SRIMAAN COACHING CENTRE-TRICHY-TRB-ASSISTANT PROFESSOR IN GOVT.ARTS & SCIENCE COLLEGES –BUSINESS ADMINISTRATION – UNIT-7 STUDY MATERIAL -TO CONTACT:8072230063.

2024-25
SRIMAAN

SRIMAAN

TRB ASSISTANT PROFESSOR

Assistant Professor in Govt. Arts and Science Colleges and
Govt. Colleges of Education in the Tamil Nadu Collegiate Educational Service

BUSINESS ADMINISTRATION

UNIT-7- PRODUCTION AND OPERATIONS MANAGEMENT

TRB-ASST.PROF. STUDY MATERIALS

TAMIL/ ENGLISH / MATHS/PHYSICS /CHEMISTRY /COMMERCE /BIO-CHEMISTRY/ BOTANY / ZOOLOGY/ ECONOMICS /HISTORY / GEOGRAPHY/COMPUTER SCIENCE & APPLICATION / IT/ EEE / ECE/ GEOLOGY/ BUSINESS ADMINISTRATION /HRD / MICRO-BIOLOGY / ENVIRONMENTAL SCIENCE / EDUCATION AVAILABLE.

PG-TRB STUDY MATERIALS:–TAMIL/ENGLISH/ MATHEMATICS/PHYSICS CHEMISTRY/COMMERCE (T/M & E/M)/BOTANY (T/M & E/M)/ ZOOLOGY HISTORY (T/E)/ECONOMICS (T/E)/ GEOGRAPHY /BIO-CHEMISTRY PGTRB-COMPUTER INSTRUCTOR GRADE-I -TO CONTACT -8072230063.

SRIMAAN COACHING CENTRE-TRICHY-TRB-ASSISTANT PROFESSOR IN GOVT.ARTS & SCIENCE COLLEGES –BUSINESS ADMINISTRATION – UNIT-7 STUDY MATERIAL -TO CONTACT:8072230063.

2024-25
SRIMAAN

TRB-POLYTECHNIC LECTURER MATERIALS:

MATHEMATICS / ENGLISH /PHYSICS / CHEMISTRY/COMPUTER SCIENCE/ IT / EEE /ECE /EIE/ICE/MECHANICAL/CIVIL/MOP AVAILABLE.

UG-TRB & SGT: ALL SUBJECT STUDY MATERIALS AVAILABLE.

SCERT/DIET/GTTI STUDY MATERIAL AVAILABLE.

DEO & BEO (T/M & E/M) STUDY MATERIALS AVAILABLE.

TRB-ASST.PROFESSOR STUDY MATERIAL AVAILABLE.

PG-TRB: COMPUTER INSTRUCTOR GRADE-1 –FULL STUDY MATERIAL WITH QUESTION BANK AVAILABLE

TNPSC-ASSISTANT DIRECTOR OF CO-OPERATIVE AUDIT STUDY MATERIAL AVAILABLE.

TNEB-(ASSESSOR/AE/JA) MATERIALS WITH QUESTION BANK AVAILABLE

UG-TRB/PG-TRB /TRB-POLYTECHNIC/ DEO & BEO MATERIALS ARE SENDING THROUGH COURIER.

TO CONTACT

8072230063

PG-TRB STUDY MATERIALS:–TAMIL/ENGLISH/ MATHEMATICS/PHYSICS CHEMISTRY/COMMERCE (T/M & E/M)/BOTANY (T/M & E/M)/ ZOOLOGY HISTORY (T/E)/ECONOMICS (T/E)/ GEOGRAPHY /BIO-CHEMISTRY PGTRB-COMPUTER INSTRUCTOR GRADE-I -TO CONTACT -8072230063.

SRIMAAN COACHING CENTRE-TRICHY.

TO CONTACT:8072230063.

TRB-ASSISTANT PROFESSOR

BUSINESS ADMINISTRATION

UNIT-7: Production and Operations Management

INTRODUCTION:

Production and Operation Management deals with the creation of goods and services through the application of the business concept. They are also vital in both service and manufacturing firms. It has a primary objective, which is to employ the company's resources to produce goods and services fit for the market. The goal of the production function is to add value. Be it product or services; the idea is to create something that will strengthen the relationship between the organization and customers. But this cannot only be made possible by the production department. The marketing people also have a huge role to play in this. They are the ones that will distribute the product to potential buyers and should have the capacity to inform the production department of what customers or consumers would prefer.

Production management is relevant to the firm's success in many ways. Used efficiently, it can lead to numerous accomplishments which will take the business to a great height. Following are the importance of production management:

- **Helps the Firm to Accomplish its Objectives**
- **Boost Business Reputation and Goodwill**
- **Reduces the Cost of Production**

The goal of customer satisfaction is an important part of effective production and operations. In the past, the manufacturing function in most companies was inwardly focused. Manufacturing had little contact with customers and didn't always understand their needs and desires. In the 1980s, many U.S. industries, such as automotive, steel, and electronics, lost customers to foreign competitors because their production systems could not provide the quality customers demanded. As a result, today most American companies, both large and small, consider a focus on quality to be a central component of effective operations management.

Meaning of "Production"

Production implies the creation of goods and services to satisfy human needs. It involves conversion of inputs (resources) into outputs (products). It is a process by which, raw materials and other inputs are converted into finished products. Earlier the word "manufacturing" was used synonymously with the word "production", but nowadays, we use the term "manufacturing" to refer to the process of producing only tangible goods whereas the word "production" (or operation) is used to refer to the process of creating both goods (which are tangibles) as well as services (which are intangibles). Any process which involves the conversion of raw materials and bought-out components into finished products for sale is known as production. Such conversion of inputs adds to the value or utility of the products produced by the conversion or transformation process. The utility or added value is the difference between the value of outputs and the value of inputs. The value addition to inputs is brought about by alteration, transportation, storage or preservation and quality assurance.

Meaning of "Operations" : The term **"operations"** refers to a function or system that transforms inputs into outputs of greater value.

Operations are often defined as a transformation or conversion process wherein inputs such as materials, machines, labour and capital are transformed into outputs (goods and services). In a productive system, if the outputs are strictly tangible goods, such a system is referred to as a "production system" and the transformation process is referred to as "production". Nowadays, the service system in which the output is predominantly a service or even a pure service, is also treated as a productive system and often referred to as an "operating system" instead of a **"production system".**

Production/Operations as a System

This view is also known as "systems concept of production". A system is defined as the collection of interrelated entities. The systems approach views any organisation or entity as an arrangement of interrelated parts that interact in ways that can be specified and to some extent predicted. Production is viewed as a system which converts a set of inputs into a set of desired outputs. A production system has the following elements or parts :

(i) Inputs,

(ii) Conversion process or transformation process, **(iii) Outputs** **(iv) Transportation subsystem,**

(v) Communication subsystem and **(vi) Control or decision making subsystem.**

Production/Operations as a Conversion/Transformation Process

The conversion or transformation sub-system is the core of a production system because it consists of processes or activities wherein workers, materials, machines and equipment are used to convert inputs into outputs. The conversion process may include manufacturing processes such as cutting, drilling, machining, welding, painting, etc., and other processes such as packing, selling, etc. Any conversion process consists of several small activities referred to as "operations" which are some steps in the overall process of producing a product or service that leads to the final output.

Importance of Production Function

The production is the core function of any business organisation. Production function creates goods and services and organisations exist primarily to create goods and/or to provide services. Without production function, there would be no need for any other function such as marketing, finance or human resource function. Also, more than 50 per cent of employees in a business organisation have jobs in the area of production. Moreover the production function is responsible for a major portion of assets in most organisations. Consumption of goods and services is an integral part of any society and production function facilitates creation of goods and services for the benefit of people in the society.

Objectives of Production/Operations Management

Some of the important objectives of production/operations management are :

(i) Maximum customer satisfaction through quality, reliability, cost and delivery time.

(ii) Minimum scrap/rework resulting in better product quality.

(iii) Minimum possible inventory levels (i.e.,optimum inventory levels).

(iv) Maximum utilisation of all kinds of resources needed.

(v) Minimum cash outflow.

(vi) Maximum employee satisfaction.
(vii) Maximum possible production (i.e., outputs).
(viii) Higher operating efficiency.
(ix) Minimum production cycle time.
(x) Maximum possible profit or return on investment.
(xi) Concern for protection of environment.
(xii) Maximum possible productivity.

Responsibilities of Production/Operations Managers

The following are the major responsibilities of production/operations managers :
(i) Meeting requirements of quality demanded by customers.
(ii) Establishing realistic delivery or completion dates.
(iii) Producing the required volume of products to meet the demand.
(iv) Selection and application of most economic methods or processes.
(v) Controlling the cost of inputs and conversion process and thereby keeping the cost of outputs within the desired limits.

DECISION MAKING IN PRODUCTION/OPERATIONS MANAGEMENT

The production/operations managers manage all activities of the production/operations systems which convert inputs into the desired outputs (goods and services). The production/operations managers have the ultimate responsibility for the creation of goods or provision of services. Even though the kind of jobs that production/operations managers oversee vary from organisation to organisation, (because of the different products or services involved) their job is essentially managerial. They must co-ordinate the use of resources through the managerial process of planning, organising, staffing, directing (or influencing) and controlling.

The decisions which production/operations managers make may be classified into three general categories:

(i) Strategic Decisions: Decisions about products, processes and facilities. These decisions are strategically important and have long-term significance for the organisation.
(ii) Operating Decisions: Decisions about planning production to meet demand. These decisions must help to resolve the issues concerned with planning production to meet customers' demands for products and services and to achieve customer satisfaction at reasonable costs.
(iii) Control Decisions: Decisions about controlling operations concerned with day-to-day activities of the workers, quality of products and services, production costs, overhead costs and maintenance of plant and equipment.

PROBLEMS OF PRODUCTION/OPERATIONS MANAGEMENT

The problems involved in production management require two major types of decisions relating to :
(i) Design of the production system and
(ii) Operation and control of the production system.

Decisions related to the design of production system are longrun decisions whereas, decisions related to operations and control of the production system are short-run decisions.

The problems involve the relative balance of the emphasis on such factors as cost, service and reliability of both functional and time performance, which depends on the basic purposes of the total enterprise and on the general nature of goods and services produced. In general, manufacturing organisations emphasise more on cost, consistent with quality and delivery commitments whereas, service organisations may emphasise reliability and service, consistent with cost objectives (for example, hospitals).

Long-Run Decisions

Long-run decisions related to the design of the production system are:

(i) Selection and Design of Products: Product selections and designs with productive capability (i.e., producibility of products) are interdependent.

(ii) Selection of Equipment and Processes: Selection of the most economic equipment and processes among the various alternatives considered, the firm's capability to invest in capital assets and its basic approach to production (i.e., job, batch, mass or continuous production) must be considered.

(iii) Production Design of Parts Processed: Production design aims at selection of equipment, processes, and tools for economic production which set limits on the cost of outputs.

(iv) Job Design: It involves basic organisation of work as well as matching workers to their jobs in order to reduce fatigue and improve productivity.

(v) Location of the System: It is a trade-off decision since there is no one best location for a productive system to be located. The balance of cost factors determined by various considerations is critical.

(vi) Facility Layout: This involves decisions related to design capacity, basic modes of production, shifts of working, use of overtime and subcontracting. In addition, operations and equipment must be located in relation to each other such that the overall material handling cost is minimised. Other factors involved are heating, lighting and other utility requirements, the allocation of storage space, washing space and the design of the building to house the layout.

Short-Run Decisions

Short-run decisions related to the operations and control of the system are :

(i) Inventory and Production Control: Decisions made are concerned with allocation of productive capacity consistent with demand and inventory policy. Feasible schedules must be worked out and the load on machines and labour and the flow of production must be controlled.

(ii) Maintenance and Reliability of the System: Decisions must be made regarding the maintenance effort, maintenance policy and practice recognising the fact that machine down time may lead to idling of labour and production stoppage resulting in lost sales.

(iii) Quality Control: Decisions must be made to set permissible levels of risk that bad parts are produced and shipped or the risk that good parts are scrapped due to sampling inspection. Inspection costs must be balanced with the probable losses due to passing defective materials or products. Decisions regarding controlling the quality of on-going processes must be taken.

(iv) Labour Control: Labour is the major cost element in most products and services. Hence, work measurement and wage incentive systems must be developed to control labour costs and to increase labour productivity.

(v) Cost Control and Improvement: Day-to-day decisions which involve the balance of labour, material and overhead costs must be made by production supervisors.

THE SCOPE OF OPERATIONS MANAGEMENT :

Operations management has been gaining increased recognition in recent years because of the following reasons:

(i) The application of operations management concepts in service operations.
(ii) The growing importance of quality.
(iii) The introduction of operation management concepts to other areas such as marketing and human resources and
(iv) The realization that the operations management function can add value to the end product.

FACILITY PLANNING

Facility planning exercise determines how an activity's tangible fixed assets best support achieving the activity's objectives. In developing a layout for a system producing goods or services, we seek the optimum allocation of space to the components of the system.

More specifically we try to determine the best arrangement of facilities and equipment capable of satisfying anticipated demand (quantity, quality and timing) at lowest cost. This is the phase when all the elements of the process are integrated and therefore special care should be taken to create an environment conductive to high productivity and the satisfaction of social and psychological needs of all the people at work. Facility Planning is also known under other names such as Lay out Planning, Plant Layout, Facilities Design, Facilities Planning etc.

Objectives of Facility planning

i) Support organisation's mission through improved material handling_ materials control and good housekeeping.

ii) Effectively utilise people, equipment, space and energy.

iii) Minimise capital investment.

iv) Be flexible and promote ease of maintenance.

v) Provide for employee safety and job satisfaction.

These objectives can be restated as characteristics of good layout.

Stages in New Product development Process: -

-To minimize risk of new product failure, new product development follows a structured process.
- Stages in new product development are:

Idea Generation.
Idea Screening.
Concept Development & Testing.
Marketing Strategy Development.
Business Analysis.
Product Development.
Market Testing.
Commercialization.

Idea Generation:

- New product development process starts with search for ideas.

- Sources of new product ideas could be

Customers:

• Market research could be done with recent customer/lead users (customer who make advance use of product & recognize improvement needs).

• Market research determines product improvement required.

R & D / Employees:

• Employees could be encouraged to give new product ideas & rewarded suitably.

Competition:

• Through study/analysis of competitive products.

Marketing Channel & Their Staff:

• Dealers, distributors, employees of distributors & dealers.

Senior/Top Management:

• Product innovators could be senior management.

Idea Screening:

- Ideas generated need to be screened for action.
- To start with, ideas are sorted into
  Promising ideas.
  Marginal ideas.
  Rejects.
- Promising ideas are evaluated by a committee.
- Surviving promising ideas are screened through a process.

Concept Development & Testing:

- Attractive ideas should be refined into list able product concepts.

Product Ideas:

• Possible product that company may offer to the market.

Product Concept:

• Elaborated version of the idea expressed in meaningful consumer terms.

Product Image:

• Picture that consumer acquire of an actual/potential product.

Marketing Strategy Development:

- After concept testing, for concepts that qualify a preliminary marketing strategy is created to introduce new product into market.
- Marketing strategy may be refined in later stages.

Business Analysis:

- After product concept/marketing strategy is developed, company can evaluate proposal's business attractiveness.

- For this,

Sales.

Cost.

Profits.

• Are projected for 5 years period.

- These are matched with company's objectives. If there is a match, the new product concept moves to product development stage.

Product Development:

- If a product concept passes the business analysis test, it is taken forward to the product development stage.
- So far, the concept exists on paper.
- In product development, concept is provided in detail to R & D to make physical product.
- Stages in product development could be:
  - **o Prototype development.**
  - **o Prototype Lab Testing.**
    - Test for Functionality.
    - Test for Psychological aspects such as color.
    - Test for Looks/Styles.
    - Test for Price Fitment.
  - **o Functional Testing.**
    - Test for Safety/Effectiveness.
  - **o Consumer Testing.**
    - Test samples with consumers in lab.
- Once management is satisfied with new product, functional/psychological performance, product is ready for market.

Market Testing:

- At this stage, new product is ready for:
  - Brand Name.
  - Packaging.
  - Preliminary Marketing Program.
- **Objective of market testing could be:**
  - Test product in actual market setting.
  - Learn about actual market size.
  - Learn about how consumers/dealers handle, use, repurchase new product. Commercialisation:
- After successful market testing, new product moves to commercialisation stage.
- During this stage, production of new product on a commercial basis is rapidly built up.
- New product is formally launched. For this, decision to be taken could be:
  - o When to Launch:
  - o Where to Launch:
  - o To Whom:
  - o How to Launch:

The Phases of Product Design

To design is to formulate a plan for the satisfaction of human need.

A. Recognition of need: The designing process begins with recognition of need and deception to do something about it. Recognition of the need and phrasing the need often constitute a highly creative act, because the need may be only an age of discontents, a feeling of uneasiness, or a sensing that something is not right. For example the need to do something about a food packaging machine may be indicated by noise label, by the variation in package weight, and by slight but perceptible variations in the quality of the packaging or wrap.

B. Definition of the problem: It must include all the specifications for the product that is to be designed. Specifications are the inputs and output quantities, the characteristics and the dimensions, and all the limitations on these quantities. The specification defines the cost, the number to be manufactured, the expected life, the range, and the reliability. Anything, which limits the designer's freedom of choice, is specification. Firms that are constantly evolving new designs make extensive use of computer-assisted design (CAD) techniques during this phase. These approaches enable designers to develop and test a multitude of goods or service configurations that could not otherwise be explored.

C. Synthesis: After the problem is defined and a set of written and implied specification has been obtained, the next step in design is the synthesis of the optimum solution.

D. Analysis and optimization: Synthesis cannot take place without both analysis and optimization, because the product under design must be analyzed to determine whether the performance complies with the specification. The analysis may reveal that the product is not an optimum one. If the design fails either or both of these tests, the synthesis procedure must begin again.

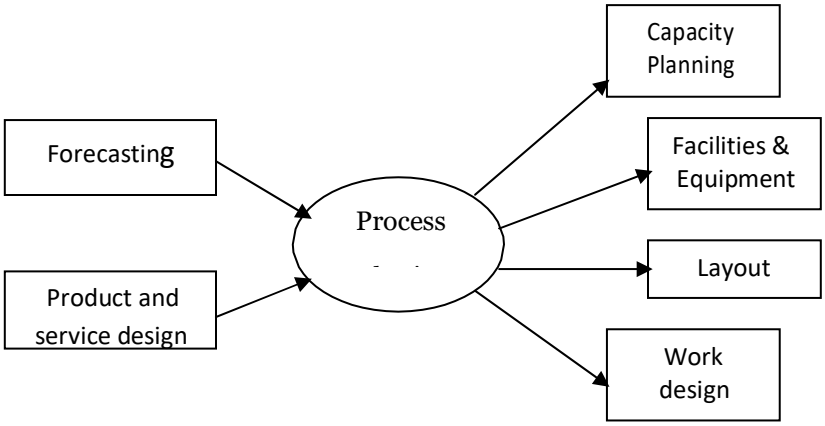
E. Evaluation: It is a significant phase of the total design process. Evaluation is the final proof of a successful design. Here the designer wishes to discover:

- If the design really satisfy the need or needs?
- Will it compete successfully with similar products?
- Is it economical to manufacture and to use?
- Is it easily maintained and adjusted?
- Can a profit be made from its sale and use? etc.

F. Presentation: The designer has also to sale the new idea. The designer should not be afraid of possibilities of not succeeding in a presentation. In fact, occasional failure should be accepted, because failure or criticism seems to accompany every really creative idea. Those willing to risk defeat obtain the greatest gains. In final analysis, the real failure would lie in deciding not to make the presentation at all.

Process Selection

In the manufacturing the product, the process selection refers to the way an organization chooses to produce its goods. Essentially it involves choice of technology and related issues. And it has major implications for capacity planning, layout of facilities, equipment, and design of work systems. Process selection occurs when new products or services are being planned. However it also occurs periodically due to technological changes in equipment.



In the processing system the continuous and intermittent processing have some key differences which affect how these systems are managed. The following sections highlight the key differences between the processing systems.

Continuous and Semi-continuous Processing

High volumes of standardized output are produced by continuous processing systems. The ultimate continuous processing systems produce a simple product such as flour or sugar. Generally, these products are measured on a continuous basis rather than counted as discrete units. Industries that use continuous processing are sometimes referred to as process industries.

Products of process industries include plastics, chemicals, petroleum, grain, and steel. Other examples include liquid and powder detergents, and water treatment. The output of the system is highly standardized. Semi continuous processing produces outputs that allow for some variety; products are highly similar but not identical. Example includes automobiles, television, computers, calculators, cameras and video equipments. This form of processing is often referred to as repetitive manufacturing.

Intermittent Processing

When systems handle a variety of processing requirements, intermittent processing is used. Volume is much lower than in continuous system. Intermittent systems are characterized by general-purpose equipments that can satisfy a variety of processing requirements, semiskilled or skilled workers who operate the equipment, a narrow work span of supervision than for most continuous systems.

One form of intermittent processing occurs when batches, or lots, of similar items are processed in the same manner (e.g., food processing). A canning factory might process a variety of vegetables; one run may be sliced carrots, the next green beans, and the next corn beets. All might need similar process of washing, sorting, slicing, cooking, and packing, but the equipment needs to be cleaned and adjusted between runs.

Another form of intermittent processing is done by a job shop which is designed to handle a great variety of job requirements than batch processing .Lot sizes vary from large to small, even a single unit. What distinguishes the job shop operation from batch processing is that the job requirements often vary considerably from job to job. Examples of intermittent processing are textbook publication, bakeries, health care systems, and educational systems. In some cases the outputs are made for inventory (clothing, automobile tires); in others,

they are destined to meet customer needs (health care) or specifications (special tools, parts, or equipment).

Types of Process Process technologies are broadly of five types according to its unique operating characteristics, problems, and challenge. These five types are Job shop, Batch, Assembly line and Continuous and Project.

i. Job shop: Job shop technology is a process technology suitable for a variety of custom´designed products in small volumes. Job shop technology is appropriate for manufactures of small batches of many different products. It is also considered as intermittent processing systems because small quantities are produced.

ii. Batch: Batch technology is a process technology suitable for a variety of products in varying volumes. Batch technology is a step up from job shop technology in terms of products standardization, but it is not as standardized as assembly line technology. Within the wide range of products in the batch facility, several are demanded repeatedly and in large volumes. These few dominant products differentiate batch facilities from job shops. The system must be flexible for the low-volume/high-variety products, because it is meant for those many jobs which are performed with frequent shifting from one job to another. This system has a high to moderate variety range. Many food items are produced by batch system.

iii. Assembly Line: Assembly line technology is a process technology suitable for a narrow range of standardized products in high volumes. Assembly line (or simply line) technology is for facilities that produce a narrow range standardized products. Laundry appliances are a representative example. Since the product designs are relatively stable, specialized equipment, human skill and management systems can be developed and dedicated to the limited range of products and volumes. Beyond this range, the system is inflexible. Automobiles, for example are produced in Assembly Line system.

iv. Continuous: Continuous process is suitable for producing a continuous flow of products. Chemical plants and oil refineries exemplify users of continuous flow technology. Materials and products are produced in continuous, endless flows rather than in batches or discrete units. The product is highly standardized, as are all of the manufacturing procedures, the sequence of product buildup, materials and equipment. Continuous flow technology affords high-volume, around- the-clock operation with the capital-intensive, specialized automation. It produces large volumes of one highly standardized item. There is no processing variety. Sugar is produced by a continuous processing system.

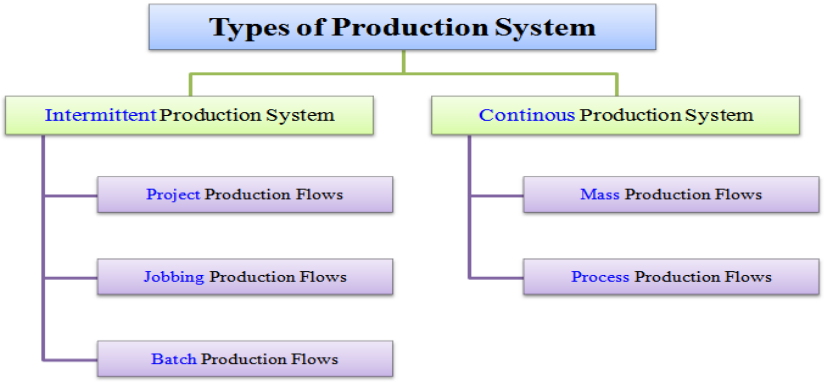
v. Project: Project technology is suitable for producing one-of-a-kind products. Project technology deals with products that are tailored to the unique requirement of each customer. A construction company, with its many kinds and sizes of projects, is an example. Since the products cannot be standardized, the conversion process must be flexible in its equipment capabilities, human skills and procedures. The conversion process features problem solving, teamwork, and coordinated design and production of unique products. It is suitable for handling complex jobs consisting of unique sets of activities that must be completed in a limited time span. Examples include large or unusual construction projects, new product development or promotion, space mission, and disaster relief efforts.

TYPES OF PRODUCTION SYSTEM

* Basic 2 types of production system -

1. Intermittent production system
2. Continuous production

And they are further divided into sub types as –

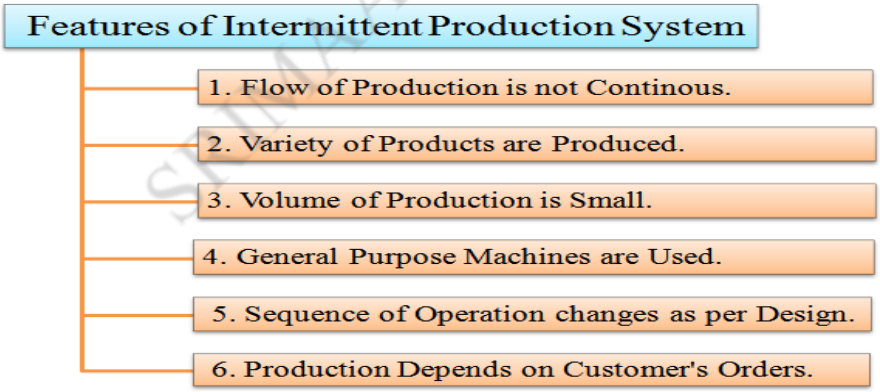


A. INTERMITTENT PRODUCTION SYSTEM: -

- Intermittent means something that starts (initiates) and stops (halts) at irregular (unfixed) intervals (time gaps).
- In the intermittent production system, goods are produced based on customer's orders.
- These goods are produced on a small scale.
- The flow of production is not continuous.
- In this system, large varieties of products are produced. These products are of different sizes.
- The design of these products goes on changing according to the design and size of the product. Therefore, this system is very flexible

➢ **Examples of the intermittent production system:-**

The work of a goldsmith and a tailor's is based exclusively on the frequency of customer orders. Here, ornaments or clothes are not made continuously.



THE TYPES OF INTERMITTENT PRODUCTION SYSTEM -:

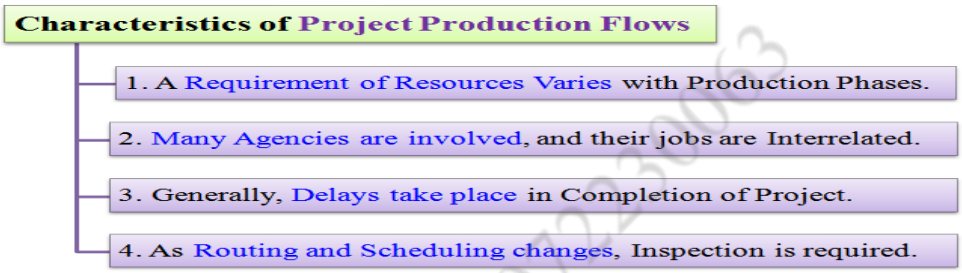
Ai) Project production

ii) Job shop production and

iii) Batch production flows.

Ai) PROJECT PRODUCTION:

- The company accepts a single complex order or contract.
- The order must be completed within a certain period of time and at an estimated cost.
- Consider manufacturing of ships, or flyovers or bridges or highways etc.
- Such products are never manufactured in large quantities.
- Labour, facilities and other resources focus on these products.
- Therefore, each product can be treated as a project, which requires the sequencing of certain activities, either in series or simultaneously.
- Examples - construction of airports, roads, buildings, shipbuilding, dams, etc.



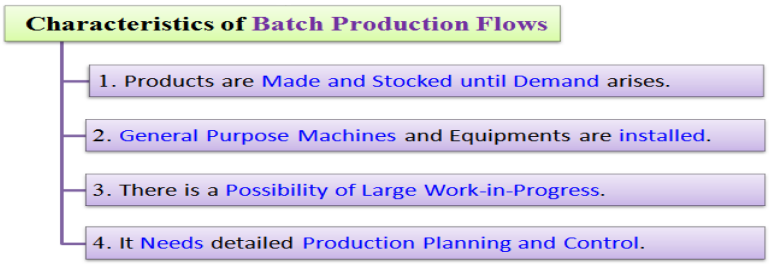
Aii) JOB SHOP PRODUCTION:

- In the job production flows, the company accepts a contract to produce one or a few units of a product strictly according to the specifications given by the customer.
- The product is produced within a certain period and at a fixed cost. This cost is fixed at the time of signing the contract.
- Examples -services provided by clothing workshops, repair shops, manufacturers of special machine tools, etc.

Aiii) BATCH PRODUCTION FLOWS:

- In batch production flows, the production schedule is decided according to specific orders or is based on demand forecasts.

- Here, the production of items takes place in lots or lots.
- A product is divided into different jobs.
- All jobs in a production batch must be completed before starting the next production batch.
- Example - manufacturing of drugs and pharmaceuticals, medium and heavy machinery, etc.

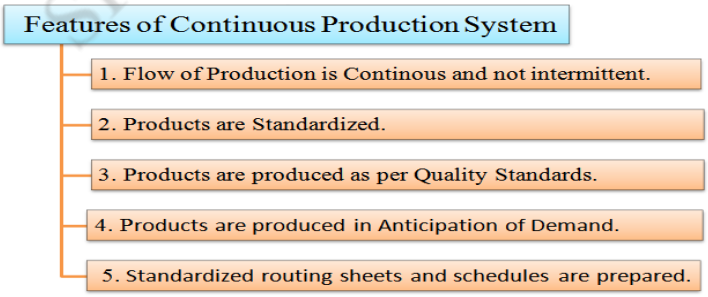


B. CONTINUOUS PRODUCTION SYSTEM:

- Continuous means something that operates constantly without irregularities or frequent stops.
- Goods are constantly produced according to the demand forecast. The goods are produced on a large scale for storage and sale.
- They are not produced at the customer's request.
- Here, the inputs and outputs are standardized together with the production process and the sequence.
- Examples -

(i) Food industry is based solely on the demand forecast. Here a large-scale food production takes place. It is also a continuous production.

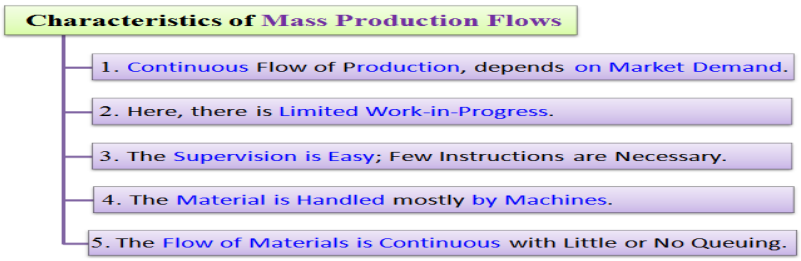
- (ii) Fuel industry is also based solely on the demand forecast. Crude oil and other raw sources are continuously processed on a large scale to obtain a usable form of fuel and offset global energy demand.



SUB TYPES OF CONTINUOUS PRODUCTION SYSTEMS -:

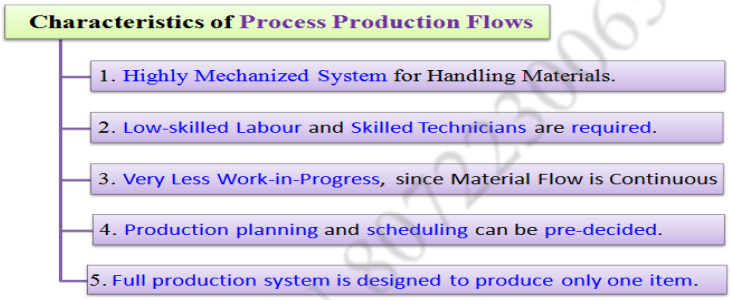
1. MASS PRODUCTION FLOWS:

Here, the company produces different types of large-scale products and stores them in warehouses until they are demanded in the market.



B –ii) PROCESS PRODUCTION PROCESSES:

- Here, a single product is produced and stored in warehouses until it is demanded in the market.
- The flexibility of these plants is almost nil because only one product can be produced. Examples - Production system at steel, cement, paper, sugar, plant etc.



SRIMAAN COACHING CENTRE-TRICHY- TET / PG-TRB / UG-TRB BEO/ DEO/TRB-POLY/ASST.PROF/TN-MAWS /TNEB /SCERT STUDY MATERIALS AVAILABLE- CONTACT:8072230063.

2024-25
SRIMAAN

TN-MAWS-MUNICIPAL ADMINISTRATION & WATER SUPPLY DEPARTMENT-(DEGREE & DIPLOMA) STUDY MATERIALS AVAILABLE.

TRB-ASSISTANT PROFESSORS IN GOVERNMENT ARTS AND SCIENCE COLLEGES & COLLEGES OF EDUCATION STUDY MATERIALS AVAILABLE.

UG-TRB MATERIALS

GRADUATE TEACHERS / BLOCK RESOURCE TEACHER EDUCATORS (BRTE) & SGT

- **UG TRB: TAMIL MATERIAL WITH QUESTION BANK.**
- **UG TRB: ENGLISH STUDY MATERIAL +Q. BANK.**
- **UG-TRB: MATHEMATICS MATERIAL WITH Q. BANK (E/M)**
- **UG TRB: PHYSICS MATERIAL WITH QUESTION BANK (E/M)**
- **UG TRB: CHEMISTRY MATERIAL + QUESTION BANK (E/M)**
- **UG TRB: HISTORY MATERIAL + Q.BANK (E/M)**
- **UG TRB: ZOOLOGY MATERIAL + QUESTION BANK (E/M)**
- **UG TRB: BOTANY MATERIAL +QUESTION BANK (T/M& E/M)**
- **UG TRB: GEOGRAPHY STUDY MATERIAL (E/M)**

SCERT/DIET/GTTI (LECTURER) STUDY MATERIAL AVAILABLE.

TNPSC-(CESE)-JSO STUDY MATERIAL AVAILABLE.

TANGEDCO (TNEB)-(T/M & E/M)

ASSESSOR/ASSISTANT ENGINEER (A.E)/JUNIOR ASSISTANT (ACCOUNTS)

SRIMAAN COACHING CENTRE-TRICHY- TET/PG-TRB / UG-TRB BEO/ DEO/TRB-POLY/ASST.PROF/TN-MAWS /TNEB /SCERT STUDY MATERIALS AVAILABLE- CONTACT:8072230063.

2024-25 SRIMAAN

PG-TRB MATERIALS

PG-TRB: COMPUTER INSTRUCTOR-GRADE-I (NEW SYLLABUS)-2024-2025 STUDY MATERIAL WITH Q.BANK AVAILABLE

- PG TRB: TAMIL STUDY MATERIAL +QUESTION BANK (T/M)
- PG TRB: ENGLISH MATERIAL WITH QUESTION BANK.
- PG-TRB: MATHEMATICS MATERIAL WITH Q.BANK (E/M)
- PG TRB: PHYSICS MATERIAL WITH QUESTION BANK (E/M)
- PG TRB: CHEMISTRY MATERIAL + QUESTION BANK (E/M)
- PG TRB: COMMERCE MATERIAL WITH Q.BANK (T/M)&(E/M)
- PG TRB:ECONOMICS MATERIAL+Q. BANK (T/M & E/M)
- PG TRB: HISTORY MATERIAL + Q. BANK (T/M & E/M)
- PG TRB: ZOOLOGY MATERIAL + QUESTION BANK (E/M)
- PG TRB: BOTANY MATERIAL +QUESTION BANK (T/M& E/M)
- PG TRB: GEOGRAPHY STUDY MATERIAL (E/M)

TNPSC-DEO (District Educational Officer(Group – I C Services) (TAMIL & ENGLISH MEDIUM) STUDY MATERIAL AVAILABLE.

TRB-BEO (Block Educational Officer) (TAMIL & ENGLISH MEDIUM) STUDY MATERIAL AVAILABLE.

TRB-POLYTECHNIC LECTURER-(NEW SYLLABUS) STUDY MATERIALS AVAILABLE

- MATHEMATICS STUDY MATERIAL with Question Bank.

SRIMAAN COACHING CENTRE-TRICHY- TET / PG-TRB / UG-TRB BEO/ DEO/TRB-POLY/ASST.PROF/TN-MAWS /TNEB /SCERT STUDY MATERIALS AVAILABLE- CONTACT:8072230063.

2024-25
SRIMAAN

- ENGLISH STUDY MATERIAL with Question Bank.
- PHYSICS STUDY MATERIAL with Question Bank.
- CHEMISTRY STUDY MATERIAL with Question Bank.
- MODERN OFFICE PRACTICE STUDY MATERIAL with Q.B.
- COMPUTER SCIENCE STUDY MATERIAL with Question Bank.
- INFORMATION TECHNOLOGY STUDY MATERIAL with Q.Bank.
- ECE STUDY MATERIAL with Question Bank.
- EEE STUDY MATERIAL With Question Bank.
- MECHANICAL STUDY MATERIAL With Question Bank.
- CIVIL STUDY MATERIAL With Question Bank.
- EIE STUDY MATERIAL with Question Bank.
- ICE STUDY MATERIAL with Question Bank.

10% Discount for all materials. Materials are sending through COURIER.

TO CONTACT

8072230063

SRIMAAN