CHAPTER-II

CLUSTER APPROACH - THEORETICAL FRAMEWORK FOR ANALYSIS

Clustering, the development mantra accepted by all the countries of the world both developed and developing to meet the global challenges and as an important tool used against the increasing competition from large industries and Multinational Corporations. Clustering of industries is emerging as the engine of economic activity. It is the local agglomeration of enterprises mainly SMEs, but often also including some large enterprise which are producing and selling a range of related and complementary products and services (UNIDO, 1997). For example a localised leather industry includes leather tanning units, leather finishing units, leather goods producers, leather garment manufactures, designers, subcontractors, merchant buyers and exporters etc. Here stress is given to geographical and sectoral concentrations of interrelated or interdependent enterprises. Clusters improve producer’s access to market thereby enabling them to produce more. This paves the way for rapid industrialisation and overall development of the region leading to an improvement in the standard of living of the people within the same region.

Industrial clusters are made up of geographically concentrated and sectorally specialised enterprises and other agents (Nadvi, 1995). Cluster represent a kind of new spatial organisation form in between arm’s length markets on the one hand and hierarchies or vertical integration on the other (Porter, 1998). External economies arise through clustering, which helps to attract still more industries. Cluster policies have received much international attention in the 1990s, primarily as a consequence of Michel Porter presents cluster studies from ten countries as the basis of an analysis of the forces
behind the competitive advantages of nations (Kristensen & Laursen, 1999). Clustering of firms or industries helps to pooling of skilled labours, transport facilities, and other economies external to the firm. The presence of industry cluster helps to increase efficiency, productivity and capacity for innovation of firms within the cluster, it helps to stimulate and diversify new business formation, and wages of the workers will increase and employment opportunities in local firms are improved. Clusters innovative capacity depends on its ability to generate the significant innovations in processes, design, product, logistics, marketing and management which are relevant for the industries competitive advantage. The growth potentiality of a cluster depends on the demand for products, the competitive position of the cluster and the availability of resources necessary to support growth. The number of people employed is not a remarkable matter for the success of a cluster. But the cluster should be made up of interrelated industries. Through specialisation, division of labour among enterprises is strengthened. This will help to improve the quality of products as well as speed and make production more flexible.

Cluster is a geographically bounded concentration of similar, related or complementary business active channels for business transactions and dialogue that share specialised infrastructure, labour market and services and that are faced with common opportunities and threats (Rosenfield, 1996). Based on quantitative parameters used, cluster definitions vary from country to country. The main theme or content of a cluster is the linkages and relationships among various actors. The cluster actors include raw material suppliers, equipment suppliers, component producers, subcontractors, final goods producers etc. All play different roles to make cluster a successful one. Clusters also often extend downstream to channels and customers and laterally to manufactures of complementary products and to companies in industries related by skills, technologies or common inputs. Finally many
clusters include governmental and other institutions such as universities, standard setting agencies, think tanks, vocational training providers and trade associations that provide specialised training, education, information research and technical support (Porter, 1998). Clustering arise from localisation economies namely the availability of common buyers and suppliers, the formation of specialised skilled labour pool and the informal transfer of knowledge (Chakravorthy & Lall, 2005). Cluster is a set of related industries beyond sectors with less strict geographical boundaries which can encompass even an entire economy (Beerepoot, 2005). Thus the different definitions of clustering shows the different concepts related to it like co-operation and competition that develops between the clusters, collective efficiency, upgrading, reduction in transaction costs, performance path of the cluster etc. Cluster consist of not only firms producing similar or complementary products but also people who belong to the same professions, have similar jobs, formal training and types of on-the-job experience. The foundation of any cluster based strategy is determining which types of firms are to be included and where the clusters are concentrated.

The overall external environment determines the balance between competitions and co-operation among firms within a cluster. To get its ideal form for the cluster, co-operation between the firms is necessary which increases its productivity and reduces the cost of production. A large number of firms are working together for completing the production process which include input production, manufacturing and complementary services. Through the co-operative networks at the regional level SME’s can achieve collective learning, scale economies and improve innovation.

Co-operation between the firms may be either horizontal or vertical co-operation. In horizontal clustering, co-operative practices exist among the producers. It occurs as the new technology and labour skills are applied to
related industries in different sectors. Through horizontal co-operation functional upgrading and product upgrading takes place within the cluster. In vertical co-operation, co-operative practices are between producers and their suppliers/subcontractors. Increased vertical clustering takes place as the division of labour gets more specialised and new firms are able to fill the new niche markets. The BPO and Call centre industries can be cited as an example of such type of integration. As a result of vertical co-operation process upgrading takes place. A single firm alone cannot produce the whole product. To give the product its original shape the firms within the cluster must have to co-operate. But this does not mean that there exists no competition among the units. For improving the quality of the product, the competition is also needed. So amongst the clusters along with co-operation, healthy competition between the firms also exists.

Collective efficiency, another concept related to clustering, describes the advantages that the firms achieve through working together. The concept collective efficiency proposed by Schmitz is related to and partly related to the older concept of agglomeration economies. Competitive advantage which greatly promotes business is one of the characteristic features of collective efficiency, derived from local external economies and joint action. By working in isolation individual firms find it difficult to achieve collective efficiency. The structure of a cluster and its links with the rest of the economy determines the extent of collective efficiency and the distribution of clusters’ benefits. Collective efficiency is of two types – Passive and Active. Passive collective efficiency derives for a firm when they become a part of the cluster. These may take the forms of easy access to market, availability of a large pool of skilled labours, technological spill over, flexibility and reduction in transaction cost etc.
The performance path of clusters-the high road growth and low road growth path, both leads to competitiveness. High road growth path is based on efficiency enhancement and innovation i.e., through economic gain. With increased economic gain it is possible to increase the wages of workers; their social conditions will improve and protects the interest of the workers. In the low road growth labour gets low wages and it provides a picture of deregulated market environment. The followers of this approach believe that by lowering the wages of workers, there will be an increase in profits. But there is also a possibility of producing low quality products.

2.1 THE CONCEPT OF CLUSTERING: DEFINING CLUSTERING

There is no generally accepted definition of industrial clusters. Cluster designates a group of firms engaged in similar or related activities within a national economy, Porter(1990). Relationships within an industry cluster do benefit from firms’ being located near one another but the definition does not cover the geographical proximity as one of its characteristics. The geographical proximity characteristic gained attention from Marshall (1890) concept of industrial district. A cluster is a geographic and sectoral agglomeration of enterprises. Schmitz,(1992).

2.1.1 Upgrading

The concept upgrading relates to how the firms improve their performance. Upgrading may be process, product, functional and intersectoral upgrading. Process upgrading and product upgrading tend to be the first upgrading strategies for the firms to pursue. In process upgrading cost reduction is possible either by reorganising production or by implementing new technology. Production reorganises either by implementing new machinery or by using some production technology or reorganises the production relationship. Here the relationship of the firm with their suppliers
is subject to changes. It is also known as vertical co-operation. In process upgrading there is more efficient transformation of inputs into output, by reorganising the production system or by introducing superior technology. Through functional upgrading either the number of manufactures increases or firm changes their product design and marketing processes. Under product upgrading more sophisticated or higher value added goods are produced. Product upgrading can be defined in terms of increased unit values. In functional upgrading and product upgrading joint action or horizontal co-operation between the firms is necessary. Inter sectoral upgrading applies the competence acquired in a particular function of a value chain\(^1\) or pursuing a new market. There are four level of analysis upon which upgrading can operate including factories, local or national economies, inter firm organisational networks or value chain and regions.

2.1.2 Competition

There exist five forces in Michel Porter’s framework for understanding the fundamental forces that affect competition in an industry. The five forces consist of those close to a company that affects its ability to serve its customers and make profit. These forces are: buyers, suppliers, potential entrants, substitute products or services and rivalry among existing forces. A change in any of the forces normally requires a company to reassess the market place (Porter M. E., 1980a). Through the analysis of the relative strength of the five competitive forces helps a company to select a strategic position. In the global textile industry, a mature firm can easily be replaced if it continues to pursue a low cost strategy for an extended period of time. Because the textile industry is one of the first industries to develop in a country due to its low barriers to entry and reliance on large pools of unskilled labour, it is one the most competitive industries in the world in labour-intensive, price driven sectors such as cutting and sewing apparel (Abernathy,
The way to sustain competitive advantage is to upgrade it to more sophisticated types that require more advanced skills, capital investments and an educated work force (Porter M. E., 1990). A firm’s competitive position is determined by firm’s ability to put together the operational effectiveness and strategic positioning. The Value Chain framework was used by Porter in order to explain the cluster framework.

### 2.1.3 Value Chain

Value chain describes the full range of activities which are required to bring a product from its outset to its use and beyond. Value chain can be limited within a single geographic location or spread across wide areas or it can be contained within a single firm or divided among different firms. Every firm’s value chain is composed of five activities-inbound logistics, operations, outbound logistics, marketing and sales and services. In addition to this there are four supporting activities that facilitate the creation of a product’s value outside the primary activities undertaken by the firm including procurement, technology development, human resource management and infrastructure (Federick & Cassil, 2009).

### 2.1.4 Industrial Districts

Marshall is the father of modern concept of industrial district. He is the person who identified the earlier benefits of industrial clustering. Industrial district is considered as one of the key element. In the opinion of Marshall only industrial district could rescue the British economy from its decay stage. Industrial district is a small region with above average vertical and horizontal links with other economic activities in the region.
2.1.5 Geographical Concentration

There are various reasons for geographical concentration of industries, which include the resource concentration such as climate, soil, mines, quarries, access to land or water in a specific area, the presence of a town and the patronage of a court which produces demand for goods of high quality. Localised firms have a wider market than an isolated firm which helps to the survival of small firms.

The advantages of geographical concentration include hereditary transformation of special talents from one generation to another, the establishment of a number of firms in a specific locality helps to the growth of subsidiary trades in that locality, through division of labour and usage of highly specialised machineries and employers have got easy access to workers, due to the existence of a local market for special skills.

2.2 CLUSTER IDENTIFICATION

Earlier the process to identify clusters was primarily an art. A detailed set of criteria were used for cluster identification including industry growth rate, multiplier effect, job creation and income potential, match with local resources, environmental considerations, relationships with local suppliers, contribution to quality of life and synergy with local institutions and businesses (Enright, 2000). The six criteria were suggested for selecting target clusters including high salaries, strong employment base, export, high location quotient, national growth in employment and relative local growth (Kelton, Pasquale, & Rebelein, 2008).

The two general methods exist for defining clusters are: a heuristic approach and algorithmic approach. Heuristic approach that relies on case studies, self-identification by businesses and associations, surveys, expert opinion, business directories and local knowledge and experience to identify
regional areas of economic specialisation and interdependencies. This approach is typically required to identify emerging clusters (Rosenfeld, 2006).

Algorithmic approach based on economic data available by place and type of business such as input-output data, Location Quotient and network analysis (Bergman & Feser, 1999). Recently two different research groups have used this approach to identify textile related clusters. The efforts to develop such cluster definitions on the basis of empirical analysis have came to be known by terms such as cluster mapping (Solvell, Lindqvist, & Ketels, 2003).

2.3 DIMENSIONS OF INDUSTRY CLUSTERS

There are four general dimensions that underline the definition of an industrial cluster-Geographic scope, organisational scale, functional and inter firm relationships and the role of institutional actors and social infrastructure (Bergman & Feser, 1999).

2.3.1 Geographic scope- Geographic scope of a cluster refers to the territorial extent of the firms, customers, suppliers, support services and institutions that are embedded in the ongoing relationships and interdependent activities that characterise the cluster (Enright, 2000). Geographic scope ranges from a region, a state, or even a single city. Based on the geographic scope clusters are of localised and dispersed. Localised clusters found in a small geographic area, often a single town with tight groupings and dispersed clusters are spread across a wider geographical area. For the competitive advantage of the entities within the cluster the geographic proximity of the cluster has got its own advantages, but the clusters do not have specific geographic bounds.

2.3.2 Organisational scale-Clusters are made up of both direct and indirect linkages in vertical and horizontal relationships. It includes more than just one industry.
2.3.3 **Functional and inter firm relationships**- The relationships between the organisational structures within the cluster extend beyond typical trading patterns.

2.3.4 **The role of institutional actors and social infrastructure**- The training centre, colleges and trade associations and institutions for collaborations play a major role in cluster. If the clusters are effective they help to facilitate co-operation, social interaction and information exchange.

2.4 **TERMS RELATED TO CLUSTER**

2.4.1 **Density of a Cluster**

Density of a cluster refers to the number and economic weight in terms of market shares of relevant industries of the firms in the cluster (Enright, 2000). On the basis of density, the clusters are of dense clusters and sparse clusters. In *dense clusters* the number of firms will be hundreds, thousands or even ten thousands of firms with total sales reaching hundreds, millions or billions of dollars. A *sparse cluster* consists of fewer firms or fewer substantial firms.

2.4.2 **Breadth of a cluster**

Breadth of a cluster refers to the range of horizontally related industries connected by common technologies, end users, distribution channels and other non vertical relationships (Enright, 2000). On the basis of breadth clusters are of narrow cluster and broad cluster. *Narrow clusters* are those which include one of a few industries and their supply chains and *broad clusters* are those which provide a wide variety of products in closely related industries.
2.4.3 Cluster Depth

Cluster depth refers to the range of vertically related industries within the cluster (Enright, 2000). Cluster depth classifies cluster into deep and shallow clusters. In *deep clusters* the region does not just contain an industry or set of related industries. It consists of complete or nearly complete supply chains and *shallow clusters* are those that depend mainly on inputs, components, equipments, support services from outside region and technology.

2.4.4 Activity Base of a Cluster

Activity Base of a Cluster includes the nature and number of the activities in the value added chain performed with the region. On the basis of activity there are activity rich clusters and activity poor clusters. *Activity rich* clusters perform many of the critical activities in the value added chains of the relevant industries. Whereas *activity poor* clusters undertake only a few activities in a given industry or set of related industries.

2.5 EVOLUTION OF A CLUSTER

Clusters are not static they are dynamic and therefore subject to changes. Due to the dynamic nature, clusters are of sunrise, noon day and sunset. Clusters passes through different stages of development (Flowchart 2.1).

**Figure 2.1 Evolutionary process of a cluster**

![Flowchart 2.1](image)

The evolution process from one stage to another is not so smooth and certain stages may not be separated from one another. Clusters are of various
sizes medium sized and large sized. Large firms existing in matured clusters while small firms existing in young clusters.

**2.5.1 Initial Stage** - Formation of cluster takes place at the initial stage. The basement of the cluster is formed by some leading firms in a particular region. On the basis of success of these units new units are attracted towards the cluster. Related firms also start functioning. The subcontracting units get established and manpower development also takes place during this stage of development. Prices remain to be high at this stage due to high cost of production. Because of few numbers of firms less competition exists between the firms.

**2.5.2 Growth Stage** - During this stage new firm enters the cluster leading to competition between the firms and innovations. Industry attains rapid development government institutions intervene in the activities of the industry and raw material and other service providers join the activities of the industry.

**2.5.3 Matured Stage** - Due to cut throat competition or the existence of overcapacity the growth slows down during this stage which continues for a long period. Cost of production again starts shooting up. For withstanding with other firms each of the firms have to maintain a strong research and development wing to introduce new product or develop new production process. The ‘survival of the fittest’ the rule of the jungle gets valid here and those industrial units which are weak get thrown out and only the stronger ones survive.

**2.5.4 Extinction Stage** - Cost of production is goes on rising during this stage because of high labour cost. Competition naturally reduces because only the stronger firms continue to exist in the cluster. Due to external factors like change in life style, the demand for the clusters’ product may reduce. For the
survival of the industry it has to either search for a new location or produce a new product. Otherwise the cluster will decay.

2.6 FORMATION OF A CLUSTER

Clusters are formed because of natural reasons, high demand potential and private initiative through inducement, easy access to raw material, availability of skilled labours etc.

The factors influencing the cluster formation are -resources (raw material and skilled manpower), market (Demand for the products) and infrastructure (Ramesha, 2000). Majority of the clusters emerged because of market. UNIDO study on Indian clusters shows 99 out of 138 clusters are market driven, only 6 seem to have come up primarily because of conducive infrastructure and the rest 33 clusters are resource based (Ramesha, 2000). Clusters help to achieve certain well defined objectives including specialisation in particular field of production by the firms, attract entry and there by connecting the suppliers and buyers into the value chain, fullest utilisation of local resources and capabilities; creating situations for co-operative work.

2.7 STEPS IN THE FORMATION OF A CLUSTER

The formation of a cluster normally involves the following steps: Selection of the cluster, Diagnosis of the cluster, Trust building among cluster actors, Action plan preparation, Implementation and Monitoring cum evaluation (Flow chart 2.2)
2.7.1 Selection of the cluster - The location or region for cluster formation is selected by taking into account certain factors like the socio-economic importance of the cluster, promotional role of the cluster, viability, initiative and the potential sustainability.

2.7.2 Diagnosis of the cluster - A diagnostic study is conducted to know the possibilities and potentialities for cluster formation. Sufficient information is gathered in relation to the constraints, potentialities, local linkages and support mechanisms of a cluster.
2.7.3 Trust building among cluster actors - Building trust among cluster actors is necessary for establishing a realistic action plan that will have support from clients, support agencies and service providers.

2.7.4 Prepare an action plan - Cluster action plan is considered as a road map with the help of which the relationship among cluster players are developed

2.7.5 Implementation - the responsibility of implementing the action plan is gradually shifted to the private sector and they get support from local institutions for the above

2.7.6 Monitoring cum evaluation - the final step in cluster formation is monitoring and evaluation of the earlier steps (selection of the cluster, diagnosis, trust building, prepare action plan and implementation). For strengthening trust and best practices among the community this step is necessary.

2.8 PORTER’S DIAMOND MODEL

DIAMOND is basically a model of interactions to be used as the analytical tool to examine the firm and its relations to its surrounding. The diamond consists of six central parts which can describe the interactions and relations: the strategy of the firms together with the management of the firm and organisation and the routines of the firm are of course important since in the end it is the firm that must gather and use the knowledge and the factors of production in an effective way. Regarding the sector the formal and informal co-operation, as well as the rivalry between firms in the sector is important. Also the strength of the organisations and institutions which undertake the interests of the sector as a whole is important. The presence or non-presence of related sectors that are internationally competitive and either supplying or adopting technology in a way that stimulates accumulative and interactive
process has an influence. This is related to the product and process innovations where lead users or producers of knowledge are seen as important. The relative size of the home market and the quality of the demand play a crucial role. The factor advantages are traditional factor endowments but also the infrastructure, the human resources and the technological ability of the country. The state play a role through regulations related to sectors or business in general, in addition to investment in for example, infrastructure. The state’s role as an advanced user is also important (Kristensen & Laursen, 1999).

The Porter diamond was the theoretical corner stone in the analysis of the relations and interplay in the resource areas and the methodology to analyse the connections and flows was quantitative with a historical perspective.

2.9 CHARACTERISTICS OF A CLUSTER

Clusters are identified on the basis of their peculiar features. Each cluster possesses some characteristics. These features are somewhat different in real world than the ideal one.

2.9.1 Geographical Proximity- All the firms of a cluster are concentrated in close geographical region. Geographical proximity is not a necessary condition for an association to work, but it makes it easier for the association to work. For the achievement of external economies geographical proximity has got its own importance. To promote interaction between industry and academia, the close relationships between scientific and high-tech talent, firms are encouraged by the close proximity are a significant promoter or strengthenner of these links remain uncertain.

2.9.2 Sectoral specialisation - Concentrated small enterprises in particular region specialise in the production of a particular commodity.
2.9.3 **Common infrastructure** - Common infrastructural facilities are available to the firms within the industry.

2.9.4 **Inter firm collaboration and competition** - There is a high density of interfirm linkages, including horizontal linkages (between competing firms) and vertical linkages (between suppliers, manufactures and distributors). Collaboration among firm facilitates collective action and collective learning. At the same time competition leads to innovation.

2.9.5 **Shared social, cultural or political characteristics** - At one extreme there are clusters where the individuals who run and work in the firms share a strong, homogeneous, socio-cultural identity and strong family ties (Advani, 1997). In some cases, it is primarily an ethnic identity on a common local value system that is shared. In other cases it is largely a political identity that is shared among members of firms.

In addition to this some other features that are viewed in different clusters include the economic agents within the clusters are supported by some public and private local institutions. Some supporting institutions are exist within the cluster whose aim is to either to support or to hinder the cooperation within the cluster.

2.10 **TYPES OF CLUSTERS**

On the basis of its formation and based on different criteria clusters differ from each other. On the basis of its formation clusters are of three types—Natural clusters, demand based clusters and induced clusters.

2.10.1 **Natural Clusters** - Natural clusters are formed to some natural reasons like the easy access to raw material, skilled manpower, market access etc. For example marble cutting cluster in Kishangarh, Rajasthan. In Rajasthan there is easy access to marble stone which led to the growth of this natural cluster.
2.10.2 Demand Based Clusters - Demand based clusters are formed because of huge demand for a particular product. The small or isolated firms find it difficult to produce the products in bulk and therefore these smaller firms start to work together and co-operate with each other. All these lead to formation of clusters. The readymade garments of Indore and Mumbai can be considered as one of the best examples for demand based clusters.

2.10.3 Induced clusters - Favorable factors like incentives to start new firms, infrastructural facilities, existence of a large public sector unit in order to demand the product of small firms induces them in a locality to form clusters and produce the product in large quantities. The automobile industry of Gurgaon is an example for induced cluster. The setting up of this automobile cluster in Gurgaon region may be due to the establishment of Maruti Udyog Limited.

These clusters are formed because of the influence of natural reasons, inducement, demand for its formation etc. There are also certain other types of clusters which are formed on the basis of certain criteria like the level of technology of firms, extensiveness of change in cluster overtime and the coordination and networking. Likewise the clusters can be classified into five types—Informal clusters, Organised, innovative, technology parks and incubators and Export Processing Zones (EPZ s) (The UNCTAD Secretariat, 1998).
<table>
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<tr>
<th>Types</th>
<th>Informal clusters</th>
<th>Organised clusters</th>
<th>Innovative Clusters</th>
<th>Technology Parks &amp; Incubators</th>
<th>EPZs</th>
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<tr>
<td>Features/Examples</td>
<td>Suame Magazine (Kumasi, Ghana)</td>
<td>Sialkot(Punjab, Pakistan)</td>
<td>Bangalore(India)</td>
<td>Business International Incubator(China)</td>
<td>Maquiladora (Mexico)</td>
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<td>Innovation</td>
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<td>Size of firms</td>
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<td>Exports</td>
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<td>Learning</td>
<td>Little</td>
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Source: Compiled by UNCTAD Secretariat from various sources (2000), UNCTAD/ITE/EDS/Misc.18,vol:I.

2.10.4 Informal Clusters - Informal Clusters consists of micro and small firms, low technology based, with less skilled workers and will have barriers to entry. These types of clusters are mainly seen in less developed countries and developing countries. The Suame Magazine Cluster in Kumasi, Ghana is the best example for informal clusters. The innovations are low but will have high competition. The co-operation between the firms will also be low.

2.10.5 Organised Clusters - Availability of infrastructural facilities, skilled labourers, better technology, competition between the firms etc. lead to the formation of organised clusters. The Surgical instruments clusters (Sialkot,
Pakistan), can be considered an example for organised cluster. Co-operation and networking develops between the firms within an organised cluster and this distinguishes organised cluster from other types of clusters. The co-operation, trust among the firms will be high.

2.10.6 Innovative Cluster - Innovative cluster use high technology, skilled workers and innovative mentality of the cluster which makes them to survive in this competitive world. Brazilian Ceramic Tile cluster Santa Catarina, provides the best example for innovative cluster. Innovative clusters are mainly found in developed countries. But in exceptional cases these clusters are formed in developing countries, like the software cluster in Bangalore, India. Here trust and co-operation among the firms are high but still will compete with each other and the export will also be high.

2.10.7 Technology Parks - Technology Parks use both low technology and high technology, medium skilled workers. There is lack of co-operation and competition between the firms of these clusters.

2.10.8 EPZs - In EPZs firms technology level ranges from low to medium. Co-operation and competition exist between the firms. Subcontracting is there, but these clusters have no linkage, either forward or backward with local community.

Now at the time of globalisation when every product, service or business activities faces global market opportunities and global competitions the SME’s may not be able to survive if they simply depend on own limited resources and specialised skill and technological capabilities along. They turn out to be successful when they take advantage of local industrial cluster policy measures or develop own linkage with other firms or institutions to exploit new technological outcomes and untapped local resources. Even though the word‘cluster’ is popular and ‘industrial cluster policies’ are
prominent, the functioning of clusters its practical roles and possibilities within the policy frameworks are not necessarily clear.

2.11 ADVANTAGES OF CLUSTER

The basic advantage of cluster are without incurring costs of long distance travel or changing their homes and uprooting their families, the individual jobseekers and entrepreneurs can have access of interesting job opportunities. Clusters help to the growth, visibility and identity for a region through the existence of universities and research institutions within the nearby areas of a cluster. The regional developers can think about the existing linkages between industries. The presence of a cluster helps to increase information flow and the likelihood of innovation and new businesses from spin-offs, downstream, upstream and in related industries (Porter M. E., 1990). Firms located within an industrial cluster have got strong local demand for their products and the costs for searching consumers are comparatively low.

2.11.1 Supply Side Benefits of clustering

Creation of specialised labour becomes possible. A pooled market was created for workers with the same skills helping them to work in co-operation during situations of uncertainty related to business cycle and unemployment. There is adequate provision for traded and non trade inputs specific to an industry at a low cost and in greater variety. Positive externalities were generated to the transmission of knowledge between nearby firms. Access to infrastructural facilities becomes easier. Risk to investment in start up companies is reduced i.e., investors can invest in a start-up company and that is off without fear because it belongs to a cluster. Clusters help to identify the production process giving local developers an insight into types of firms which should be targeted. The economic base is diversified by developing the
supplier networks or related support services needed to serve the firms within the cluster.

2.11.2 Demand Side Benefits of Clustering

There is the advantage of strong local demand especially which derived from related industries. By understanding the specific needs relating to infrastructure or of workforce the planners are able to build the existing strength and provide more appropriate assistance to business. For the small business units selling differentiated products can found customers more easily by locating within a cluster. Firms can readily exploit the ideas of their customers, who were a good source of ideas for innovation. Firms can exploit the idea either by locating near to the users or by establishing customer services.

2.12 SOCIO-ECONOMIC IMPACTS OF INDUSTRIAL CLUSTERS

Following are some of the important impacts that clusters create in an economy. This includes industrial development which can be fueled and help to the improvement of nation’s overall competitiveness, improvement in productive efficiency, improve quality of the product leading centers for the specific industries and promoting regional branding, growth and innovation, formation of new business etc.

2.12.1 Industrial development can be fueled and improve nation’s overall competitiveness: - The competitiveness of local industries can be sharpened through clustering. The local regional economy will benefit through local clusters.

2.12.2 Productive efficiency can be improved: - Productive efficiency and quality of the product can be improved through the close linkage that exists within an industrial cluster. The input suppliers also get the benefit of
clustering. Transaction cost can be reduced by getting inputs from nearby areas. This reduces delays in accessing inputs, improves productivity of the establishments and minimizes the need for inventory.

2.12.3 Development of leading centers for specific industries and promoting regional branding:- The competitiveness and some of distinctive features of industrial clusters helps to develop certain regions as specific centers. The region became famous for all types of inputs, materials and capital goods.

2.12.4 Growth and innovation:- Prior knowledge about technologies, availability of components, services and marketing concepts from other enterprises through the ongoing relationships among the enterprises. New value added products and services are developed through the transfer of knowledge and technology among the co located enterprises.

2.12.5 New business formation will take place:- Easy access of capital, skilled labour, specialised equipment or components suppliers etc. help to establish new businesses within the cluster.

2.12.6 Job creation:- Establishment of new units within clusters will create huge demand for labour. Like this clusters become an important source for job creation.

2.12.7 Urbanisation and industrialisation:- Clusters can become an effective platform for industrialisation as they can direct the rural labour to modern industries.
2.13 OBSTACLES FOR THE DEVELOPMENT OF INDUSTRIAL CLUSTERS

Large numbers of factors are acting as supportive for the smooth development of clusters; it is not free from the various obstacles affecting it. They are:

2.13.1 Linkages between the clusters become weak: - Due to weak linkages between enterprises there is overcapacity in production, duplicative factors of production etc. The clusters become uncompetitive because of their small operation scale, emphasize on short term benefits, severe competition, rather co-operation with one another.

2.13.2 Lack of relevant personnel and management experience: - There is lack of suitable management and technicians to cope with the ever changing world, in enterprises within some industrial clusters.

2.13.3 Lack of local industry culture: - Some industrial clusters do not have local industry culture or the social embeddedness i.e., a common trust, mission and co-operation required for sustaining the development of the industrial clusters.

Next section discusses and analyses the clusters and its characteristics in India with special reference to the industrial clusters of Kerala.

2.14 INDUSTRIAL CLUSTERS IN INDIA WITH SPECIAL REFERENCE TO KERALA

2.14.1 An overview of industrial sector in India:

During pre British period Indian industries enjoyed worldwide reputation. The Dacca Muslin, Banaras sarees, Kashmir shawls etc. are world famous. Textiles and handicrafts industries were spread all over the country.
Europe was a customer of Indian manufactured goods during 17th and 18th centuries. The superior industrial status of India prompted the Industrial Commission of India (1918) to record that at a time when the Western Europe, the birthplace of modern industrial system was inhibited by uncivilized tribes, India was famous for the wealth of her rulers and for high artistic skills of her craftsmen and even at a much later period, when the merchant adventurers from West made their first appearance in India the industrial development of this country was at any rate not inferior to that of the more advanced European nations.

Before the industrial revolution Indian products, agricultural or industrial, had got greater demand in Europe. During those days the British East Company were more interested in exporting Indian manufactured goods, textiles, spices etc. to Europe. At that time India had only trade relation with England. Later it is observed that when British conquered India and started direct administration, the nature of relation between India and England changed. Along with this the industrial revolution in England reversed the character of foreign trade and destructed the Indian industries. With industrial revolution British industries expanded their productive capacity and there was huge demand for raw materials which initially hit the existence of textiles, handicrafts industry and gradually all the Indian industries. All these led to deindustrialisation or progressive ruralisation of India. India lost her fame in industrial field.

At the time of independence, in terms of industrialisation, India was typically a backward economy because of the colonialisation and exploitation by the British. In order to uplift the economy from this pathetic condition the government adopted various measures. Initially development pattern was characterized by strong centralised planning. Basic and strategic industries were owned by the government private enterprises being regulated and
controlled. In the field of trade protectionist measures were adopted with tariff and non tariff barriers. All these protective and controlled measures lead to stagnate the efficiency, productivity and competitiveness of Indian industries.

Making a sharp departure from the industrial policy resolution of 1956, government announced a new industrial policy on July 24, 1991 the basic philosophy been summed up as-‘continuity with change’ (Dhingra, 2006). In this new framework the public sector got a supportive role, privatisation increased and globalisation, liberalisation policies were introduced. The process of liberalisation got a fillip with the announcement of the New Industrial Policy, in July, 1991 and entered a new phase of what has been described as ‘reform by storm’ that supplements ‘ reform by stealth’ of the last half of the seventies and ‘reform with reluctance’, during the second half of the eighties (Dhingra, 2006).

The liberalisation and privatisation resulted in large scale increase in investment and sweeping changes in the industrial sector. It also leads to stiff competition in the economy. Number of small scale units which could not withstand this competition began to close down forcing the government to take adequate measures in favour of the small scale sector. Abid Hussain Committee was appointed to suggest measures to improve the conditions of small scale units.

One of the recommendations of the committee was to increase public and private partnerships by forming clusters of small scale enterprises. Clusters can become a source of informational economies, accretion of skills and economies in infrastructure development (Chopra, 2008) . So clustering was accepted as a policy by the government to help the small medium enterprises to face the global competition.
2.14.2 Industrial clustering in India

In Indian context the clusters can be defined as sectoral and geographical concentration of enterprises in particular small and medium enterprises faced with common opportunities and threats which can give rise to external economies, example, specialised suppliers of raw materials, components and machinery, sector specific skills etc. favour the emergence of specialised, technical, administrative and financial services. Create a favourable atmosphere for the development of inter firm co-operation and specialisation as well as of co-operation, among public and private local institutions to promote local production. For example, knitwear and garment industry in a specific geographic region which includes knitting firms, cloth finishing, dyeing and printing firms, garment producers, merchant buyers and exporters and producers of specialised inputs such as thread, buttons, zips etc. Clusters differ in terms of the number of units included and the quantity of output produced by them.

The region wise distribution of clusters in India shows major concentration of clusters in western India. The industrial development in western areas and the demand for industrial products from agricultural workers helped the development of clusters in these regions. Town and cities helps the growth of clusters. In India majority of clusters are centered on towns and cities. Majority of SMEs clusters in India are concentrated mainly in industrialised states like Maharashtra, Gujarat, Haryana, Punjab, Rajasthan, Tamil Nadu, Uttar Pradesh etc. The maximum number of small and medium enterprise clusters is concentrated in Maharashtra (Table 2.2) with around 16 percent of the national total followed by Gujarat (14percent) and Uttar Pradesh (11 percent). The states of Bihar, Chhattisgarh, Goa, Himachal Pradesh, Jharkhand and Uttarakhand have only less than five clusters functioning in their states.
Table: 2.2
Number of small and medium enterprise clusters in different Indian states

<table>
<thead>
<tr>
<th>Sl. No</th>
<th>States</th>
<th>Number of clusters</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Andhra Pradesh</td>
<td>32</td>
</tr>
<tr>
<td>2</td>
<td>Bihar</td>
<td>3</td>
</tr>
<tr>
<td>3</td>
<td>Chhattisgarh</td>
<td>2</td>
</tr>
<tr>
<td>4</td>
<td>Delhi</td>
<td>19</td>
</tr>
<tr>
<td>5</td>
<td>Gujarat</td>
<td>49</td>
</tr>
<tr>
<td>6</td>
<td>Goa</td>
<td>1</td>
</tr>
<tr>
<td>7</td>
<td>Haryana</td>
<td>23</td>
</tr>
<tr>
<td>8</td>
<td>Himachal Pradesh</td>
<td>3</td>
</tr>
<tr>
<td>9</td>
<td>Jammu &amp; Kashmir</td>
<td>5</td>
</tr>
<tr>
<td>10</td>
<td>Jharkhand</td>
<td>3</td>
</tr>
<tr>
<td>11</td>
<td>Karnataka</td>
<td>19</td>
</tr>
<tr>
<td>12</td>
<td>Kerala</td>
<td>10</td>
</tr>
<tr>
<td>13</td>
<td>Maharashtra</td>
<td>58</td>
</tr>
<tr>
<td>14</td>
<td>Madhya Pradesh</td>
<td>10</td>
</tr>
<tr>
<td>15</td>
<td>Orissa</td>
<td>13</td>
</tr>
<tr>
<td>16</td>
<td>Punjab</td>
<td>30</td>
</tr>
<tr>
<td>17</td>
<td>Rajasthan</td>
<td>20</td>
</tr>
<tr>
<td>18</td>
<td>Tamil Nadu</td>
<td>28</td>
</tr>
<tr>
<td>19</td>
<td>Uttar Pradesh</td>
<td>39</td>
</tr>
<tr>
<td>20</td>
<td>Uttarakhand</td>
<td>3</td>
</tr>
<tr>
<td>21</td>
<td>West Bengal</td>
<td>17</td>
</tr>
<tr>
<td></td>
<td>Total</td>
<td>358</td>
</tr>
</tbody>
</table>

Source: Taken from www.smecluster.org

Clusters are formed either naturally or through inducement. In India majority of clusters are naturally formed without any inducement or involvement by the government for example Tiruppur hosiery. Private enterprises are the guiding factor behind the formation of natural clusters. Government provides help to these clusters only in their later stages of development.

Government takes direct initiative in case of formation of induced clusters. These types of clusters are formed in fields like electronics, software,
floriculture, biotechnology etc. All the infrastructural facilities needed for the development of induced clusters are provided by the government. An example for induced cluster being the Bangalore software cluster, which is also, belongs to the category of innovative cluster. Easy availability of resources including natural resources and human resources, easy access to market and the availability of basic infrastructural facilities helped the development of clusters.

Indian industrial clusters possess some special characteristics like geographical proximity of the clusters, sectoral specialisation, close inter firm collaboration, competition between the firms, common infrastructure, common opportunities and threats and state support. Many of them are common to the clusters all over the world. In the modern competitive world clusters are becoming attractive business destination. Clustering of industries is advantageous to the participating firms in different ways.

♦ Clustering of industries helps to overcome shortage of capital and lower potentialities of small firms.
♦ Quick decisions can be taken by industrial members within a cluster, than members in isolated SMEs.
♦ Easy and quick passing of information between the firms within a cluster helps to increase productivity and improve the quality of the product.
♦ Clusters are flexible, making it perfectly suited to the dynamic world.
♦ Clustering of firms helps to the spatial concentration of skilled and experienced labours.
♦ Firms have easy access to raw material, machinery, designs, advisory and business development services.
2.14.3 Classification of Industrial Clusters in India

In the Indian context, enterprise clusters are broadly classified into industrial, artisanal, and service clusters (Table 2.3). Industrial clusters include traditional SME clusters, ancillary SME clusters, and export SME clusters. Traditional SME clusters include power looms and exclude ancillaries and exporting clusters. Artisan clusters are highly employment intensive using less energy and producing commodities mainly for meeting local demand. Some of these clusters have adopted mechanised processes later on. Handicraft clusters, handloom clusters, and tiny small-scale industrial clusters are included in this category. Service clusters include health, information technology, business process outsourcing, software repairs, recycling tourism, education, logistics, business, and financial services, research and development services, etc.

Table: 2.3
Broad classifications of clusters

<table>
<thead>
<tr>
<th>Industrial clusters</th>
<th>Artisan clusters</th>
<th>Service clusters</th>
</tr>
</thead>
<tbody>
<tr>
<td>Traditional SME clusters (including power looms, but excluding ancillaries &amp; exporting clusters)</td>
<td>Handicraft clusters</td>
<td>Service clusters (examples: health, IT, business process outsourcing, software repair, recycling tourism, education, logistics, business and financial services, research and development services, etc.)</td>
</tr>
<tr>
<td>Ancillary small &amp; medium enterprise cluster</td>
<td>Handloom clusters</td>
<td></td>
</tr>
<tr>
<td>Export SME clusters</td>
<td>Tiny small scale industrial clusters</td>
<td></td>
</tr>
</tbody>
</table>

2.14.4 Institutions engaged for cluster development in India

In earlier period besides the government State Bank of India and Small Industries Development Bank of India were the two institutions that have taken up cluster development projects in India. State Bank of India entered the scene during 1988 – 89 with a project SBI Project Uptech. Under this project the clusters were upgraded selecting on the basis of certain criteria.

UNIDO entered with cluster promotional activities during later 90s. UNIDO pointed out the importance of inter relationship among cluster actors and the measures to be taken in order to improve this relation. The real impetus for cluster based initiatives in the country came after the year 2000. This included both state government institutions and some non-governmental organisation. During the pre liberalisation period the government played important role in all cluster development activities, while the post liberalisation period witnessed the emergence of a number of institutions for the promotional activities of industrial clusters in India.

2.15 INDUSTRIAL CLUSTERS IN KERALA- A FOCUS

Kerala the greenish land lies between the Western Ghats and Arabian Sea, about 15000 square miles with varying scenic beauty. Kerala is known as the epitome of India. Historically Kerala has long been a land of racial admixture and co-existence (Government of Kerala, 2008). Kerala society is the most advanced one in India having almost hundred percentage literacy, world class health care systems, lowest infant mortality and highest life expectancy rates.

The commodity producing sectors are lagging behind and Kerala is considered as the least industrialised state in India. The backwardness of the sector have been attributed towards different factors like high cost of production, labour related problems and psychological fear of entrepreneurs
etc. by various studies on industrial backwardness of the state. Study conducted by the CII across 18 states of India in the year 2000, on the attractiveness of the state for inviting new investments, rated Kerala at 6th place in terms of investment attractiveness but 13th in terms of investment climate. But taking into consideration all the potentials of Kerala, the overall composite rank rose to 3rd among the 18 states.

Table: 2.4

Kerala’s Ranking among 18 Indian states

<p>| | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Law and order</td>
<td>1</td>
</tr>
<tr>
<td>Education, health expenditure</td>
<td>1</td>
</tr>
<tr>
<td>Social sector</td>
<td>2</td>
</tr>
<tr>
<td>Affluence</td>
<td>3</td>
</tr>
<tr>
<td>Infrastructure penetration</td>
<td>5</td>
</tr>
<tr>
<td>Investment attractiveness</td>
<td>6</td>
</tr>
<tr>
<td>Finance</td>
<td>6</td>
</tr>
<tr>
<td>Labour</td>
<td>8</td>
</tr>
<tr>
<td>Investment climate</td>
<td>13</td>
</tr>
<tr>
<td>Overall composite rank</td>
<td>3</td>
</tr>
</tbody>
</table>


In Kerala there is adequate availability of skilled labours, natural resources and all the infrastructural facilities which are necessary for the industrial development. Studies show that the large scale public and private investments failed to achieve the desired results in the state and therefore it would be better to concentrate on the development of the large number of small scale enterprises existing in Kerala. The statistical data from industrial settings of the state reveal that 80 percent of the industrial units in Kerala falls
The small scale enterprises are not well performing because of their less access to credit facilities, technology and markets, lack of economies of scale and negotiating power, lack of specialisation, advantages of co-operativeness, limited access to strategic information, lack of adequate linkage with private or public service providers and relative isolation. Among all these problems relative isolation is the main problem faced by the small scale industrial units. The survey on industrial sector conducted by the state before preparing the 10th plan document shows that some common opportunities exist in Kerala for the small scale industrial units. Among the related small scale industrial units there is lack of proper co-ordination, information dissemination and knowledge fragmentation. On the basis of the survey findings the industries department of Kerala introduced a scheme, “Cluster Development Programme” (CDP) during the 10th plan period. The strategy followed the same path implemented by the Government of India in the pattern of UNIDO.

The Kerala Government gave emphasis on cluster and network development activities, in its 2003 industrial policy. The policy states that sector specific clusters of industrial units will be promoted with the assistance of financial institutions and skill development facilitated through Common Facility Centre and training institutions (Department of industries, Government of Kerala). For implementing cluster development programme government introduced different activities like the establishment of Common Facility Services Centers, common brand building for export market, common purchasing practices, providing mutual guarantee for financial obligations, conducted a diagnostic study for identifying the areas where government
interventions are necessary, prepared a detailed action plan for cluster development.

2.15.1 Government Initiatives for cluster development in Kerala

Clusters though cannot be created by public policies, has been gaining strong interest that have been reflect in the recent public policy initiatives which concentrate on creating conditions that encourages its formation and growth. The central government initiated the cluster development activity in the pattern of UNIDO and majority of the state governments has included this programme as a part of their industrial development activities. At the beginning of the present decade Government of Kerala also included cluster development programme as a part of their industrial policy. Majority of the traditional, cottage and village industries and some of the new industries included this programme as a part of their developmental activities. In almost all the districts of Kerala industrial clustering were introduced in fields like rubber, leather, cane and bamboo, plywood, handlooms and garments, diamond, halva, agricultural implements etc.

For implementing cluster development programme a lot of initiatives were taken by the government officials. Over 83 officials were given training to act as Cluster Development Agents (Government of Kerala, 2004). Accordingly various cluster development activities like training for cluster development agents, for conducting diagnostic studies, initial trust building activities and prepared project reports at the primary stages of cluster development. Government launched two new schemes–MMLS\textsuperscript{6} and grant assistance for conducting different activities. MMLS is utilized for creation of common corporate entities, which take up activities like sourcing of loans, common brand creation, marketing and setting up of common facility centers etc. Through the second scheme assistance were granted for conducting various activities like creating adequate awareness among the stake holders.
for participating in national and international trade fairs and exhibitions, field visits, study tours etc.

Creation of a technology upgradation fund for small natural clusters and the introduction of an industry incubator scheme are the other initiatives taken by the Government of Kerala for cluster development.

2.15.2 Industrial cluster development in Kerala

The economic geography of Kerala shows that there is little concentration of small enterprises and most of similar kinds are spread across the Southern part of Kerala. Therefore the classical approach of clustering is impractical. So the cluster approach has to be adjusted to suit to the Kerala’s geographical conditions. The change is observed in readjusting some of the similar firms in the form of consortiums.

To undertake cluster development activities 53 sectors/ areas for industrial cluster have been identified in 14 districts by K–BIP and DICs. Trained cluster development agents coordinate the activities of cluster consortium. The cluster development agents have completed the preliminary works for setting up of 46 clusters (Government of Kerala, 2004-05). Estimation by industry department shows that 60 clusters have been identified and 32 clusters have been developed and approved under cluster development programme (Government of Kerala, 2006) (Table: 2.5).
### Table: 2.5

**Developed clusters in Kerala**

<table>
<thead>
<tr>
<th>Name of districts</th>
<th>Number of clusters in each district</th>
</tr>
</thead>
<tbody>
<tr>
<td>Trivandrum</td>
<td>3</td>
</tr>
<tr>
<td>Kollam</td>
<td>3</td>
</tr>
<tr>
<td>Pathanamthitta</td>
<td>1</td>
</tr>
<tr>
<td>Alappuzha</td>
<td>2</td>
</tr>
<tr>
<td>Kottayam</td>
<td>5</td>
</tr>
<tr>
<td>Ernakulam</td>
<td>8</td>
</tr>
<tr>
<td>Thrissur</td>
<td>2</td>
</tr>
<tr>
<td>Palakkad</td>
<td>1</td>
</tr>
<tr>
<td>Malappuram</td>
<td>3</td>
</tr>
<tr>
<td>Kozhikode</td>
<td>3</td>
</tr>
<tr>
<td>Kannur</td>
<td>1</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>32</strong></td>
</tr>
</tbody>
</table>


Major concentration of clusters is found in Southern districts like Ernakulam and Kottayam, accounting for 25 percent and 16 percent respectively of the total number of clusters in the state. The districts have attained high industrial and infrastructural development. The lowest number of developed clusters exists in districts like Pathanamthitta, Palakkad and Kannur.

Pioneer clusters under cluster development programme in Kerala include Rubber cluster at Changanacherry, Leather cluster in Kottayam, Rice mill cluster in Kalady, Tread Rubber cluster at Edappally, Cane and bamboo cluster, Plywood cluster in Perumbavoor, Diamond cluster in Thrissur, Handloom and Garments cluster in Kannur, Rubber cluster at Malappuram, Halva cluster in Kozhikode (Cherukara & Manalel, 2007).
2.15.3 Industrial and Artisanal clusters in Kerala

In Kerala there exist both industrial clusters and artisanal clusters. In the state, about 12 industrial clusters and 399 artisanal clusters exist (Gateway of Industrial and Artisanal clusters, 2009).

The industrial clusters in the state produce mainly coir and coir products, powerloom products, rubber products and seafood processing. They exist mainly in the districts of Kollam, Alappuzha, Ernakulam, Kottayam, Palakkad and Malappuram (Table 2.6). Kerala has about 399 artisanal clusters producing a large variety of products. Majority of artisanal clusters are from Alappuzha, Thrissur and Ernakulam District.

Table: 2.6

<table>
<thead>
<tr>
<th>Industrial clusters in Kerala</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Name of district</strong></td>
</tr>
<tr>
<td>Alappuzha, Kollam</td>
</tr>
<tr>
<td>Alappuzha, Kollam</td>
</tr>
<tr>
<td>Ernakulam, Faizlure, Kannur, Malappuram &amp; Palakkad</td>
</tr>
<tr>
<td>Ernakulam, Kottayam</td>
</tr>
<tr>
<td>Ernakulam</td>
</tr>
</tbody>
</table>

Source: www.cluster.org

With the introduction of cluster approach a large number of neglected industries which are moving towards their decay stage can be regenerated and become a contributor towards the overall economic development of an economy. Through this chapter brief information regarding clusters in India are obtained with special mention about clusters in Kerala. In the next chapter a case study of Kannur Handloom cluster is discussed.
Value chain shows the way in which value is created by a firm, which is determined by the combination of activities a firm focuses on and how the firm manages the activities it engages in to differentiate itself from its competitors and create a competitive strategy.

Operational Effectiveness means performing similar activities better than rivals perform them, referring to any numbers of practices that allow a company to better utilize its inputs.

Strategic Positioning - Which focuses on performing different activities from rivals’ or performing similar activities in different ways.

Maquiladora is an assembly plant in Mexico, especially one along the border between US and Mexico, to which foreign materials and parts are shipped and from which the finished product returned to the original market.

Industrial Commission of India (1916-1918), appointed by the Government of India in 19th May, 1916 in the department of Commerce and Industry. The Commission was instructed to examine and report upon the possibilities of further industrial development in India.

MMLs will be provided @ Rs.4200 per weaver to individual weavers, their self help groups and joint liability groups by the government. So as to enable them to get fresh loans from the Financial Intermediaries. Interest subvention of 3percent per annum for 3 years. The loans extended by the financial Intermediaries to the handloom weavers and their co-operative societies.