

Factors considered in facility location



**ASSIGN
BUSTER**

Facility Location is the right location for the manufacturing facility, it will have sufficient access to the customers, workers, transportation, etc. For commercial success, and competitive advantage following are the critical factors:

Overall objective of an organization is to satisfy and delight customers with its product and services. Therefore, for an organization it becomes important to have strategy formulated around its manufacturing unit. A manufacturing unit is the place where all inputs such as raw material, equipment, skilled labors, etc. come together and manufacture products for customers. One of the most critical factors determining the success of the manufacturing unit is the location.

Facility location is actually a term used in operation management, facility location or location analysis is done so that the better uses of the location can be understood. The company by understanding the materials and production process done nearby the location can save ample time in production process and also save a lot in terms of transportation cost. And also the company can find out optimum position for the location of the company so that all the factors that are needed will be not a long distance from the company.

Facility location determination is a critical strategic decision. There are several factors, which determine the location of facility among them competition, cost and corresponding associated effects. Facility location is a scientific process utilizing various techniques.

Location Selection Factors

For a company which operates in a global environment; cost, available infrastructure, labor skill, government policies and environment are very important factors. A right location provides adequate access to customers, skilled labors, transportation, etc. A right location ensures success of the organization in current global competitive environment.

Industrialization

A geographic area becomes a focal point for various facility locations based on many factors, parameters and issues. These factors are can be divided into primary factors and secondary factors. A primary factor which leads to industrialization of a particular area for particular manufacturing of products is material, labor and presence of similar manufacturing facilities. Secondary factors are available of credit finance, communication infrastructure and insurance.

Errors in Location Selection

Facility location is critical for business continuity and success of the organization. So it is important to avoid mistakes while making selection for a location. Errors in selection can be divided into two broad categories behavioral and non-behavioral. Behavioral errors are decision made by executives of the company where personal factors are considered before success of location, for example, movement of personal establishment from hometown to new location facility. Non-behavioral errors include lack of proper investigative practice and analysis, ignoring critical factors and characteristics of the industry.

Location Strategy

The goal of an organization is customer delight for that it needs access to the customers at minimum possible cost. This is achieved by developing location strategy. Location strategy helps the company in determining product offering, market, demand forecast in different markets, best location to access customers and best manufacturing and service location.

Factors Affecting Facility Location

If the organization can configure the right location for the manufacturing facility, it will have sufficient access to the customers, workers, transportation, etc. For commercial success, and competitive advantage following are the critical factors:

- **Customer Proximity:** Facility locations are selected closer to the customer as to reduce transportation cost and decrease time in reaching the customer.
- **Business Area:** Presence of other similar manufacturing units around makes business area conducive for facility establishment.
- **Availability of Skill Labor:** Education, experience and skill of available labor are another important, which determines facility location.
- **Free Trade Zone/Agreement:** Free-trade zones promote the establishment of manufacturing facility by providing incentives in custom duties and levies. On another hand free trade agreement is among countries providing an incentive to establish business, in particular, country.

- Suppliers: Continuous and quality supply of the raw materials is another critical factor in determining the location of manufacturing facility.
- Environmental Policy: In current globalized world pollution, control is very important, therefore understanding of environmental policy for the facility location is another critical factor.

Some of the benefits in location analysis include:

You get a thorough knowledge of all the factors involved in the production, and ways through which the materials that are needed in the production can easily be accessed.

When you do a proper location analysis for your facility you will also come across alternate substitute materials that are readily available and will cost less.

You can save a lot on transportation cost for materials, labour, import and export.

The materials will be available at a comparatively low cost.

The best way to get a task done is by finding out ways through which the task can be done. Location analysis helps you in those aspects.

Allows to you differentiate between practical positions to place your facility. Like for example, you cannot build a hazardous facility in a residential area.

Gives you access to cheap labour, and needed raw materials like water electricity and many more.

Helps in a smooth running of an organization, by seeing to that all that is possibly needed is readily and easily available.

Also has very easy access to production, distribution and sale of the products.

Allows you to outperform your competitor's facilities

Once you have found the optimal location then you will very easily overcome all the issues that you are likely to face and have a smooth running of an organization. When you plan accordingly, you will also be prepared to face some minor hindrances.

FACILITY LAYOUT

For an organization to have an effective and efficient manufacturing unit, it is important that special attention is given to facility layout. Facility layout is an arrangement of different aspects of manufacturing in an appropriate manner as to achieve desired production results. Facility layout considers available space, final product, safety of users and facility and convenience of operations.

An effective facility layout ensures that there is a smooth and steady flow of production material, equipment and manpower at minimum cost. Facility layout looks at physical allocation of space for economic activity in the plant. Therefore, main objective of the facility layout planning is to design effective workflow as to make equipment and workers more productive.

Facility Layout Objective

A model facility layout should be able to provide an ideal relationship between raw material, equipment, manpower and final product at minimal cost under safe and comfortable environment. An efficient and effective facility layout can cover following objectives:

- To provide optimum space to organize equipment and facilitate movement of goods and to create safe and comfortable work environment.
- To promote order in production towards a single objective
- To reduce movement of workers, raw material and equipment
- To promote safety of plant as well as its workers
- To facilitate extension or change in the layout to accommodate new product line or technology upgradation
- To increase production capacity of the organization

An organization can achieve the above-mentioned objective by ensuring the following:

- Better training of the workers and supervisors.
- Creating awareness about of health hazard and safety standards
- Optimum utilization of workforce and equipment
- Encouraging empowerment and reducing administrative and other indirect work

Factors affecting Facility Layout

Facility layout designing and implementation is influenced by various factors.

These factors vary from industry to industry but influence facility layout.

These factors are as follows:

<https://assignbuster.com/factors-considered-in-facility-location/>

- The design of the facility layout should consider overall objectives set by the organization.
- Optimum space needs to be allocated for process and technology.
- A proper safety measure as to avoid mishaps.
- Overall management policies and future direction of the organization

Factors Influencing Location of Industries

- There are different kinds of industries and each one required different kinds of inputs.
- Further importance of different inputs varies due to their varying cost or they require in various proportions or ease/difficulty in availability of different inputs or various scale of industrial operation or any such reason.
- These factors cannot be distributed ubiquitously around the world.
- The value, bulk, life and care required for different types of produce vary considerably across different type of industries.
- Similarly different inputs required vary in cost as well as in proportion.
- Also with changing technology and people's aspirations the relative importance of these location governing factors changes over time
- Thus they have different capacity to exert different pull to locate an industry in their favour.

Location of Indian Cement Industry

Decisions regarding industrial location have a unique place in the fields of industrial management and regional planning because such decisions have long-term implications for the health and well-being of an economy and because they are almost irreversible. Most industries involve huge

investments, which generate cash flows over a long period of time and the history testifies that the success of an industry depends significantly upon the appropriateness of its location.

Factors Affecting Location

Availability of Raw Material

The various determinants of the optimum location of a particular industry play varying role in the location of different industries. In the cement industry, availability of raw material and fuel, and transport cost are more significant than the other factors because cement is a weight losing and bulky product. Its weight losing nature argues for location near raw materials while bulkiness favours location near the market. Since Weber's (1929) material index (ratio of localized material to output) is more than 1.5 for cement, the net effect of these two factors favours nearness of raw materials. As a result cement factories are, in fact, located in close proximity to the sources of raw materials. Most cement manufacturing units are established within a radius of 15 to 20 kilometers of limestone deposits.

The raw materials required for cement are limestone, clay, and gypsum. Although limestone deposits and clay are available in fairly large quantities all over the country, proximity of railhead is essential for reducing the transportation cost. The availability of gypsum may not affect location for its requirement is only about four per cent. Cement, in most plants in India, is manufactured through the wet process and thus large quantities of water are needed. However, as water is available in good quantities throughout our country, this does not affect location. The only important consideration seems to be the availability of coal since diesel, the alternative source of

fuel, is considerably more expensive. The availability of coal pulls the industry towards Bengal and Bihar and, to some extent, Orissa, Andhra Pradesh, Maharashtra, and Madhya Pradesh.

Regional Demand and Supply

The region-wise demand for, and capacity and production of cement in India in 1971, the latest year for which data are available, are presented in Table 1. They indicate that demand is in excess of supply in the Eastern and the Northern regions, while quite the reverse is true for the Western and the Southern regions. An examination of the past data indicated that this trend has been prevailing for long. Thus, the market criterion alone would argue for expansion of cement industry in the Eastern and the Northern regions and for its contraction in Western and Southern regions.

Management's Interest

The choice of location of a new factory to a certain extent depends on the management's interest in a particular region. If the management has country-wide industrial interest, perhaps this factor would not merit attention in location studies. However, if the management has regional or local industrial interest this factor becomes a decisive one. Both these kinds of management's interest are found in the Indian cement industry. On the one hand, we have Associated Cement Companies Ltd. (ACC) and Dalmia Cement (India) Ltd., whose interests are country-wide. On the other hand, there are cement firms run by state governments, such as Andhra Cement, Madras Cement, and Orissa Cement, whose interests are limited to its development within their own territories.

Since South India possesses more regional entrepreneurs willing to float cement factories at present, the Southern region continues to have more cement factories than other regions.

Government Policy

For quarrying of limestone, the cement industry has necessarily to depend on the government for lease terms. Besides, encouragement and facilities or discouragement and hindrance from government do exert their influence on location. In the early days, the then princely states encouraged the expansion of the cement industry in their territories. Thus, out of eleven factories existing in 1936 at the time of formation of ACC, as many as five factories were in princely states and in case of one, viz., the Punjab, the Provincial Government was directly interested in capital and management.

Recently, the governments have evinced keener interest in developing the cement industry in industrially

Cotton Textile Industry

Cotton textile industry is one of the oldest industry in the world.

Since textiles are one of the basic needs of every person there is always sufficient demand for it.

Cotton textile industry requires raw cotton, cheap and large labour pool(automation has reduced its importance in some areas), power, good transport, humid climate (large plant may maintains it artificially) capital, market, etc.

Cotton is regarded as nearly pure raw material since it loses very little weight in processing and it is very easy to transport raw cotton and cotton textile with nearly similar cheap rates.

Thus the pressure of raw material as seen in the case of iron and steel industry is absent here.

Thus other locational factors particularly transport, labour, power and market become important.

With good transport facility it can be established anywhere but where power supply present.

Development of electricity has reduced its dependency on the source of power supply and automation has diluted the need of skilled large labour pool requirement.

Now the considerations of market to link the industry effectively with the consumer and employment generating capacity of this industry are becoming more significant in locating this industry.

Initially it was in the form of scattered small and cottage industry but later with the development of spinning and weaving machinery in England it started getting importance as a large regular industry.

Britain was first to have a quick enlargement in production pattern of cotton textile industry with home invented machinery.

Due to durability, fineness, uniformity and above all cheapness of produce Britain got prominent position in cotton textile sector of the world by giving local small scale

Industries very very tough competition.

Iron and Steel Industry

Iron and steel is one of the most basic industry since it is a close input to many other types of industries.

But the pattern of demand and technological changes has brought some interesting locational shift in this industry.

In early days when the iron smelting technology started getting industrial importance in Europe the demand was low and mostly of local nature.

At this juncture charcoal obtained from forest wood was used with lime to make sponge iron.

Abundant forest was present everywhere and so small plants were located locally near the forest.

This led to dispersion of this industry up to mid eighteenth century.

During this time the use of coal in iron smelting gradually started maturing.

Attraction to coalfield regions was also governed by then available technology and demand.

Forest area started shrinking (about one acre of forest log required to smelt five tone iron) demand for iron increased considerably due to starting of

<https://assignbuster.com/factors-considered-in-facility-location/>

heavy engineering works, required iron ore to coal ratio was 1/8, coal producing regions already had some iron work history and pool of labour required, at some places iron ore was found associated with coal and like factors, all resulted into the establishment and shift of iron industry in coalfield areas.

The development of the Appalachian region of North America, Liege in Belgium, the South Wales and the Sheffield region of England, etc. are good examples of attraction of coalfield to iron and steel industry.

Since late eighteenth to the end of nineteenth century Coal field enjoyed its position and witnessed heavy development of iron and steel and related industrial agglomeration.

During this period it has developed sufficient industrial inertia at many places and thus survived successfully even in twentieth century.

But not all coalfields witnessed similar developments

Those located in remote areas, sparsely populated area and poorly developed area were remained engaged in exporting coal at cheaper rates.

This helped in setting of industries also at coastal locations where iron made with imported raw materials are available for export.

Japanese plants and to some extent Vishakhapatnam plant of India belong to this category.

In last fifty to hundred years the role of market also become significant.

A big market helped in setting large integrated steel plant and in providing scrap iron as raw material to reduce transportation cost.

So they also attracted iron and steel plant near to them.

Since iron and steel is regarded as one of the most basic industry as an indicator of industrial development of a region and so many region hitherto undeveloped and have some capacity are aspiring for it.

Here government policies play very deciding role as seen in the case of the development of iron and steel industries in the Chotanagpur plateau of India which also has many other advantages.

Thus location of iron and steel industry in the world has responded effectively to the changing nature of different factors of industrial locations.