it was then called developed from a based import trading. Its existence dated back to 1912 when all tobacco products and brands were imported and sold by various trading companies.

In 1912, the British American Tobacco Company BAT in London established depots and sales outlets in Nigeria to handle distribution of the own products. A pilot factory was later established at Osogbo in 1933 to manufacture cigarette from imported leafs, 1937, the first full scale Factory was opened in Ibadan, Oyo State and subsequently the Port-Harcourt and Zaria factories in 1959.

In 1951, the Nigerian Tobacco Company Ltd was incorporated to BAT. In 1960 NTC Ltd became a Public Company when in May that year, BAT offered for sale to the Public in Nigeria some of the ordinary share in its stock and by 1980 NTC was among one of the publicly quoted Nigerian company on the Stock Exchange.

Due to the State of the Nigerian economy the Port-Harcort Factory was closed down in 1983 followed by Ibadan factory in 1995, leaving Zaria factory as the only factory in operation.

However, the British American Tobacco (Nig Ltd) acquired the ownership position of NTC in October 2000. With its Head Office in Lagos, Zaria, Enugu, Por-Harcourt and Ibadan house the factories and regional Offices.

3.2. The Objectives of BAT (Nig) Ltd

The vision of the organization is to achieve leadership of the global tobacco industry. In quantitative terms this is defined in terms of market share, profit grown and share holder value company's paid capital stand at about ₦ and its stocks are dealt in, on the Nigerian stock exchange market

Nigerian Tobacco Company pioneered the tobacco growing on a commercial scale in 1934, when following the setting up of pilot factory in Oshogbo, the company did a survey of likely means of growing tobacco crops. Tobacco growing was first concentrated around Oshogbo in Oyo state of Nigeria. However, with rigid growth and expansion of NTC and due to larger markets share for its products, the farming of Tobacco crops were soon extended to other areas like Iseyin and Ago-Are both in Oyo state, and later extended to Northern Nigeria - Sokoto, Kano, Maiduguri and Zaria.

Today, only Zaria factory is existing. The Port Harcourt factory was closed down since 1983 and Ibadan factory was closed down in December 1995.

4.2 CONTRIBUTION OF BRITISH AMERICAN TOBACCO LTD TO NIGERIAN ECONOMY.

NTC PLC Zaria as a manufacturing organization, transform certain inputs raw Tobacco into specified Cigarette of various grading and qualities desired by society or that will satisfy the particular needs of the customers and that result into a profit for the organization.

According to the Company's Journal publication, volume 59, 1990, it has made constructive responses to the dynamic imperfect Nigerian society by identifying tasks that need doing and has gone a great deal to justify its social, agricultural and economic responsibilities to the society, as part of its objectives.

The Company has contributed in no small measure to the agricultural development of Nigeria. It is involved in Tobacco and food crops large scale farming and its agro-trained personnel are always on the spot to help and advice the farmers. This programme helps to reduce the drift from rural to Urban areas.

BAT has helped in the industrial dispersion in Nigeria with factories built in different parts of the country. It is among the top lists that contributes to the National revenue by way of import duties on materials, excise duty on finished goods and taxes on Company profits.

Employment opportunities have been created for thousands of Nigerians. Before the late 1995 when both Ibadan and Portharcourt factories were closed down, BAT had been recorded as creating employment for about 4millions Nigerian citizens, ranging from administrative position to distributorship, Tobacco brokers, Tobacco farmers and even the petty cigarette trader and hawkers owe their employment opportunities to the existence of BAT.

In social development, it has contributed to various communities in which it operates, ranging from sports promotion, including long tennis, polo games, gulf etc.; Awarding scholarship for studies in

Schools and Universities. It donated on entire pathological laboratory for the research into sickle-cell to the college of medicine University of Lagos Teaching Hospital, and another donation of demonstration farm complete with irrigation dam to the institute of Agriculture Armada Bell University Zaria. BAT spear head funds raising activities and provision of social amenities like canopies for waiting passengers at strategic Bus stops in urban areas etc.

4.3 Purchasing Functions And Techniques Of BAT LTD

The study reveals that British American Tobacco Company is operating a centralized purchasing department headed by a purchasing Manager'. All purchases are made through the department except that other department are allowed to maintain impress account with which some urgent minor and low value (₦) items are purchased. However, the receipts and invoices of such individual departmental purchases must have to pass through the central store receiving sheet, for the purpose of control and for reimbursement accordingly.

The producers of BAT purchasing department are spelt out in the purchasing policies and producers of the company ; and which is subject to review from time to time.

Among these objectives, are :

a) To supply the entire organization with steady flow of materials and services as and when required to meets its needs.

b) To work consistently in harmony with the suppliers in order to reduce unnecessary costs to mutual advantage.

c) To strive to obtain by all ethical means the best value for every Naira spent.

d) To maintain sound cooperative relationship with other departments and to produce or provide information's and advises when necessary to ensure the effective operation of the organization.

e) To develop staff training through on the job training system and where possible recommended academic training for its staff.

Purchasing Cycle Of British American Tobacco Company Ltd

The department, as centralized, receives departmental order request from some departments like personnel department, company clinic, leaf department and central store.

Particularly, the central store has the largest request on purchasing department and is the central focus of this research study.

The authority to make purchases, ie purchase requisition usually comes from the central store through a completed form called "***departmental order***". On receipt of departmental order, a buyer is assigned to register it after checking for correctness of specification and other details of items so requested. Purchasing department maintain a standard form designed to call for quotations from suppliers. However, the company has a strong policy of buying from vendors with genuine business and existing office and or store and must be registered with the corporate affairs division (Company and Allied Matters). It must be registered with BAT as a contractor.

Inspection team is constituted by BAT that comprises of purchasing staff, production, store and Engineering departments for the purpose of carrying out surprise visits from time to time on selected vendors with the aim of assessing their businesses and their ability to satisfy the Company when and as required.

However, because of the general price levels of the 1980s, that was frighteningly high, due to the introduction of structural adjustment programme policy of president Ibrahim Babangida's administration

(1986), the company eroded price judgment and so maintains quotations from already selected vendor for a particular material for at least a period of three (3) months before they are subject to review.

4.4 Procedures For Receipts And Issuing Of Materials In BAT Central Store :

Receipts Of Materials :

In the central store of BAT, materials are received from various sources, such as local purchases from suppliers, receipts of machine spare parts from overseas, receipts of reworked of fabricated spares and sub-assemblies from workshop and items received for safekeeping.

On daily basis, by 4.00PM, the store keeper should have satisfied himself that goods receiving sheet is correctly completed and having signed it, should be passed to the stores manager and the spares logistic Engineer for final approval.

Actual Receiving Procedure - Local Purchase

Usually, the central store is served with a copy of local purchase order in respect of the materials to be delivered. On delivery of goods/materials, the store copy of LPO. is used to check the conformity of items delivered with the specifications required, including quality and quantity.

On satisfactory receipt, the store assistants does the racking of the items after entries have been made on the receiving sheet. The stock positions are updated through the computer.

Actual Receipts Procedure - Imports

The procedures for receiving imported items are slightly different from local purchases, especially in the areas of record and the involvement of the store staff.

Usually, the central store prepares the indent (foreign order) and must have copy of each order in the file. The foreign consignment comes in wooden cases, through Apapa in Lagos. The storekeeper examine the cases and endorse consignment note for the carrier when there is no apparent damage to the boxes. The boxes are later opened to get the packing list which specifies details of items contained in the box.

The original indent is used to check off the physical items and the packing list. Technical staff from engineering department are called into identifying spare parts to be received, whenever the storekeeper is in doubt.

Once the storekeeper has been satisfied that all items received have been marked off against the packing list, he then update the stock position through the computer. Necessary entries are mode on the import goods receiving sheet accordingly.

The storekeeper ensures that items which are either short supplied or damaged on transit are noted and communicated to the supplier in the United Kingdom - British American Tobacco Company (BAT).

4.5 Inventory Planning And Stock Control System In BAT Ltd.

The inventory planning and stock control of BAT is the general responsibilities of the central store staff and the individual departments.

Two categories of stock are held in the store : stock items and non-stock items. The stock items are usually reviewed frequently by the storekeeper, ie three months stocks are carried and are in the custody of the store staff. The non-stock items are materials requested through the store by individual department and meant to be uplifted immediately on arrival.

The quantities to be ordered are carefully calculated in line with the company's ordering policies in the following manner :

Maximum Level

The Company do not stick to the universal mathematical computation, rather, their stock levels are worked out in accordance with the physical consumption rates. 18months maximum stock level duration is maintained by the company ; which the store should not exceed for items imported while 3 months maximum level is held for items bought locally.

Maximum stock level is worked by reference to:

Necessity of Avoiding stock out

Inconvenience of frequent works for small quantities.

Costs of holding stocks.

Minimum Stock Levels

The minimum of 6months stock level is maintained for overseas purchases and 1 (one) month is maintained for the local stores.

Reorder Level

This is the stock level at which an order (Indent) has to be initiated. The company maintain 15months re-order level for indent. Usually in the overseas purchases, the estimated lead time between when an order in placed and the time of receipt is 4months.

However, in working the above mentioned order levels, a straight and simple calculation are used such that the total consumption's of each month is multiplied by the standard months allowed for each stock level for individual item.

Indents are typed out in 4 copies and the storekeeper ensures that they are posted in the appropriate file in the computer (as evidence that they are put on order).

4.6 Stock Taking Procedures In Central Store Of BAT Ltd Zaria

There are three different types of physical stocktaking adopted by BAT, each having a different purpose. They are perpetual stock count (on daily basis), three months intervals an annual stock check (end of the year).

Before physical Stock count, a programme is drawn by the factory accountant detailing out the following stock checkers:

- Accounting representative (the main stock checkers)
- Stores representative (whose responsibility is to help in locating and identifying item for easy checking)
- Dates of Stocktaking
- Sections and description of items to be checked.

The perpetual (daily) stock count is carried out and intended to cover 100% of all central store items over the period of 18 months. during the physical count all items are checked in the presence of the store keeper who witness the result in the stocktaking sheet. Any suspected damage of item is reported immediately to the factory Manager/Engineer.

In the case of the daily stocktaking exercise, result are compiled weekly and finally at the end of the month, compared and reconcile the figures showed in the document and physical count. Daily checking is concentrated on high value items, high turnover, critical and attractive items.

Having highlighted the total differences and their Naira values accordingly, the result could either be write of write back. they are write-off if the item is missing only at the current stock check. they are write-back if the item previously declared missing is recovered again. It is possible this way because the central store is holding a large different types of material (worth N270 million) as at the month of August, 1997.

Usually, after the investigation, the difference between physical count and the record are still unresolved, the Store keeper should give full written explanation in respect of each difference. Difference are extracted into the Stock Reconciliation form (SRF) are passed to the Factory Engineer who endorse and pass forward to the Production Director for final approval and or appropriate action. Some Store staff were punished in connection with unexplained difference; ranging from deployment, termination and dismissal.

But where a write-off, write-back has been approved, a copy is sent to the Stores Manager which will act as notification and authority to alter and make necessary adjustment on the stock records. However, any write-off in excess of N120,000.00 is refereed to the Finance Director in Lagos for approval.

4.7 Make - Or - Buy As A Procurement Policy Of BAT Ltd.

The make-or-buy decision of the Company stemmed up from tobacco farming itself. On discovering that some parts of the Country can grow tobacco leaf, they discouraged the importation of tobacco leafs and embarked on farming the crops in a large scale.

By 1934, BAT had quite a large hectares of tobacco farms at Iseyin and Ago-Are in Oyo State; and later the farm spread to the Northern Nigeria - Kano, Maiduguri, Zaria, Sokoto e.t.c.

However, the researchers main concern here is the make-or-buy decision as regards the provisioning of machines spare parts, components and sub-assemblies BAT had for long adopted a formalized policy for identifying and reworking of old machine parts and making new ones. This is particularly so because of the increasing restrictions on availability of foreign exchange or the high exchange rate problem.

To make such exercise meaningful, an intensive capital project (spare parts workshop) was built with the technology milling machine to engage in fabrication of spare and components whose materials can be readily obtained locally.

The central store therefore holds varieties of stocks of such items like brass, bronze, stainless steels and other sizes of aluminum round bars which the spare parts workshop can always withdraw for fabrication of spare parts. Usually, a proper costing of each item is made and compared with imported ones and where it is cheaper then it become obvious that it should be made within.

Consequently, items fabricated in the workshop are taken to the central store and the store is debited with the value. By the decision to make, the Company has avoided the risks of delivery delays, likely damage to items on transit and the eventual savings of foreign exchange reserves.

CHAPTER FIVE

5.1 Summary

The importance of materials in any organization, particularly industries can not be over emphasized. It is described as the 'Life-blood' of a firm which requires maximum care and management especially in the areas of design, specification and quality control, inventory control and the actual usage in the process of manufacture.

Regrettably enough, materials which takes the largest share of the total expenditure in most organization had not been accorded the priority it deserves until the beginning of the second half of this Century. this time, the Manufacturing Sector began to realize that efficient management of materials could lead to huge savings and profitability for an organization. they have also realized that the buying well of these materials used for production of other goods is as important as selling the end product. Both materials waste and duplication can always be avoided right from the period of design and cost analysis, specification and the entire acquisition.

Every industrial concern today is pre-occupied with the development and manufacture of a product that can be marketed at a profit. And this can only be achieved through the blending of factors such as men, money, materials, machines and management's (5Ms). In particular, the acquisition of materials method adopted must always seek to balance the seemingly irreconcilable factors of the (6Rs), the right quality, right quantity, right source, right time, right prices and delivered at the right place.

BAT Ltd materials management policies have been positively pursued until the year 1996 when the weight of the Economic recession began to negate all its procurement policies.

In the areas of make-or-buy decision and policy, the Company is able to install some sophisticated milling machines with a workshop that it capable of fabricating spare parts and machines components that were hitherto imported into the country, hence saving some foreign exchange reserves. The procurement department is organized to pursue the course of profitability for the company by ensuring that prices are reviewed periodically and only genuine contractors, registered with BAT Ltd are awarded contract. the inventory control policy of the company is done in a way that takes into consideration the actual production schedules which ensure optimum stock held; i.e. not too much and not too little of stock held at any given time.

Because of the importance and recognition given to materials and the huge Naira values involved, a detail and combined stocktaking methods (perpetual, quarterly and Annual Stock checks) are carried out to cover all items of stock.

However, generally speaking, Nigeria is still far behind in the areas of technological advancement and for this obvious reason, our manufacturing sectors have been bedeviled by materials shortages and hence over dependent on the importation of at least over 60% of their materials inputs. BAT Ltd is not left out in this unfortunate situation. Nigeria today is undergoing a serious Economic depression, low capacity utilization, accelerated inflation, retrenchment and unemployment. In 1995/1996 alone, BAT reduced its labor force to about 50% which led to the closure of the Ibadan factory; leaving only Zaria factory.

5.2 Recommendation:

As a result of the empirical findings from the research study, it will be of great importance to suggest recommendations and remedial measures which could help in the efficient material acquisition and management in industries.

First and foremost, since it has been identified that the industrial materials inputs are import intensity, the researcher therefore wish to suggest that the Federal Government in collaboration with the Nigeria Institute of Purchasing and Material Management constitute a centralized purchasing ministry in Nigeria, through where most industries can always obtain their resources collectively from overseas.

Like every Ministry, it will be headed by a Minister with departments created, such as: Capital equipment purchases department, Consumable spare parts department, Material research and Development department - like the one we have in Abuja now (Local Raw Materials Research & Development Institute), designs and Cost analysis department e.t.c. With this recommendation full adopted in this Country, there will be advantage in economy of bulk purchase, a total cut down in duplication and wastes and also economy in the use of personnel. There is no doubt that BAT and other grounding industries will benefit from such centralized purchasing system.

That it is high time Nigerian Government enacted a law on purchasing professions and give professional full control in supply function like its counter parts in the fields of Accounting, Law, e.t.c. so that the mediocre and unqualified buyers that dominates industrial set-up are replaced.

Finally, the researcher recommend also that the activities of training and development should be intensified especially among supply function personnel's. Professional buyers should be trained to acquire elements of engineering knowledge so that they can perform the marketing field work without necessarily referring back to factory engineers before they buy. It has become obvious that we can not divorce purchasing from engineering (purchasing is in engineering, as engineering is in purchasing)

The Nigerian government has done a great thing to institute Industrial Training Fund (ITF) which has been long in existence.

But sadly enough, most organizations have regarded the institution as a mere statutory function to which they subscribe their financial contribution annually. Their interests are not represented in the training centers of this (ITF). In particular, Industries, should be made to send returns of statistics of their personnel's trained by the (ITF) annually to the Federal Government Office Of Statistics for proper appraisals.

5.3 Conclusion

Finally, in conclusion, the increasing importance of materials and the administration of it has became a reality and a matter which at least is as important to the manufacturing businesses as the importance of the actual product to be manufactured.

In acquiring materials therefore, while the price paid is important, what is far more important is obtaining value for money. In short price is not everything, the overall assessment should take into consideration - quality, quantity, timing and other delivery performance as well.

However, finance is a limiting factor that decides the buyers performance e.g. when a financial controller delays payment to solve an internal cash - flow difficulty or refuses to release funds to take advantage of supply market opportunity, again the buyers performance is affected.

Conversely, if the buyer makes an error in selection and suppliers delivers materials behind schedule or there is quality failure, the whole production programmes becomes disrupted.

Therefore the corporate management efforts should be tailored towards coordinating materials management activities and to seek optimization in the overall functions involved.