Certified Purchase Manager
Sample Material

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1. MATERIALS MANAGEMENT

Materials Management is referred to as the practice through which the required good and services are supplied to an organization to fulfill its objectives of purchasing, storing and flow of materials. The process is primarily concerned with the planning, procurement, storage and provision of right material in right quantity, of right quality and at right time in order to organise and program the production activity through proper integration in an industrial enterprise. It is indeed the daily activity in many industries, engaged in buying materials, transporting them to the plant, changing the materials into parts, assembling them into finished products, selling and transporting the product to the consumer. An effective materials management facilitates the implementation of these activities that are further dependent upon various materials to be managed, their inventory control, and for movement and supply at different locations.

About two decades ago, there was very low competitive markets related to selling consumer items manufactured by various industrial undertakings, neither was the availability of raw materials to manufacture the finished products was ever scarce. And thus, materials management was never as critical then as it is today and was never given a special recognition in the organizations. Nevertheless, today things have changed drastically; materials management has taken an important seat in every industrial setting, for production streamlining. It is imperative to arrange for all types of materials before initiating the production activity that would be required for production and further supply at different production centers.

Broadly, planning, purchasing, inventory planning and control, storage, materials supply, handling and transportation are major elements of materials management, of which planning, purchasing and scheduling are three key functions of materials management – all centered upon enhanced productivity. Besides, materials management also helps in keeping the cost of production to the minimum, streamlines production and increases profitability. In addition to managing the material cost and its supply, the process also assists in its proper utility, movement, storage, handling and distribution. The planning stage encompasses market research and forecasting of product sales and purchase of materials required for manufacturing the product. Routine-based activities include purchase of material, its procurement, transportation, storage, inventory control, quality control and inspection of materials and products supplied at different production centers prior to production activity. The materials management department is responsible for purchasing materials, handling, packaging, warehouse planning, inventory control, bookkeeping, disposal of surplus and scraps, protection and safety of finished products, stores management, selection of marketing personnel and their training and placement. Therefore, it is very critical for a materials management department to exist in an organization to facilitate production management activities. Materials management complements marketing, sales promotion and quality, quantity and cost control activities in an organization.

1.1. Objectives of Materials Management

The objectives of materials management can be classified into two categories, viz. primary objectives and secondary objectives. Primary objectives are composed of effective materials planning, purchasing, procuring / receiving, storage and inventory control, supply and distribution of materials, quality control, solid customer and supplier relationship, and enhanced departmental competence. On the other hand, secondary objectives are composed of efficient production scheduling, decision-making, materials specification and standardization, product designing and

development, demand forecasting, material quantity assessment, quality assurance of purchased materials, material handling, use of value analysis and value engineering, capacity build of workers in materials management, and smooth movement of materials. In order to accomplish these objectives, it is important to maintain harmonious relationship and coordination amongst all employees of materials management department with each other, and with those of other departments in the organization to cater to all production centers.

Other basic yet important objectives of management in every organization include:

- ✓ Increase sales by way of sales promotion activities
- ✓ Maximize profits through economies of scale
- ✓ Improvise customer services
- ✓ Globalize the product sales
- ✓ Adapt to the advanced technology
- ✓ Maintain good employer-employee relationship
- ✓ Arrange for alternate material options
- ✓ Reduce manufacturing and other related costs
- ✓ Introduce a corporate social responsibility

The objectives of materials management should synchronize with the basic objectives of management in order to meet the objectives of the organization.

1.2. Functions of Materials Management

The functions of materials management have been classified into two categories as well, namely, primary functions and secondary questions. These functions assist in the accomplishment of the aforesaid basic, and primary and secondary objectives of materials management.

Primary Functions

The primary functions of the materials management are required to meet the primary objectives:

Material Requirements Planning (MRP)

The MRP takes the end product requirements from the master production schedule {that generates the amounts and dates of specific items required for each order} and breaks them down into their component parts and subassemblies to create a materials plan. This plan indicates the schedule when production and purchase orders must be placed against each part and subassembly such that the products can be completed on schedule. A majority of MRP systems also assign production capacity to each order, the process termed as **capacity requirement planning**. Just in Time (or JIT) is another technique which is being widely used which practically does not require inventory. However, in a manufacturing organization, it is not possible to have no inventory or stock of materials or any such record for production purposes. The MRP technique is used to plan the materials from raw materials, finished products, subassemblies, assemblies and components according to Bill of Materials (BOM) to procure them to complement a master production schedule (MPS). The MRP is used by every company on computers that uses an MPS for product manufacturing requiring assemblies, materials and components to manufacture the final products. The BOM explodes the MPS and specifies the requirements of low-level assemblies, components, raw materials and finished parts. The orders are planned to meet these requirements.

Purchasing

Every organization strategizes to economize its procurement of raw materials from its suppliers and their production. As about 50-60% of sales turnover is primarily spent on the purchase of materials from the suppliers, the revenues earned on the sales largely depends upon how economic has been the purchase and use of the raw materials in the concerned organization. Secondly, the profitability also depends on the efficiency by which the purchasing and procurement of raw materials has been made and their availability, for sure. Nevertheless, for the purchasing function to be effective, the first and foremost requirement is to get the material requisition ready through proper authority to begin its purchase. The next step is to finalize on the right vendor with whom you can benefit from making the purchase today and tomorrow. Don't rush in placing the order. Before placing the order, make sure you have checked the quality of materials and that the cheap price does not compromise with the quality of the material. Materials should be purchase in both right quantity and right quality at the right time and at the right cost. Set a proper purchase policy and procedure.

Inventory Arrangement and Control

In the cosmopolitan world of today, the inventory arrangement would mean the purchase of materials to be stored before entering the production stage or sold out, such that the stock cost is zero. There are three kinds of inventories: a) raw materials; b) purchased goods; and c) finished components. Their inventory control is the responsibility of the materials management department, production department and the sales department. It is always important to ensure that inventory at different levels is maintained, the raw materials are available at each level, and that there is proper flow of materials from one production facility to another at all levels in a manufacturing firm. The inventory of parts and materials is therefore very important for the delivery is made to the concerned production centers. This includes inventory arrangement and control in the stores department. At times, when the supplier is unable to make the supply of desired quantities of materials available at right time, it is advisable that certain types of inventories are maintained and stored to ensure the continuity in production and the assembly line. Before its supply to the consumers, the final products are also first stocked as inventory to cater to the irregular demand and stabilize the supplies in the market. Different inventory models have been developed for different materials to cut down on expenditure on the purchase, supply, inventory control and production control to evaluate and optimize the associated costs in placing order and stocking materials for production.

Continual and Effective Flow and Supply of Materials

The required materials by all production centers and other departments should be ensured for its continuity in flow and supply by the materials management department. Many a times, low or zero inventories lead to stock-outs and halts in production. Improper or lack of materials handling tools can also lead to hurdles in material supplies. Alternative options or emergency supply systems can be deployed to ensure continuity in production lines. Fluctuations in both demand and production capacity are the critical factors. To keep pace with changing demands and perceptions of consumers, the management needs to maintain continuity in production and control the flow of materials supply and distribution at different production facilities and other related departments in an organization.

Material Quality Control

The quality of the finished products manufactured will depend upon the quality of raw materials used to manufacture those products. Therefore, the purchase of right quality of materials is indeed very important. The quality of materials can be measured through proper inspection, specifications, quality control, simplification and standardization. The components and parts can be assured for reliability by their size and dimensions within tolerance limits. The market is truly under the buyer's control, determined by the consumer's tastes and preferences. Material quality control should be aimed at producing a good which is not only of higher quality but also available at low cost. The product can be well specified through its dimensional accuracy, quality standards, dependability, durability, reliability, aesthetic properties and high performance. All these elements help in reducing the production cost. High quality can only be assured if the input materials used are of high quality. The reliability is dependent upon the performance of the product, which again depends upon its quality. The product performance can be checked both by quality inspection as well as accuracy. The selection of suppliers as well as the relationship between sellers and buyers can be determined by the material quality. Further, the size, specifications and the quality of materials should also be given due weightage to maintain the materials quality control. Tests required for quality assurance should be specified and conducted as per the specified standards.

System Efficiency

This function ascertains the efficiency of the system being used. If the system used for materials management is inept or faulty, the above objectives cannot be met, irrespective of the procedure adopted. For things to be maintained in an effective manner as planned for managing materials, an effective control ought to be there for every single process in the department. The Management Information System (MIS) and a feedback control mechanism should be adopted at every stage to organise the management and employees' performance and achieve best results.

Secondary Functions

The secondary objectives can only be fulfilled through the following key secondary functions of the materials management:

Standardization and Generalization

The design and the technical department of an organization, which comes after the production department process, determine the standards and specifications of different types of materials. The term 'standards' encompass the alterations in sizes and variety, the quality and the exchangeability of components and products. Standardization and generalization (or simplification) ensures proper utilization of materials and diminishes wastages. Standard materials can also be availed at economic costs. It also aids the purchasing department in selecting the materials and the vendors from whom they need to be purchased. If there is lesser variety of materials to be bought and stored, it saves on both the kinds of inventories as well as the costs of transporting those inventories to the stores. Manufacturing a standard product ensures overall cost of production.

Product Design and Development

The product sales can be boosted with its range and functionality. With the help of the advanced technology such as Computer Aided Design (CAD), the product can be designed different with a variety of options and yet at a fast pace. Another technology development in manufacturing is the Computer Aided Manufacturing (CAM) that can bring both a variety as well as flexibility to a

product. The materials management department shall then perform as per the use of these ranges of materials and produce variety of components and hence, ensure the delivery of such materials.

Manufacturing and Purchase Decisions

The manufacturing and purchase decisions are a part of the management's policy decisions. The organization's capacity and other facilities developed to produce a range of items should be the prime objective and is the most important planning activity of every organization. However, when an organization grows rapidly, its sales also increases at the same pace and this is when it comes critically important to take a decision on whether the organization must buy the parts or expand its facilities to keep pace with the rising demand and sales. This is also a key decision for the materials management department and aides in the selection of vendors such that the items can be purchased at reduced prices. The manufacturing and buying decisions can be largely influenced by material assessment, its availability, procurement, alternate material selection and inventory control functions, and are taken on the basis of the cost economics and cost-benefit analysis developed by the organization by use of existing and future production capacity of skills, labour and available machines in the factory.

Material Coding and Classification

One of the important functions of materials management, the material coding and classification provides support to the production and purchasing department of an organization. The materials are classified through a simple yet standard method, such as ABC Analysis, to manufacture the product or sell various goods. This method is used by many organizations for the purposes of classifying and storing materials, which are identified by their codes and nomenclatures. The coding methods should be used by every firm to keep a check on the range of materials, their quantities and costs.

Estimation and Planning

The MRP can be implemented through accurate estimates of sales and demand for products in the industry. Market fluctuations should be given due consideration to make any production control. The materials management department can make use of one of the methods of forecasting that gives productive results to the organization. Predicting the future demand of sales helps in the planning of materials supply. Use of analytical tools for logical estimations and planning of procurement of different materials for production. Any fluctuations in demand can also lead to uncertainties in supply as well, which can only be addressed by maintenance of proper quantity of inventory of materials in short supply at the right time. The materials manager need to make use of different techniques in order to forecast and plan the procurement, purchase, manage and supply the transportation and storage of materials to effectuate the supply chain management at every production centre, in order to adapt to the changes in quantity and schedule of quantity and adhere to the demand fluctuations of products manufactured by the organization.

Thus, we see that the following elements should be carefully studied and analyzed by the materials management department in order to accomplish the objectives and functions of materials management:

- ✓ Organization of materials management
- ✓ Material Requirements Planning (MRP)
- ✓ Capacity requirement planning

- ✓ Bill of Materials (BOM)
- ✓ Master Production Schedule (MPS)
- ✓ Just In Time (JIT)
- ✓ Management Information System (MIS)
- ✓ Estimating and purchasing
- ✓ Inventory control
- ✓ Storing, and warehouse planning and control
- ✓ Value assessment
- ✓ Material handling
- ✓ Disposal of surplus or excess stock, and scrap
- ✓ Material cost reduction and control
- ✓ Departmental coordination
- ✓ Ancillary industrial development

1.3. Organization of Materials Management

Of the 7 prime resources needed to run an organization, including management, materials, methods, manpower, machines, money and matrix (facilities), the materials are the major resource to be managed effectively. The organization of materials management is aimed at planning the materials requirements for the production of goods and services. The organization structure should be such that the materials can be managed efficiently and its flow, storage and use can be controlled effectively. Materials management organization ensures that the materials are used economically and wisely. The finished products should be manufactures using the existing materials purchased at economic costs and be brought under a single organizational section, with equal sharing of responsibilities of their flow, maintenance, storage, utility, quality and cost of materials. Materials management is not just limited to organizing materials, but also managing the inventory and purchase activity, assessing the value, conservation and protection of inventories in hand and in process.

The organization of materials management ensures efficient integration of activities related to materials and the regulation of their use as per the production requirements to maintain stability in the department. There should be harmonious structural growth and authority within the organization's hierarchical system and integrative decision-making. This helps in achieving the goals of the organization by way of proper information supply system.

1.4. Need, Scope and Functions of Integrated Material Management

Considering the primary and secondary functions of materials management, the materials management coordinates with different departments of a manufacturing firm. The cost of manufacturing is a major investment in materials in any manufacturing firm, going up to 55-65% of the total sales value. Soon after the materials are purchased by the organization and brought into the production centers, their value begins to increase in the form of costs associated with materials order, transferring them to inventory, and their maintenance and handling. To achieve economies of scale in costs related to materials management, the organization needs to implement a clear-cut method of planning the quantity of materials to be ordered and stored as inventory and work-in-process inventory. Similarly, to bring reduction in the costs of materials purchase, the manufacturing firm should adopt effective and dynamic techniques of materials management to adapt to the frequent fluctuations in demand and production.

The term 'integrated material management' refers to the management of resources in an integrative manner to make way for national economic development, through efficient utilization of MIS, advanced technologies and innovative, economic materials for manufacturing. The management needs to develop a comprehensive materials management system to establish a pathway for the most effective use of the resources through new technological advancements, methods and concepts. The major resources are the manpower, materials and money, and hence, the critical importance of materials management. Out of these three resources, materials should be managed through proper integration to achieve the following functions:

- ✓ Decide on the purchase of materials
- ✓ Ensure the centralization of power
- ✓ Coordinate all functions of the departments
- ✓ Ensure quick and accurate decision-making
- ✓ Administer data analysis by Electronic Data Processing (EDP) and use of computing technology
- ✓ Emphasize on the opportunity for growth

Self Assessment Questions

Q.1 Which of these is/are key elements of materials management?

A. Inventory Planning & Control
B. Materials supply & handling
C. Purchasing Materials
D. All of the above

Q.2 Which is the primary function of materials management?

A. Material Codification
B. Material Requirements Planning
C. Standardization
D. Product Design & Development

Q.3 The MRP is used by every company on computers that.....

A. Uses an MPS for product manufacturing.
B. Specifies the requirements of low-level assemblies and other materials.
C. Maintains good employer-employee relationship.
D. Increases sales by way of sales promotion activities.

Q.4 Integrated material management involves resource management for:

A. National economic development
B. MIS effective utilization
C. Economic manufacturing
D. All of the above

Q.5 A feedback control mechanism should be adopted at which stage for better performance?

A. First stage
B. Second stage
C. Every stage
D. Last stage

Answers : 1-D, 2-B,3-A,4-D,5-C