Fundamentals of Human Geography

Chapter-6 Secondary Activities

MANUFACTURING

- Manufacturing involves a full array of production from handicrafts to moulding iron and steel and stamping out plastic toys to assembling delicate computer components or space vehicles
- The common characteristics of manufacturing are the application of power, mass production of identical products and specialised labour in factory settings for the production of standardised commodities
- Manufacturing may be done with modern power and machinery or it may still be very primitive

Characteristics of Modern Large Scale Manufacturing

Modern large scale manufacturing has the following characteristics:

1. **Specialisation of Skills/Methods of Production-** Under the 'craft' method factories produce only a few pieces which are made-to-order. So the costs are high. On the other hand, mass production involves production of large quantities of standardised parts by each worker performing only one task repeatedly.
2. **Mechanisation-** Mechanisation refers to using gadgets which accomplish tasks. Automation is the advanced stage of mechanisation. Automatic factories with feedback and closed-loop computer control systems where machines are developed to 'think', have sprung up all over the world.
3. **Technological Innovation-** Technological innovations through research and development strategy are an important aspect of modern manufacturing for quality control, eliminating waste and inefficiency, and combating pollution.

Modern manufacturing is characterised by:

i. a complex machine technology

ii. extreme specialisation and division of labour for producing more goods with less effort, and low costs
iii. vast capital
iv. large organisations
v. executive bureaucracy

Uneven Geographic Distribution

- Major concentrations of modern manufacturing have flourished in a few number of places
- These cover less than 10% of the world's land area
- These nations have become the centres of economic and political power
- In terms of the total area covered, manufacturing sites are much less conspicuous and concentrated on much smaller areas than that of agriculture due to greater intensity of processes
- Industries maximise profits by reducing costs .Industries should be located at points where the production costs are minimum

Some of the factors influencing industrial locations are as under:

1. **Access to Market**- The existence of a market for manufactured goods is the most important factor in the location of industries. 'Market' means people who have a demand for these goods and also have the purchasing power (ability to purchase) to be able to purchase from the sellers at a place. For eg. the developed regions of Europe, North America, Japan and Australia provide large global markets as the purchasing power of the people is very high. The densely populated regions of South and South-east Asia also provide large markets.
2. **Access to Raw Material**- Raw material used by industries should be cheap and easy to transport. Industries based on cheap, bulky and weight-losing material (ores) are located close to the sources of raw material such as steel, sugar, and cement industries
3. **Access to labour supply**- The availability of both unskilled and skilled, or technically qualified manpower, is an important factor in the location of industries. Unskilled labour is easily available in urban locations due to large rural-urban migration. One characteristic feature of the labour factor is its mobility.
4. **Access to Sources of Energy**- Industries which use more power are located close to the

source of the energy supply such as the aluminium industry. Other than coal, today hydroelectricity and petroleum are also important sources of energy for many industries.

5. **Access to Transportation and Communication Facilities**- Speedy and efficient transport facilities to carry raw materials to the factory and to move finished goods to the market are essential for the development of industries. The cost of transport plays an important role in the location of industrial units. Western Europe and eastern North America have a highly developed transport system which has always induced the concentration of industries in these areas.Communication is also an important need for industries for the exchange and management of information.
6. **Government Policy**- Governments adopt 'regional policies' to promote 'balanced' economic development and hence set up industries in particular areas
7. **Access to Agglomeration Economies/Links between Industries**-Many industries benefit from nearness to a leader-industry and other industries. These benefits are termed as agglomeration economies. Savings are derived from the linkages which exist between different industries.

Classification of Manufacturing Industries

Manufacturing industries are classified on the basis of their size, inputs/raw materials, output/products and ownership

1. **Industries based on Size**- The amount of capital invested, number of workers employed and volume of production determine the size of industry. Industries may be classified into household or cottage, small-scale and large-scale
    a. **Household or cottage industry**- It is the smallest manufacturing unit. The artisans use local raw materials and simple tools to produce everyday goods in their homes with the help of their family members or part-time labour. Finished products may be for consumption in the same household or, for sale in local (village) markets, or, for barter. Some common everyday products produced in this sector of manufacturing include foodstuffs, fabrics, mats, containers, tools, furniture, shoes, and figurines from wood lot and forest, shoes, thongs and other articles from leather; pottery and bricks from clays and stones.
    b. **Small Scale industry-** This type of manufacturing industry uses local raw material, simple power-driven machines and semi-skilled labour. It provides employment and raises local purchasing power..Therefore, countries like India, China, Indonesia and

Brazil, etc. have developed labour-intensive small scale manufacturing in order to provide employment to their population.

c. **Large Scale industry**- It involves a large market, various raw materials, enormous energy, specialised workers, advanced technology, assembly-line mass production and large capital. This kind of manufacturing developed in the last 200 years, in the United Kingdom, north-eastern U.S.A. and Europe.

   On the basis of the system of large scale manufacturing, the world's major industrial regions may be grouped under two broad types, namely

   i. traditional large-scale industrial regions which are thickly clustered in a few more developed countries.
   ii. high-technology large scale industrial regions which have diffused to less developed countries.

2. **Industries based on Inputs/Raw Materials**- On the basis of the raw materials used, the industries are classified as: (a) agro-based; (b) mineral based; (c) chemical based; (d) forest based: and (e) animal based.

   a. **Agro based Industries**- Agro processing involves the processing of raw materials from the field and the farm into finished products for rural and urban markets. Major agro-processing industries are food processing, sugar, pickles, fruits juices, beverages (tea, coffee and cocoa), spices and oils fats and textiles (cotton, jute, silk), rubber, etc. Food processing /Agro processing includes canning, producing cream, fruit processing and confectionery.
   b. **Mineral based Industries**-These industries use minerals as a raw material. Some industries use ferrous metallic minerals which contain ferrous (iron), such as iron and steel industries but some use non-ferrous metallic minerals, such as aluminium, copper and jewellery industries.
   c. **Chemical based Industries-** Such industries use natural chemical minerals, e.g. mineral-oil (petroleum) is used in petro-chemical industry. Salts, sulphur and potash industries also use natural minerals. Chemical industries are also based on raw materials obtained from wood and coal. Synthetic fibre,plastic, etc. are other examples of chemical based industries.
   d. **Forest based Raw Material using Industries**- The forests provide many major and minor products which are used as raw material. Timber for furniture industry, wood, bamboo and grass for paper industry, lac for lac industries come from forests.

e. **Animal based Industries**- Leather for leather industry and wool for woollen textiles are obtained from animals. Besides, ivory is also obtained from elephant's tusks.

3. **Industries Based On output/product**- The consumer goods industries produced goods which are consumed by consumers directly. For example, industries producing breads and biscuits, tea, soaps and toiletries, paper for writing, televisions, etc. are consumer goods or non-basic industries.
4. **Industries based on ownership-**
   a. **Public Sector** Industries are owned and managed by governments. In India, there were a number of Public Sector Undertakings (PSUs).
   b. **Private Sector** Industries are owned by individual investors. These are managed by private organisations. In capitalist countries, industries are generally owned privately.
   c. **Joint Sector** Industries are managed by joint stock companies or sometimes the private and public sectors together establish and manage the industries.

Traditional Large-Scale Industrial Regions

- These are based on heavy industry, located near coal-fields and engaged in metal smelting, heavy engineering, chemical manufacture or textile production
- These industries are now known as smokestack industries
- Traditional industrial regions can be recognised by:
    - High proportion of employment in manufacturing industry.
    - High density housing, often of inferior type, and poor services.
    - Unattractive environment, for example, pollution, waste heaps, and so on.
- Problems associated with such Industries are unemployment, emigration and derelict land areas caused by closure of factories because of a worldwide fall in demand

The Ruhr Coal-field, Germany

- This has been one of the major industrial regions of Europe for a long time
- Coal and iron and steel formed the basis of the economy
- The Ruhr region is responsible for 80% of Germany's total steel production
- The future prosperity of the Ruhr is based less on the products of coal and steel, for which it was initially famous, and more on the new industries like the huge Opel car assembly plant, new chemical plants, universities

- Out of-town shopping centres have appeared resulting in a ‘New Ruhr’ landscape

Concept of High Technology Industry

- High technology, or simply high-tech, is the latest generation of manufacturing activities
- It is best understood as the application of intensive research and development (R&D) efforts leading to the manufacture of products of an advanced scientific and engineering character
- Professional (white collar) workers make up a large share of the total workforce
- These highly skilled specialists greatly outnumber the actual production (blue collar) workers
- Robotics on the assembly line, computer-aided design (CAD) and manufacturing, electronic controls of smelting and refining processes, and the constant development of new chemical and pharmaceutical products are notable examples of a high-tech industry
- Neatly spaced, low, modern, dispersed,office-plant-lab buildings rather than massive assembly structures, factories and storage areas mark the high-tech industrial landscape
- High-tech industries which are regionally concentrated, self-sustained and highly specialised are called technopolies. The Silicon Valley near San Francisco and Silicon Forest near Seattle are examples of technopolies
- Iron and steel, textiles,automobiles, petrochemicals and electronics are some of the world’s most important manufacturing industries

Iron and Steel Industry

- The iron and steel industry forms the base of all other industries and, therefore, it is called a basic industry
- It is basic because it provides raw material for other industries such as machine tools used for further production
- It may also be called a heavy industry because it uses large quantities of bulky raw materials and its products are also heavy
- The large integrated steel industry is traditionally located close to the sources of raw materials – iron ore, coal, manganese and limestone – or at places where these could

be easily brought, e.g. near ports
- These are less expensive to build and operate and can be located near markets because of the abundance of scrap metal, which is the main input

Distribution of iron and steel industry in the world

- The industry is one of the most complex and capital-intensive industries and is concentrated in the advanced countries of North America, Europe and Asia
- In U.S.A, most of the production comes from the north Appalachian region (Pittsburgh), Great Lake region (Chicago-Gary, Erie, Cleveland, Lorain, Buffalo and Duluth) and the Atlantic Coast (Sparrows Point and Morisville)
- The industry has also moved towards the southern state of Alabama. Pittsburg area is now losing ground. It has now become the “rust bowl” of U.S.A
- In Europe, U.K., Germany, France, Belgium, Luxembourgh, the Netherlands and Russia are the leading producers
- The important steel centres are Scun Thorpe, Port Talbot, Birmingham and Sheffield in the U.K.; Duisburg, Dortmund, Dusseldorf and Essen.in Germany; Le Creusot and St. Ettienne in France; and Moscow, St. Petersburgh,Lipetsk, Tula, in Russia and Krivoi Rog, and Donetsk in Ukraine. In Asia, the important centres include Nagasaki and Tokyo-Yokohama in Japan; Shanghai, Tienstin and Wuhan in China; and Jamshedpur, Kulti-Burnpur, Durgapur, Rourkela, Bhilai, Bokaro, Salem,Visakhapatnam and Bhadravati in India

Cotton Textile Industry

- Cotton textile industry has three sub-sectors i.e. handloom, powerloom and mill sectors
- Handloom sector is labour-intensive and provides employment to semi-skilled workers
- It requires small capital investment
- This sector involves spinning, weaving and finishing of the fabrics
- The powerloom sector introduces machines and becomes less labour intensive and the volume of production increases
- Cotton textile mill sector is highly capital intensive and produces fine clothes in bulk
- Cotton textile manufacturing requires good quality cotton as raw material

- India, China, U.S.A, Pakistan, Uzbekistan, Egypt produce more than half of the world’s raw cotton
- The U.K, NW European countries and Japan also produce cotton textile made from imported yarn