PLANT LOCATION

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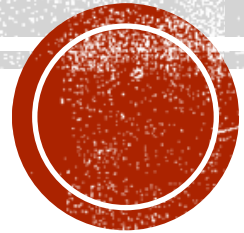

CONCEPT AND FACTOR GOVERNING PLANT LOCATION

- A **plant** is a place, where men, material, money, equipment, machinery, etc are brought together for manufacturing product.
- The problem of plant location arises when starting a new concern or during the expansion of the existing plant.
- Plant location means deciding a suitable location, area, place, etc., where the plant or factory will start functioning. Plant location involves two major activities:
  - To select a proper geographical region
  - Specific site within the region.
- Plant location plays a major role in the design of a productions system as it determines the cost of:
  - Getting suitable raw material
  - Processing raw material to finished goods: and
  - Finished products distribution to customers.

CONCEPT AND FACTOR GOVERNING PLANT LOCATION

Hardly any location can be ideal or perfect. One has to strike a balance between various factors affecting plant location, which are discussed below:

- **Nearness to raw material:**It will reduce the cost of transporting raw material from the vendor's end to the plant. Especially those plants, which consumes raw materials in bulk, or raw material is heavy, is cheap but loses a good amount of its weight during processing (trees and saw mills), must be located close to the source of raw material.
- **Transport facilties:** A lot of money is spent both in transporting the raw material and the finished goods. Depending upon the size of raw materials and finished goods, a suitable method of transportation like roads, rail, water or air is selected and accordingly the plant location is decided. One point must be kept in mind that cost of transportation should remain fairly small in proportion to the total cost.

CONCEPT AND FACTOR GOVERNING PLANT LOCATION

- **Nearness to Market:** It reduces the cost of transporting as well as the chances of the finshed products getting damaged and spoiled in the way (especially perishable products). Moreover a plant being near, to the market can catch a big share of the market and can render quick service to the customers.
- **Availability of the Labour:** stable labour force, of right kind, of adequate number, and at reasonable rates with the proper attitude toward work are a few factors which govern plant location to a major extent. The purpose of the management is to face less boycott, strikes or lockouts and to achieve lower labour cost per unit of production.
- **Availability of fuel and power:** because of the wide spread use of electric power, in most cases fuel(coal, oil,etc.) has not remained a deciding factor for plant location. Even then steel industries are located near source of fuel (coal) to cut down the fuel transportation costs.

CONCEPT AND FACTOR GOVERNING PLANT LOCATION

- **Availability of water:** Water is used for processing, as in paper and chemical industries, and is also required for drinking and sanitary purposes. Depending upon the nature of plant, water should be in adequate quantity and should be of proper quality (clean and pure).A chemical industry should not be set up at a location which is famous of water shortage.
- **Climatic conditions:** with the development in the field of heating, ventilating and air conditioning, climate of region does not present much problem. Of course, control of climate need money.
- **Financial and other aids:** certain state give aids as loan, feed money, machinery, builtup sheds,etc to attract industrialists.
- **Land: T**opography, area, the shape of the site, cost, drainage and other facilities, the probability of floods, earthquakes (from the past history) etc. influence the selection of plant location.
- **Community Attitudes:** Success of an industry depends very much on the attitude of the local people and whether want work.

CONCEPT AND FACTOR GOVERNING PLANT LOCATION

- **Presence of related industry**
- **Existence of hospitals, marketing center, schools, banks, post offices, clubs etc.**
- **Local bye laws, taxes, building ordinance etc.**
- **Housing facilities.**
- **Security**
- **Facilities of expansion.**

LOCATIONAL ECONOMICS

- An ideal plant location is one which results in lower production cost and least distribution cost per unit.
- These costs are influenced by a number of factors as discussed in above section. The various costs which decide the locational economy are those of
  - Land
  - Building/rent
  - Equipment and machinery
  - Labour
  - Water,power and fuel
  - Raw material
  - Taxes
  - Freight
    - Incoming
    - Outgoing

LOCATIONAL ECONOMICS

The economic aspects of location are considered or an economic survey or economic analysis is carried out to decide as to which of the possible tow or more preliminary selected location, is the overall best location.

The following example will clarify the procedure

EX1 various cost and other consideration have been listed below as regards to location 1 and 2.it is required to determine the overall best location.

Factors		**Location1**	**location2**
Cost of		(Rs)	(Rs)
1. Land		100,000	90,000
2. Building		1,200,000	1,300,000
3. Water		5,000	6,000
4. Power		15,000	17,000
5. Labour		140,000	120,000
6. Fuel		40,000	35,000
7. Raw material and other supplies		140,000	130,000
8. Taxes		4,000	2,000
9. Freight	Incoming	120,000	110,000
	outgoing	160,000	150,000
Total cost		**1,924,000**	**1,960,000**

LOCATIONAL ECONOMICS

10.	Community facility	Good	Excellent
11.	Community attitude	Alright	Encouraging
12.	Housing facility	very good	good
13.	Cost of living	high	normal
14.	Community size	small	medium

Answer:

Apparently by considering the total costs involved, the location-1 seems to be better. But according to factor 10 to 14- location2 seems to be good for the employees. Considering these good points and moreover there being not much difference in the total cost of the two location, the location-2 seems to be a better choice .

LOCATIONAL ECONOMICS

EX2: From the following data select the most advantageous location for setting a plant for making transistor radios

		Site-X (Rs)	Site-Y (Rs)	Site-Z (Rs)
1.	**Total initial investment**	2,00,000	2,00,000	2,00,000
2.	**Total expected sale for the period**	2,50,000	3,00,000	2,50,000
3.	**Distribution expenses**	40,000	40,000	75,000
4.	**Raw material expenses**	70,000	80,000	90,000
5.	**Power and water supply expenses**	40,000	30,000	20,000
6.	**Wages and salaries**	20,000	25,000	20,000
7.	**Other expenses**	25,000	40,000	30,000
8.	**Community attitude**	Indifferent	Want Business	Indifferent
9.	**Employee housing facility**	Poor	Excellent	Good

LOCATIONAL ECONOMICS

Answer:

	SiteX	**Site Y**	**Site Z**
Total expense (add 3,4,5,6 and 7)	1,95,000	2,15,000	2,35,000

Rate of return(ROR)% = (Total sale – Total expense)/Total investment x 100

ROR of site X = (2,50,000-1,95,000)/2,00,000 x 100 =**27.5%**

ROR of site Y = (3,00,000-2,15,000)/2,00,000 x 100 = **42.5%**

ROR of site Z = (2,50,000-2,35,000)/2,00,000 x100 = **7.5%**

Site Y is the most advantageous because:

1. It is associated with highest ROR i.e. 42.5%
2. Community wants business
3. Housing facilities are excellent.

RURAL VS URBAN PLANT SITES

Selecting the plant sit in the City (Urban sites)

Advantage

1. A city is well connected with road,rail and air.
2. It provide good market also.
3. Right labor force is available
4. Power and water is easily available.
5. It has good hospital, marketing centers, schools, bank, recreation clubs etc.
6. The factory can be set up in the existing available building.
7. Worker's and foreman training classes and many other educational facilties can be found in cities.
8. Service of experts and specialist are easily available.
9. Many other small industries existing nearby can work as ancillaries.
10. Security is there

RURAL VS URBAN PLANT SITES

Selecting the plant sit in the City (Urban sites)

Disadvantage

1. Land available for the building is limited in Area.
2. Cost of land and building construction is high.
3. Expansion of the industry is seldom possible.
4. Local taxes,etc are high
5. Labour salaries are high.
6. Union problem are more; employee-employer relationship are not so good.

RURAL VS URBAN PLANT SITES

Selecting the plant sit in the small town (Rural sites)

Advantage

1. Plenty of land is available for building construction and expansion purposes.
2. Land is cheap.
3. Unskilled labour is available which can be trained to suit the requirement of the concern.
4. Employee-employer relations are good; no union prolem.
5. Undesirable manufacturing neighbour's are not likely to be present.
6. Municipal and other regulations and taxes etc., are seldom burdensome.
7. Government give inducement as it wants to develop the underdeveloped areas.

RURAL VS URBAN PLANT SITES

Selecting the plant sit in the small town (Rural sites)

Disadvantage

1. Skilled labour is not available.
2. Rail, road and air link may not be there at all or may not be adequate.
3. Power is not available.
4. Rural areas are far from selling markets.
5. Hospital, educational and amusement centres are not available.
6. Ancillary services cannot be obtained.
7. Expert and specialist advice are not available.
8. High grade executives may not like to live in rural areas.