DAIMSR

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OPERATIONS MANAGEMENT
Sub Code- MBCII-IV

Unit I

PROGRAMME EDUCATIONAL OBJECTIVES: PEO

Our program will create graduates who:

1. Will be recognized as a creative and an enterprising team leader.
2. Will be a flexible, adaptable and an ethical individual.
3. Will have a holistic approach to problem solving in the dynamic business environment.

Course Objectives Of OM

- CO1:The student manager will be able to **differentiate** between the planning premises (MTO, MTS, ATO)based on the type of manufacturing processes (Mass, Batch, Job, Project).

- CO2:Given a facility establishment for a product or a service, the student manager will be able to **identify/ enlist** the factors that affect the facility location decisions.

- CO3:Given a facility establishment for a product or a service or the type of manufacturing processes (Mass, Batch, Job, Project), the student manager will be able to **identify** the type of layout and **draw** the layouts.

- CO4:Given the set of activities and their duration of completion, the student manager will be able to **Construct** a PERT network and **identify** the critical path and project completion time.

Course Objectives Of HROB

- CO5: Given the supplier's vendor rating criteria with weightages and the n number of vendors with their criteria weightages, the student manager will be able to **identify** the best vendor for the organization.

- CO6: The student manager will be able to **enlist** the types of inventory management tools based on the types of inventory.

- CO7: Given the levels or phases of operations in a manufacturing unit, the student manager will be able to **identify** the costs of quality and enlist various costs associated with the same.

UNIT 1 SYLLABUS

Introduction to Operations Management:

Scope, Importance, Functions and Challenges of Operations Management. Differences between Manufacturing and Services. Planning premise, Make to stock, Make to order and Assemble to order. Capacity definitions, capacity expansion decisions and equipment selection decisions. Modern tools and recent trends in Operations management.

PRODUCTION

- Production is the process by which raw materials and other inputs are converted into finished products.
- Production management refers to the application of management principles to the production function in a factory. In other words, production management involves application of planning, organizing, directing and controlling to the production process.
- Operations is the set of activities that creates goods and services by transforming inputs into outputs.
- Operations Management is the systematic design, direction and control of the processes that transforms input into output.

SCOPE OF OPERATIONS MANAGEMENT

INTERNAL

- Location of facility
- Plant layout and material handling
- Product design
- Process design
- Production planning and control
- Quality control
- Materials management
- Maintenance management

EXTERNAL

- Manufacturing
- Mining
- Transportation
- Retailing
- Whole selling
- Insurance
- Real Estate
- Healthcare
- Airlines

OBJECTIVES OF OM

- Max output of goods and services with minimum resource inputs.
- Producing right kind of goods and services that satisfy customer needs
- Minimize cost of production
- To reduce cost of quality
- To reduce material handling costs
- Shorter new-product-lead time
- More inventory turns
- Shorter manufacturing lead time
- Greater flexibility

Types of Production System

1. Project Production
2. Job Production
3. Batch Production
4. Flow Production, Line Production, or Mass Production
5. Mass Customization

Project Production

Where a single assignment of complex nature is undertaken for completion within a given period and within the estimated expenditure.

- Special and non-standardized
- Definite beginning and definite end
- Non-uniform requirement of resources
- High cost overruns
- Scheduling and controlling

Job Production

- Producing a few units of a product specifically designed for the customer.
- Small production runs
- Made to customer's specifications
- Discontinuous flow of materials
- Highly skilled labor
- Large WIP

Eg: Ship building, dam construction, bridge building, book printing, Wedding cakes, row houses

Batch Production

Products are made in separate groups with each group going through the complete process together

- work is of repetitive nature.
- Short runs
- Large WIP
- Flexibility of production schedules
- Examples: Pharmaceuticals, paints, Chemicals, electric motors, ready made garments, biscuit and confectionery. processing claims in a large insurance company

Flow Production or Line Production (Mass Production)

Used when individual products move through one stage of production to next when the product is ready.

- The product is standardized and any deviation in quality etc. is detected at the spot.
- Continuous flow of material, assembly lines, conveyor belts
- Less WIP, Product layout, Mechanized material handling
- Low skilled labor
- Short manufacturing cycle time
- Easy supervision
- Less manufacturing costs.
- Eg: Plastics goods, hardware, assembly shops of automobiles,
- Refrigerators, fans, domestic appliances

Mass Customization

Combines job production with mass production to customize products to suit individuals.

- Production of personalized or custom-tailored goods or services to meet consumers' diverse needs at near mass production prices.
- Use computerization, internet, product modularization, and lean production.
- Examples: Dell computers, automobile assembly

Operations Management – Planning Premises

Once a company decides to produce a given product or offer a particular service, company should decide if product or service is to be the following amongst the three generic planning premises that are in use in operations management:

Make-to-Stock (MTS)

Make-to-Order (MTO)

Assemble-to-Order (ATO)

Make-to-Stock (MTS)

Make to stock (MTS) is a traditional production strategy that is used by businesses to match production and inventory with consumer demand forecasts.

Products produced for immediate sale or delivery in anticipation of demand.

Product is standardized.

Produced in large volumes.

Instant or short delivery time.

Each unit is produced or assembled by going through same series of operations in same order.

ADVANTAGES

1. Even production over a given time period
2. Reduce product lead time.
3. No problem of stock out of a product.
4. No overproduction.

DISADVANTAGES

1. Depends on accurate demand forecast.
2. Inaccurate forecasts will lead to losses due to excessive inventory.
3. Stock outs.
4. Need Higher flexibility to adjust to suddenly changing market needs.
5. Challenging for companies that have cyclic sales or seasonality

Make-to-Order (MTO)

Products/services that are made to **customer's specs** but only **after** an order is received.

Product/service is **customized**

ADVANTAGES

1. System is highly flexible.
2. Specialization/ Customization in products.
3. Higher customer satisfaction.
4. No Extra Inventory.(RM , FG)
5. Less Waiting time

DISADVANTAGES

1. Production planning depends on the whims of the client
2. Risk of inefficiency and wastage.
3. No Extra Inventory.
4. More waiting time.
5. Loss of customer.
6. Dependency on the supplier

Assemble-to-Order (ATO)

Standard components are produced in anticipation of demand.

Once an order is received, components can be combined in different ways to accommodate different customer specs.

Some customization

Some Standardization

Delivery time shorter than make-to-order.

Hybrid of MTO and MTS

Examples

- Computers (Dell)
- Standard vacation packages
- Cars built to customer's specs
- Restaurant food

CAPACITY PLANNING

Capacity Planning Concepts

- **Capacity can be defined as the maximum amount that something can hold, receive, store, or accommodate.**
- **Capacity planning is the determination of capacity and adjustment to meet the fluctuation in demand.**
- **It is the efficient use of resources by projecting production needs**
- **Strategic capacity planning is an approach for determining the overall capacity level of capital intensive resources, including facilities, equipment, and overall labor force size**

Examples of Capacity Measures

Type of Organisation	Measures of Capacity	
	Inputs	**Outputs**
Manufacturer	Machine hours per shift	Number of units per shift
Hospital	Number of beds	Number of patients treated
Airlines	Number of planes or seats	Number of seats / miles flown
Restaurant	Number of seats	Number of customer/ time
Retailer	Area of store	Sales in rupees
Theatre	Number of seats	Customer / time

Determinants of Effective Capacity/ Factors affecting Capacity Planning

- Demand Forecast factor: PLC, number of products.
- Facilities, *layout*
- Products or services factor, *product mixes/setups*
- Process factor, *quality*, *technology*
- Human considerations, *motivation*, *training*
- Operational factor, *inventory*, *purchasing*
- Supply Chain factors, *timely supply of material*
- External forces, Government *regulations*

Types/ Measures of Capacity

- Design capacity
- Effective capacity
- Actual Output
- Efficiency
- Utilization

Challenges Faced by Operations Management

- Globalization
- Technological Advancements
- Ethical Conduct
- Sustainability
- Product to service
- Environmental forces

Recent Trends in Operations Management

- Total Quality Management
- Workers Involvement
- Global Market place
- Lean production
- CAD
- CAM
- Just in time
- Mass Customization
- Growing Operations in service sector
- Business Process Reengineering
- E-SCM

Reference

Operations Management-Theory & Practice By: B. Mahadevan