2.3 Product vs. services

Product	Services
1-tangible, durable products. 2- Output can be inventoried. 3-consumption/use takes more time. 4-low costumer's involvement. 5-long response time. 6-available at regional, national and international market. 7-Reqire large facilities. 8-Capital intensive. 9-Quality easily measured. 10-Demand variable on weekly, monthly, seasonally.	1- Intangible, perishable products. 2- Output can't be inventoried. 3-Immidiate consumption. 4- High costumer's involvement. 5- Short response time. 6-local market. 7- Require small facilities. 8-Labour intensive. 9- Quality not easily measured. 10- Demand variable on hourly, daily, weekly basis.

Explanations

Manufacturing organization generally transfer tangible inputs or raw materials into some tangible output (ex: steel, refrigerator, toothpaste, soap etc.) Other inputs such as labour skills, management skills, capitals are used as well. Manufacturing organizations perform some chemical /physical processes (such as blending refining, welding, grinding.etc) to transfer their raw material into tangible products. Service providing organization though transform a set of input into set of output, they don't produce a tangible output.(ex: mail service, library service, restaurant etc.).or provide service(ex: health care, hair care, watch and automobile repair etc.). The service of service providing organization is intangible.

A 2nd distinction is based on inventories .durable goods can be kept for longer time these goods can be stored for longer time and can be transported in anticipation in future demand .Thus with durable goods ,operation manager can co up with the peaks and valleys in demand by creating inventories and smoothing out output levels. Whereas service can't be pre produced. For example: getting fast food from a fast food center, getting treatment from hospital etc.

A 3rd distinction is based on consumption/use of output. The products (goods) generally take longer period for its use, for ex refrigerator, T.V. automobile etc. can be used at least for 10 years. On the other hand, the output produced from a service operation (i.e. service) is consumed within a small time. Ex. consumption of fastfood,taking hair care, enjoying journey by a bus/train/aero plane enjoying entertainment program.

A 4th distinction is based on customer contact. Most of the consumers/customers have little or no contact with production system/organization. Whereas, in many service providing organization

consumers/customers are directly involved. For example: students in an educational institution, patients in hospital.

The 5th distinction is based on lead time/response time to customers demand. Manufacturers take generally some lead time (i.e. time period from placing the order to get the product) in terms of days/week. Whereas the services are offered within few minutes of customers arrival. For ex: ATM Service, getting postal stamps, getting grocery from a retail shop and getting examined by a doctor etc.

The 6th distinction is on availability. Products can be available from regional, national or international markets due to availability of transportations and distribution facilities whereas, service can't shipped to distant locations. Thus service organization requiring direct customer contact must locate very near to the customers.

The 7th distinction is based on liabilities/facilities. Manufacturing unit/organization producing products generally require larger facilities, more automation and greater capital investment than service providing organization.

The 8th distinction is based on capital/labour priority. Generally manufacturing firm producing goods/products require more capital than a service provider. Ex. An automobile firm requires more capital than a post office/Nursing home. The 9th and 10th distinction is based on quality and demand variation.

2.4 Various types of 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.

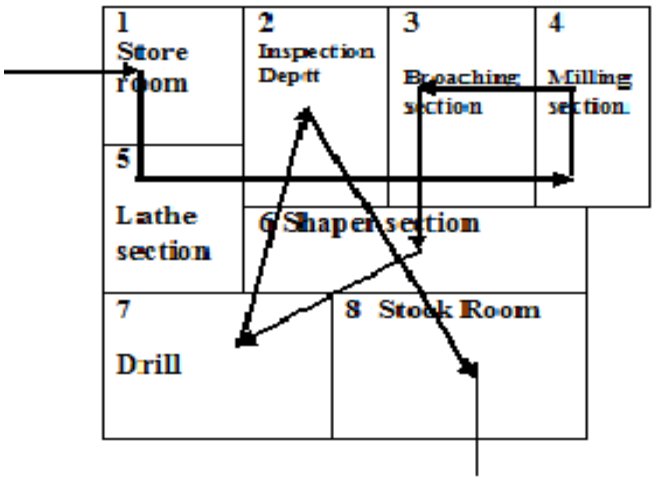

Fig 2.2 process layout

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.

Fig 2.3 product layout

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.

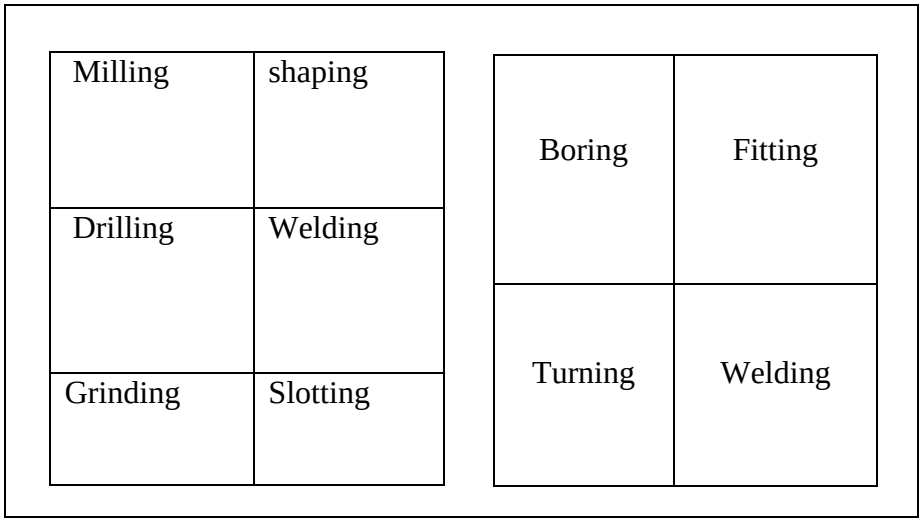

Fig 2.4 Group layout

d. Fixed position layout

- It is also called static product layoutin which the physical characterstics 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.

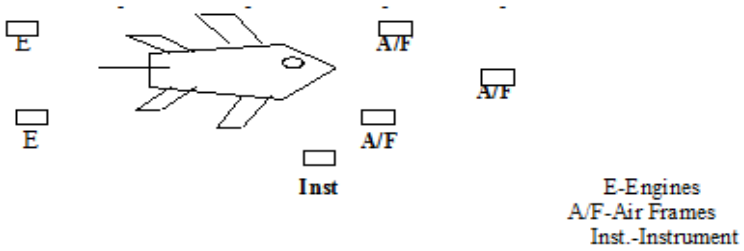

Fig 2.5 Fixed position layout