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**E - Content**

**Department of BBA/BBA(CA)**

**Subject-Production & Operation Management (402)-2021**

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**Unit 1 Introduction**

**Contents:-**

- **Introduction to production and Operation Management-**  
Meaning, Nature and Scope, Objectives of Production Management, Functions of Production Management,
- Variety of business, Methods of manufacturing, Plant layout, Service layout,
- Safety considerations and environmental aspects.

**✚ Production Management (Meaning):**

- Production management is the process of planning, organizing, directing and controlling the activities of the production function.
- Production management is concerned with co-ordination of men, money, materials, machines and methods of production goods.
- In a narrower sense, production management means planning, scheduling and controlling the flow of materials through a plant.
- In Production management, the process of producing products from raw material is managed.
- Production management involves the job of co-ordinating and controlling the activities required to make a product, typically involving effective control of scheduling, cost, performance, quality and waste requirements.

**✚ Definitions of Production Management:**

- (a) Edwood Buffa : “Production management deals with decision-making related to production processes so that the resulting goods and services are produced according to specifications in the amounts and by the schedule demanded at minimum cost.”
- (b) H. A. Harding : “Production management is concerned with those processes which convert the inputs into outputs. The inputs are various resources like raw materials,

men, machines, methods etc. and the outputs are goods and services.”

## **Nature of Production Management:**

### **(a) Concerned with Planning, Organising, Directing and Controlling:**

- Production Management is concerned with planning, organizing, directing and controlling of production systems so as to produce goods of desired quality at minimum cost and at the right time.
- It involves decision-making concerning production processes in order to produce goods or services according to specifications of quality at minimum cost and as per the demand schedule.

### **(b) Co-ordination of Different Elements of the Production Function:**

- Production management co-ordinates the different elements of the production function.
- Production management takes the decision as to the selection and design of production process, in order to produce the desired goods at minimum cost and at the right time.
- Production management comprises all the activities right from design and layout of production facilities till finishing the product for dispatch to the warehouse or customers.

### **(c) Looks after Every Step of Production Process:**

- Production management looks after each and every step in the process of production. It involves the establishment of standards, the choice of equipment and tools, the control of cost and quality and the evaluation of performance.
- It establishes the harmonious relationship between the product, the plant, the conversion process and the people so as to achieve pre-determined targets.

## **Scope of Production Management:**

### **(a) Selection of Site and Layout:**

- It is a basic consideration. Plant should be located at such a place where production and distribution costs are minimum. After locating the site, the machines, equipment and other facilities have to be laid out.
- A good plant layout facilitates the flow of materials at the desired speed.
- Plant layout deals with the arrangement of machines.

### **(b) Production Planning and Control:**

- It deals with the determination and regulation of production processes and includes the functions like scheduling, dispatching, following etc.
- It also includes quality control.

**(c) Execution of Plans:**

- Production management directs the activities of production department with a view to execute the production plans, policies and decisions.

**(d) Provision of Plant Services:**

- Plant services are the ancillary arrangements which contribute indirectly to the production function. The plant services should be provided in sufficient quantity and at proper places so that the production can be carried on efficiently.

**(e) Method of Supply:**

- The standard methods should be devised for performing the repetitive functions efficiently. The unnecessary movements should be eliminated and suitable positioning of the workers for different processes should be developed.
- Such methods should be devised with help of time and motion study.

**(f) Inventory Control:**

- It deals with the control over raw materials, work in progress, finished products, stores, supplies, tools etc. The management of these items is closely related to production function and so is included in production management.
- The raw materials supplies etc. should be purchased at right time, right quality, in right quantity from right source and at right price. The store-keeping is also an important aspect of inventory control.

**(g) Quality Control:**

- The long-run success of the business largely depends on its ability to maintain the quality standard as decided by the management and accepted by customers.
- The quality standards are prescribed in terms of specifications, tastes, size, colour, shape etc.
- The quality control is maintained by testing the actual production an to ascertain whether it conforms to the set standards. Various statistical techniques are used for the effective quality control.

## Objectives of Production Management:

- (a) **Effectiveness Objective:** Producing the right kind of goods and services that satisfy customers' needs.
- (b) **Efficiency Objective:** Maximizing output of goods and services with minimum resource inputs
- (c) **Quality Objective:** Ensuring that goods and services produced conform to pre-set quality specifications.
- (d) **Lead Time Objective:** Minimizing throughput-time- the time that elapses in the conversion process- by reducing delays, waiting time and idle time.
- (e) **Capacity Utilization Objective:** Maximizing utilization of manpower, machines, etc.
- (f) **Cost Objective:** Minimizing cost of producing goods or rendering a service.

## Functions of Production Management:

The various important functions to be performed by production management are as follows:

### (a) Production Planning:

- Production planning is the main function of production management. It facilitates the supply of goods at a proper time to execute the order received by the company. It also helps to control over the production process.
- The function of production planning involves the decision regarding when, what, how and why to produce goods.
- Production management forecasts the sales or demand for the products of the company and make the necessary arrangements to meet the demand at the proper time. Thus, production Management tries to maintain a proper balance between demand and supply.

### (b) Production Control:

- After planning, the next function of production management is to control the various factors of production in an efficient manner so that the goods are produced at the lowest possible cost and according to the requirements and satisfaction of the customers and are supplied to them on delivery dates in the ordered quantity.
- This function calls for scheduling the required work, providing necessary instructions to production department and checking the progress of production regularly.

**(c) Quality Control:**

- The production management is also responsible for maintaining the specific quality of the production.
- It should take such steps to produce the goods according to specifications and to minimize the amount of defective work. The defective work (production) should be sorted out and sold quickly.

**(d) Method Analysis:**

- There may be so many alternatives for producing a product. As all the alternatives do not work equally, some may be more economical than others.
- The production management study these various alternatives and analyses them in right perspective in order to choose the best one. This activity is called as 'Method Analysis'.
- 'Method analysis' improves the productivity of the concern and minimizes the cost of production.

**(e) Inventory Control:**

- Production management controls over the cost of production by reducing the waste of man and material, so as to make the best use of material.
- For this purpose, it has to determine the economic lot size, economic order quantity, reorder levels etc., so that the problem of over and under stocking of materials may not arise. This involves the physical and financial control over materials.
- It also includes the procurement of raw materials.

**(f) Plant Layout and Material Handling:**

- Plant layout is an arrangement of machines and equipment in such a manner so as to maintain the regular flow of production.
- An efficient plant layout aims at efficient material handling which in turn reduces wastage of men, materials and reduces the cost of production.
- The production management has to ensure that efficient material handling system and proper plant layout are designed and developed.

**(g) Work Measurement:**

- One of the main function of production management is to control and reduce the labour cost per unit.
- At different levels of production, the labour cost per unit differs. Here, work measurement is necessary. Work measurement means the level of performance of work by a worker. If any worker works below the fixed level, by work measurement techniques, his performance must be improved through positive or negative incentives.

- Time and motion studies are the work measurement techniques.

#### **h) Other Functions:**

- Apart from the above main function, the production management has to perform certain other functions such as Cost Control, Standardization, Storage, Price Analysis, Engineering Economics etc.

#### **Variety of Business:-**

- A business entity is an organization that uses economic resources to provide goods or services to customers in exchange for money or other goods and services.
- Business organizations come in different types and in different forms of ownership.

### **3 Types of Business**

There are three major types of businesses:

#### **1. Service Business**

A service type of business provides intangible products (*products with no physical form*). Service type firms offer professional skills, expertise, advice, and other similar products. Examples of service businesses are: salons, repair shops, schools, banks, accounting firms, and law firms.

#### **2. Merchandising Business**

This type of business buys products at wholesale price and sells the same at retail price. They are known as "buy and sell" businesses. They make profit by selling the products at prices higher than their purchase costs.

A merchandising business sells a product without changing its form. Examples are: grocery stores, convenience stores, distributors, and other resellers.

#### **3. Manufacturing Business**

Unlike a merchandising business, a manufacturing business buys products with the intention of using them as materials in making a new product. Thus, there is a transformation of the products purchased. A manufacturing business combines *raw materials, labor, and overhead costs* in its production process. The manufactured goods will then be sold to customers.

#### **4. Hybrid Business**

Hybrid businesses are companies that may be classified in more than one type of business. A restaurant, for example, combines ingredients in making a fine meal (manufacturing), sells a cold bottle of wine (merchandising), and fills customer orders (service).

## **Plant layout:-**

Plant layout means the disposition of the various facilities (equipment, material, manpower etc.) and services of the plant within the area of site located.

### **Objectives**

- Material handling and transportation is minimized and effectively controlled.
- Bottlenecks and points of congestions are eliminated (by line balancing) so that the raw-material and semi-finished goods move fast from one workstation to other.
- Workstations are designed suitable and properly.
- Suitable spaces are allocated to production centers and service centers.
- The movements made by the workers minimized.
- Layout can be classified into the following four categories:-
  - a. process layout**
  - b. product layout**
  - c. Group layout (combination layout)**
  - d. Fixed position layout**

#### **a. Process Layout:**

- It is also known as functional layout.
- Here similar machines and services located together
- Ex. All the lathe machines will be at one place and all milling machines at another place and so on.
- This type of layout generally employed for industries engaged in job-shop production and non-repetitive kind of production
- When there variety of products manufactured at low volume we prefer this type of layout.
- Ex. furniture manufacturer company, restaurant etc .

#### **b. Product Layout**

- It is also known as line (type) layout.
- The flow of product will smooth and logical.
- When the machines and auxiliary services are located according to the processing sequence we prefer this layout
- It implies that various operations raw material are performed in a sequence and the machines are placed along the product flow line.



- The product layout is selected when the volume of production of a product is high such that separate production line to manufacture it can be justified.
- Assembly line production or mass production prefer this type layout. Ex. Assembly of television sets assembly of computer key-board etc.

**c. Group layout:**

- It is the combination of both process and product layout.
- In this type of layout a set of machinery or equipment is grouped together in a section so that each group of machines or equipment is used to perform similar operations to produce a family of components. These machines grouped in to cells.
- It minimizes the sum of cost of transport and the cost of equipment.

**d. Fixed position layout**

- It is also called static product layout in which the physical characteristics of the product dictate as to which type of machine and men are brought to the product.
- This type layout is inherent in ship building, aircraft manufacture and big pressure vessels fabrication
- In other type layout the product moves past stationary production equipment where as in this case men and equipment are moved to the material at one place and the product is completed at the place where the material lies.

**+ Service Layout:-**

The major factors considered for service providers, is an impact of location on sales and customer satisfaction. Customers usually look about how close a service facility is, particularly if the process requires considerable customer contact. Hence, service facility layouts should provide for easy entrance to these facilities from the freeways. Well-organized packing areas, easily accessible facilities, well designed walkways and parking areas are some of the requirements of service facility layout.

## Service facility Design and Layout

Service facility layout will be designed based on degree of customer contact and the service needed by a customer. These service layouts follow conventional layouts as required. For example, for car service station, product layout is adopted, where the activities for servicing a car follows a sequence of operation irrespective of the type of car. Hospital service is the best example for adaptation of process layout. Here, the service required for a customer will follow an independent path. The layout of car servicing and hospital is shown in Figs.

