Unit IV

Subject Name	Sub Code	Semester	Prepared by
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Materials Management:

Definitions of Materials Management:

Materials Management is the planning, directing, controlling and coordinating those activities which are concerned with materials and inventory requirements, from the point of their inception to their introduction into the manufacturing process.

It begins with the determination of materials quality and quantity and ends with its issuance to production to meet customer's demand as per schedule and at the lowest cost.

Materials Management deals with controlling and regulating the flow of material in relation to changes in variables like demand, prices, availability, quality, delivery schedules etc.

Thus, material management is an important function of an organisation covering various aspects of input process, i.e., it deals with raw materials, procurement of machines and other equipment's necessary for the production process and spare parts for the maintenance of the plant. Thus in a production process materials management can be considered as an preliminary to transformation process.

It involves planning and programming for the procurement of material and capital goods of desired quality and specification at reasonable price and at the required time.

It is also concerned with market exploration for the items to be purchased to have up to date information, stores and stock control, inspection of the material received in the enterprise, transportation and material handling operations related to materials and many other functions.

In the words of Bethel, "Its responsibility end when the correct finished product in proper condition and quantity passes to the consumer."

Objectives of Materials Management:

Materials management contributes to survival and profits of an enterprise by providing adequate supply of materials at the lowest possible costs.

(i) Material Selection:

Correct specification of material and components is determined. Also the material requirement in agreement with sales programme are assessed. This can be done by analysing the requisition order of

the buying department. With this standardisation one may have lower cost and the task of procurement, replacement etc. may be easier.

(ii) Low operating costs:

It should endeavor to keep the operating costs low and increase the profits without making any concessions in quality.

(iii) Receiving and controlling material safely and in good condition.

(iv) Issue material upon receipt of appropriate authority.

(v) Identification of surplus stocks and taking appropriate measures to produce it.

The importance of material management may be summarized as follows:

1. The material cost content of total cost is kept at a reasonable level. Scientific purchasing helps in acquiring materials at reasonable prices. Proper storing of materials also helps in reducing their wastages. These factors help in controlling cost content of products.
2. The cost of indirect materials is kept under check. Sometimes cost of indirect materials also increases total cost of production because there is no proper control over such materials.
3. The equipment is properly utilized because there are no break downs due to late supply of materials.
4. The loss of direct labour is avoided.
5. The wastages of materials at the stage of storage as well as their movement is kept under control.
6. The supply of materials is prompt and late delivery instances are only few.
7. The investments on materials are kept under control as under and over stocking is avoided.
8. Congestion in the stores and at different stages of manufacturing is avoided.

Functions of Material Management:

Material management covers all aspects of material costs, supply and utilization. The functional areas involved in material management usually include purchasing, production control, shipping, receiving and stores.

The following functions are assigned for material management:

1. Production and Material Control:

Production manager prepares schedules of production to be carried in future. The requirements of parts and materials are determined as per production schedules. Production schedules are prepared on the basis of orders received or anticipated demand for goods. It is ensured that every type or part of material is made available so that production is carried on smoothly.

2. Purchasing:

Purchasing department is authorized to make buying arrangements on the basis of requisitions issued by other departments. This department keeps contracts with suppliers and collects quotations etc. at regular intervals. The effort by this department is to purchase proper quality goods at reasonable prices. Purchasing is a managerial activity that goes beyond the simple act of buying and includes the planning and policy activities covering a wide range of related and complementary activities.

3. Non-Production Stores:

Non-production materials like office supplies, perishable tools and maintenance, repair and operating supplies are maintained as per the needs of the business. These stores may not be required daily but their availability in stores is essential. The non-availability of such stores may lead to stoppage of work.

4. Transportation:

The transporting of materials from suppliers is an important function of materials management. The traffic department is responsible for arranging transportation service. The vehicles may be purchased for the business or these may be chartered from outside. It all depends upon the quantity and frequency of buying materials. The purpose is to arrange cheap and quick transport facilities for incoming materials.

5. Materials Handling:

It is concerned with the movement of materials within a manufacturing establishment and the cost of handling materials is kept under control. It is also seen that there are no wastages or losses of materials during their movement. Special equipment's may be acquired for material handling.

6. Receiving:

The receiving department is responsible for the unloading of materials, counting the units, determining their quality and sending them to stores etc. The purchasing department is also informed about the receipt of various materials.

Inventory Control

The Inventory control system is maintained by every firm to manage its inventories efficiently. Inventory is the stock of products that a company manufactures for sale and the components or raw materials that make up the product. Hence, an inventory comprises of the buffer of raw material, work-in-process inventories and finished goods.

Following are the popular Inventory Control Systems that are being used by big manufacturers and the retail units.

- ABC Inventory Control System

- Three-Bin System
- Just-in-Time (JIT) System
- Outsourcing Inventory System
- Computerized Inventory Control System
- Fixed Order Quantity
- Fixed Period Ordering

There are several inventory control systems that are in practice, and these range from simple system to a complex one depending upon nature and the size of the business operations. Talking about the simple system, several small manufacturing firms operate a Two-Bin System; wherein inventory is stored in two bins. Once the inventory in one bin is used, and the order is placed, meanwhile, the inventory from the other bin is used by the firm.

This system is quite inadequate for the larger firms that deal in several product lines and maintain a heavy sales counter. Thus, self –operating or an automatic computer system is to be employed to keep track on the inventory stock and place the order in case of a shortage.

Objectives:

(i) To minimize capital investment in inventory by eliminating excessive stocks;

(ii) To ensure availability of needed inventory for uninterrupted production and for meeting consumer demand

(iii) To provide a scientific basis for planning of inventory needs;

(iv) To tiding over the demand fluctuations by maintaining reasonable safety stock;

(v) To minimize risk of loss due to obsolescence, deterioration, etc.;

(vi) To maintain necessary records for protecting against thefts, wastes leakages of inventories and to decide timely replenishment of stocks.

Advantages of Inventory Control:

Scientific inventory control provides the following benefits:

1. It improves the liquidity position of the firm by reducing unnecessary tying up of capital in excess inventories.
2. It ensures smooth production operations by maintaining reasonable stocks of materials.
3. It facilitates regular and timely supply to customers through adequate stocks of finished products.
4. It protects the firm against variations in raw materials delivery time.
5. It facilitates production scheduling, avoids shortage of materials and duplicate ordering.

6. It helps to minimise loss by obsolescence, deterioration, damage, etc.

7. It enables the firms to take advantage of price fluctuations through economic lot buying when prices are low.

Limitations of Inventory Control:

(i) Efficient inventory control methods can reduce but cannot eliminate business risk.

(ii) The objectives of better sales through improved service to customer; reduction in inventories to reduce size of investment and reducing cost of production by smoother production operations are conflicting with each other.

(iii) The control of inventories is complex because of the many functions it performs. It should be viewed as shared responsibilities.

Inventory control has two key objectives:

Customer service level

Why do you produce goods? The answer is simple it is to sell the goods at a good price. In an open market, there are so many manufactures who may produce the same goods as you may. Then how could you be different and attract customers to your product? The answer here is plain, it's only through proper customer service.

Customer service means having the right goods available in the right quantity in the right place at the right time. This can only be achieved if you have proper inventory control measures followed up in your organization.

Cost of holding inventories

Another objective of inventory control is to optimize the cost of ordering and carrying inventories. As we know that the overall objective of inventory control is to achieve satisfactory levels of customer service by keeping the inventory costs within reasonable bounds.

Therefore, the cost of ordering inventories and carrying those inventories throughout the production is also important to keep the overall cost of selling as low as possible.

Advantages of inventory control

- Maintaining an optimum level of inventories
- Helps in laying the procurement process considering the wait-time, lead-time etc.
- Periodical inspection of inventories
- Guides us on storing and issuance of inventories from godowns.

- A systematic record of movement of materials.
- It helps to lay out plans for physical verification of inventories.

Steps involved in inventory control

Step 1: Deciding on the minimum levels of inventories

A production department is incomplete if it does not have a good relationship with the sales and marketing department. It is because the demand or need for the product you produce can only be assessed by people who are close to customers such as sales and marketing.

Thereby deciding on the levels of inventory i.e. maximum-minimum limits of inventory is important because as a manufacturer you would not like the raw materials to go obsolete even before the production has begun or to stock up raw materials that have very limited use in the production of a finished product.

Step 2: To decide on the re-order level

The demand for anything is uncertain in this world. Especially with customers taste and preferences. A product manufactured by you may be selling high and you must be ready to decide as how much to produce adhering to customers demand.

For which you have to decide as to when you will be re-stocking the raw materials which will be used in the production of the final product. If the restocking time passes beyond the committed time of the finished product to the customer, then you will not be able to deliver a complete product to the customer.

Step 3: Choosing a sound inventory control method

There are several types of inventory control method available and you can choose the one which suits your business. No matter which method you choose, it is important that the techniques should assist knowing the minimum quantity of stock, point in time at which the stock should be re-ordered and right quantity that should be ordered.

Inventory Control Methods

The following are the different types of inventory control methods used by the business.

ABC analysis

Here, the stock is divided into three sections namely A, B and C. A section consist of inventories that are high in value with low sales frequency or consumption. This category of stocks requires to be controlled closely. Category B consists of stocks that are of moderate value and with decent sales frequency. In category C, you have inventories with low value having high sales frequency requiring minimum inventory control.

Just in time (JIT)

Here, the company maintains an inventory level that is required during production. Under this method, you will not be having any excess inventory beyond the production requirements and it helps you get rid of the cost involved in storing excess stock. Here, the order of stock is placed when old stock is close to zero and this puts production in risk, even if there are small delays.

Economic order quantity (EOQ)

In this method, the company will get to know how much quantity of inventory should the company order at any point of time and when should they place the order considering the minimum level of inventory.

Fast, slow, and non-moving (FSN)

Here, the inventories are classified based on the movement. All the inventories are categorized as fast-moving, slow-moving, and non-moving. Basis the movement across the categories, the order is placed

Economic Order Quantity(EOQ)

. The economic order quantity (EOQ) refers to the ideal order quantity a company should purchase in order to minimize its inventory costs, such as holding costs, shortage costs, and order costs. EOQ is necessarily used in inventory management, which is the oversight of the ordering, storing, and use of a company's inventory. Inventory management is tasked with calculating the number of units a company should add to its inventory with each batch order to reduce the total costs of its inventory.

The EOQ model seeks to ensure that the right amount of inventory is ordered per batch so a company does not have to make orders too frequently and there is not an excess of inventory sitting on hand. It assumes that there is a trade-off between inventory holding costs and inventory setup costs, and total inventory costs are minimized when both setup costs and holding costs are minimized.

KEY ASPECTS

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- The economic order quantity (EOQ) model seeks to ensure that the right amount of inventory is ordered per batch so a company does not have to make orders too frequently and there is not an excess of inventory sitting on hand.
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How to Calculate the Economic Order Quantity (EOQ)

To calculate the EOQ for inventory you must know the setup costs, demand rate, and holding costs. Setup costs refer to all of the costs associated with actually ordering the inventory, such as the costs of packaging, delivery, shipping, and handling. Demand rate is the amount of inventory a company sells each year.

Holding costs refer to all the costs associated with holding additional inventory on hand. Those costs include warehousing and logistical costs, insurance costs, material handling costs, inventory write-offs, and depreciation.

Ordering a large amount of inventory increases a company's holding costs while ordering smaller amounts of inventory more frequently increases a company's setup costs. The EOQ model finds the quantity that minimizes both types of costs.

Example of Economic Order Quantity (EOQ)

EOQ considers the timing of reordering, the cost incurred to place an order, and costs to store merchandise. If a company is constantly placing small orders to maintain a specific inventory level, the ordering costs are higher, along with the need for additional storage space.

For example, consider a retail clothing shop that carries a line of men's shirts. The shop sells 1,000 shirts each year. It costs the company $5 per year to hold a single shirt in inventory, and the fixed cost to place an order is $2.

The EOQ formula is the square root of (2 x 1,000 shirts x $2 order cost) / ($5 holding cost), or 28.3 with rounding. The ideal order size to minimize costs and meet customer demand is slightly more than 28 shirts.

Disadvantages of Using Economic Order Quantity (EOQ)

The basis for the EOQ formula assumes that consumer demand is constant. The calculation also assumes that both ordering and holding costs remain constant. These assumptions make it difficult, if not impossible, to account for unpredictable business events, such as changing consumer demand, seasonal changes in inventory costs, lost sales revenue due to inventory shortages, or purchase discounts a company might get for buying inventory in larger quantities.

Store-Keeping: Meaning, Types, Objectives Functions and Working of the Stores!

Meaning:

After the completion of purchase procedure, the next important aspect Of materials management is storekeeping.

A storehouse is a building provided for preserving materials, stores and finished goods. The in-charge of store is called storekeeper or stores manager. The organisation of the stores department depends upon the size and layout of the factory, nature of the materials stored and frequency of purchases and issue of materials.

According to Alford and Beatty "storekeeping is that aspect of material control concerned with the physical storage of goods." In other words, storekeeping relates to art of preserving raw materials, work-in-progress and finished goods in the stores.

Types:

Stores may be centralised or decentralised. Centralised storage means a single store for the whole organisation, whereas decentralised storage means independent small stores attached to various departments. Centralised storekeeping ensures better layout and control of stores, economical use of storage space, lesser staff, saving in storage costs and appointment of experts for handling storage problems. It further ensures continuous stock checking.

It suffers from certain drawbacks also. It leads to higher cost of materials handling, delay in issue of materials to respective departments, exposure of materials to risks of fire and accident losses are practical difficulties in managing big stores.

On the other hand, decentralised stores involve lesser costs and time in moving bulky materials to distant departments and are helpful in avoiding overcrowding in central store. However, it too suffers from certain drawbacks viz., uniformity in storage policy of goods cannot be achieved under decentralised storekeeping, more staff is needed and experts may not be appointed.

Objectives of storekeeping:

Following are the main objectives of an efficient system of storekeeping:

1. To ensure uninterrupted supply of materials and stores without delay to various production and service departments of the organisation.

1. Issuing purchase requisitions to Purchase Department as and when necessity for materials in stores arises. 2. To prevent overstocking and understocking of materials,

3. To protect materials from pilferage, theft fire and other risks.

4. To minimise the storage costs.

5. To ensure proper and continuous control over materials.

6. To ensure most effective utilisation of available storage space and workers engaged in the process of storekeeping.

Functions of Storekeeping:

In the light of above objects, the functions performed by the stores department are outlined below:

1.Purchasing materials as per requisition.

2. Receiving purchased materials from the purchase department and to confirm their quality and quantity with the purchase order.

3. Storing and preserving materials at proper and convenient places so that items could be easily located.

4. Storing the materials in such a manner so as to minimise the occurrence of risks and to prevent losses due to defective storage handling.

5. Issuing materials to various departments against material requisition slips duly authorized by the respective departmental heads.

6. Undertaking a proper system of inventory control, taking up physical inventory of all stores at periodical intervals and also to maintain proper records of inventory.

7. Providing full information about the availability of materials and goods etc., whenever so necessary by maintaining proper stores records with the help of bin cards and stores ledger etc.

Working of the stores:

There are four sections in the process of storekeeping viz.

(a) Receiving section,

(b) Storage section,

(c) Accounting section, and

Storekeeper Duties and Responsibilities

•Maintain receipts, records, and withdrawals of the stockroom

• Receive, unload, and shelve supplies

• Perform other stock-related duties, including returning, packing, pricing, and labeling supplies

• Inspect deliveries for damage or discrepancies; report those to accounting for reimbursements and record keeping

• Rotate stock and coordinate the disposal of surpluses

•Ensure adequate record keeping and manage all documentation to confirm proper stock levels and maintain inventory control

•Coordinate the handling of freight, the movement of equipment, and necessary minor repairs.

The Contents in this E-Material has been taken from the text and reference book as given in the syllabus.