

MANAGING PRODUCTION AND SERVICE OPERATIONS

CHAPTER 10

OPERATIONS

- ❑ Refers to any process that accepts inputs and uses resources to change those inputs in useful ways. The transformation process converts inputs into final goods or services.

OPERATIONS MANAGEMENT

- ❑ The process of planning, organizing, and controlling operations to reach objectives efficiently and effectively.
- ❑ Efficiency is the cost of doing something or the resource utilization involved, however, effectiveness refers to goal accomplishment.

OPERATIONS AND THE ENGINEER MANAGER

- The engineer manager is expected to produce some output at whatever management level he is. If he is assigned as the manufacturing engineer, his function is to determine and define the equipment, tools, and processes required to convert the design of the desired product into reality in an efficient manner.

TYPES OF TRANSFORMATION PROCESS

The engineer manager must have some knowledge of the various types of transformation process.

1. Manufacturing processes

- Job shop
- Batch flow
- Worker-paced line flow
- Machine-paced line flow
- Batch/continuous flow hybrid
- Continuous flow

TYPES OF TRANSFORMATION PROCESS

2. Service processes

- Service factory
- Service shop
- Mass service
- Professional service

TYPES OF TRANSFORMATION PROCESS

MANUFACTURING PROCESSES

JOB SHOP

One whose production is based on sales orders for a variety of small lots. Job shops are very useful components of the entire production effort, since they manufacture products in small lots that are needed by, but cannot be produced economically by many companies.

TYPES OF TRANSFORMATION PROCESS

MANUFACTURING PROCESSES

BATCH FLOW

The batch flow process is where lots of generally own designed products are manufactured.

WORKER-PACED ASSEMBLY LINE

An assembly line refers to a production layout arranged in a sequence to accommodate processing of large volumes of standardized products or services.

TYPES OF TRANSFORMATION PROCESS

MANUFACTURING PROCESSES

MACHINE-PACED ASSEMBLY LINE

Produces mostly standard products with machines playing a significant role.

CONTINUOUS FLOW

Characterized by rapid rate at which items move through the system. The processing method is very appropriate for producing highly standardized products.

TYPES OF TRANSFORMATION PROCESS

MANUFACTURING PROCESSES

BATCH/CONTINUOUS FLOW HYBRID

This method is a combination of the batch and the continuous flow. Two distinct layouts are used, one for batch and one for the continuous flow.

TYPES OF TRANSFORMATION PROCESS

SERVICE PROCESSES

SERVICE FACTORY

Offers a limited mix of services which results to some economies of scale in operations. This also affords the company to compete in terms of price and speed of producing the service.

TYPES OF TRANSFORMATION PROCESS

SERVICE PROCESSES

SERVICE SHOP

A service shop provides a diverse mix of services. The layout used are those for job shops or fixed position and are adaptable to various requirements.

TYPES OF TRANSFORMATION PROCESS

SERVICE PROCESSES

MASS SERVICE

A mass service company provides services to a large number of people simultaneously. A unique processing method is necessary to satisfy this requirement.

TYPES OF TRANSFORMATION PROCESS

SERVICE PROCESSES

PROFESSIONAL SERVICES

These are companies that provide specialized services to other firms or individuals.

- Engineering/Management consulting
- Design services
- Advertising agencies
- Accounting services
- Legal services
- Data processing services
- Health services

IMPORTANT PARTS OF PRODUCTIVE SYSTEM

Productive system may consist of six important activities as follows:

1. Product design
2. Production planning and scheduling
3. Purchasing and materials management
4. Inventory control
5. Work flow layout
6. Quality control

IMPORTANT PARTS OF PRODUCTIVE SYSTEM

PRODUCT DESIGN

Product design refers to the process of creating a set of product specifications appropriate to the demands of the situation.

Companies wanting to maintain or improve its market share keeps a product design team composed of engineers, manufacturing, and marketing specialists.

IMPORTANT PARTS OF PRODUCTIVE SYSTEM

PRODUCTION PLANNING AND SCHEDULING

Production planning may be defined as forecasting the future sales of a given product, translating this forecast into the demand it generates for various production facilities, and arranging for the procurement of these facilities.

Scheduling is the phase of production control involved in developing timetables that specify how long each operation in the production process takes.

IMPORTANT PARTS OF PRODUCTIVE SYSTEM

PURCHASING AND MATERIALS MANAGEMENT

The management of purchasing and materials must be undertaken with a high degree of efficiency and effectiveness specially in firms engaged in high volume production.

Materials management refers to the approach that seeks efficiency of operation through integration of all material acquisition, movement and storage activities in the firm.

IMPORTANT PARTS OF PRODUCTIVE SYSTEM

INVENTORY CONTROL

It is the process of establishing and maintaining appropriate levels of reserve stocks of goods.

Ways of achieving proper inventory control:

1. Determining reorder point and reorder quantity
2. Determining economic order quantity
3. The use of just-in-time method of inventory
4. The use of material requirement planning (MRP) method of planning and controlling inventories

IMPORTANT PARTS OF PRODUCTIVE SYSTEM

WORK-FLOW LAYOUT

Work-flow layout is the process of determining the physical arrangement of the production system. A good work-flow layout will have the following benefits:

1. Minimize investment in equipment
2. Minimize overall production time
3. Use existing space most effectively
4. Provide for employee convenience, safety and comfort
5. Maintain flexibility of arrangement and operation

IMPORTANT PARTS OF PRODUCTIVE SYSTEM

WORK-FLOW LAYOUT

A good work-flow layout will have the following benefits:

6. Minimize material handling cost
7. Minimize variation in types of material-handling equipment
8. Facilitate the manufacturing (or service) process
9. Facilitate the organizational structure

IMPORTANT PARTS OF PRODUCTIVE SYSTEM

QUALITY CONTROL

This refers to the measurement of products or services against standards set by the company. Poor quality control breeds:

1. Customer complaints
2. Returned merchandise
3. Expensive lawsuits
4. Huge promotional expenditures

SUMMARY

- The management of operations is very crucial to the survival of firms.
- The function of the operations manager is to plan, organize and control operations in order to achieve objectives efficiently and effectively.
- The transformation process maybe classified as manufacturing or service processes.
- Production systems consists of various parts that complement one another in the production task. The engineer manager needs to be familiar with these various parts.