CHAPTER-I
DESIGN OF THE STUDY

1.1 INTRODUCTION

As the umbrella of protectionism wears off, the progeny of globalisation and liberalisation – the “Free trade market” is unleashed, the industries to withstand the pressure and competition has to follow co-operative behavior in terms of co-operating in some fronts while competing in some other areas. This necessitates the clustering and net working approach, which across the globe, has been ascribed to industrial development of many developed economies and evolution of sustainable industrial development of many developing economies.

Within a cluster the interlinked firms collaborate technologically and strategically, which may lead to the prosperity and growth of the economic region, where the cluster is located. Clustering increases efficiency with better use of available resources, and by promoting inter industry and inter sectoral linkages.

Industrial clusters are the geographically proximate group of interconnected companies and associated institutions in a particular field, linked by commonalities and complementarities (Porter M. E., 2000). Clustering have long been attracted the attention of researchers and policy makers for the growth prospects they offer to Small and Medium Enterprises. Small industrial units geographically agglomerate in order to overcome the constraints associated with size, promote technological development and improve their ability to compete in the domestic and global markets. Through inter relation of industries clustering helps to increase wealth of a region, primarily through
the export of goods and services. The flows of goods get stronger within the cluster through their geographical concentration and linkage.

If successfully implemented, industrial clusters enable to dramatically reduce costs, significantly improve production and establish a strong nucleus of industrial activities. Clustering through specialisation and inter firm co-operation enhances competitiveness. Competition stimulated by policy liberalisation, less segmented market, larger investment flows and a growing acquiescence to universal rules has become more intense, demanding from firms a global presence. Micro, Small and Medium Enterprises will remain competitive if integrated within the networks organised around complex, multifaceted, firms or groups. Most of the obstacles faced by the SME’s can be overcome by strengthening the linkages among all the actors of the local business system, in order to coordinate their actions and pool their resources for common goals. The SME’s of a cluster can benefit from a range of collective capacities, for instance address international markets, achieve economies of scale in the purchase of inputs and access to credit, effective division of labour etc and speed up innovation and specialisation. It creates suitable customized infrastructure support and service work promoting product design. The flexibility of the cluster often helps the participating firms to survive better in the markets, than individual firms in the same industry. The local community also gains directly and indirectly from success of the cluster due to increased local employment and more business opportunities as firms in the service and support sector are drawn into the cluster. The clustering of industrial units bring forth various benefits like assistance for the formulation of financially viable projects, in getting government subsidy and other sanctions, proper guidance and directions to cluster members with regard to risks involved in business activities and ways to get over them, assistance for technology upgradation and facilities for marketing their products reducing transportation cost and easy availability of
raw materials. The required infrastructural facilities like roads, power, water and the pollution control measures can be provided more conveniently and at lower cost for the small units within the cluster. By providing common adequate storage facilities, cluster provides scope for joint facilities which reduces the total cost incurred by individual units within the cluster. Mounting evidence is available that linkages can be strengthened in the most effective and sustainable manner within the clusters. Identifying the enormous potential of SME clusters in national economy, the Government of India has advocated cluster development as the centerpiece of its small enterprises development policy (Government of India, 1997). Industrial clusters have proven to have the potential to transform India’s troubled small scale sector.

Kerala, a traditionally industrially backward state, needs to take serious efforts in identifying the new form of opportunities equipping themselves to meet the emerging challenges. In the state where the SSI sectors predominate there is no other immediate alternative, but to pursue the concept to industrial clusters to face the challenges forced by globalisation and liberalisation. Clustering plays an important role for the development of rural and semi urban areas through attracting efficient service providers for raw material, transport, marketing etc. thereby achieving greater economies of scale for individual units. Clustering of industries facilitates proper provision of infrastructure facilities, training facilities for labourers, timely intervention, modern technology etc. The interaction among cluster members encourages and leads to innovations and competition making them capable to quickly respond to market changes and meet adequate demands of consumers. Clustering helps to the efficient and more economical use of available resources and thereby extending a helpful hand in national development.
1.2 REVIEW OF LITERATURE

Historically speaking, clustering is not a new business model; rather it is a modernised version of the putting out system\(^1\) that existed in Western Europe prior to industrial revolution. Industrial clusters all over the world brought dramatic changes in the industrial scenario of different countries both developed and underdeveloped. The theorizing of industrial clusters dates back to Alfred Marshall, who put the foundation through his studies on industrial districts in his pioneering work *Principles of Economics* (1890). Actually industrial district is of a different concept, but looking into the deep structural development there is a lot of similarities between the two. The agglomeration of firms engaged in similar or related activities generated localised external economies which resulted in lowering of the costs. Porter, M. E adopted this concept of linkage and cluster with his work *The Competitive Advantages of Nations* (1990)\(^2\) and made significant contributions to the modern industry cluster theory. His studies highlighted the importance of cluster approach in industrial and business fields. Large number of studies has been dealing on different aspects of clustering of industries including those on growth poles, agglomeration economies, economic geography, urban and regional economies; social networks etc., of which the studies relevant in the present context have been reviewed in the following section.

1.2.1 Studies in clustering and clusters

Clusters consists of a group of locally concentrated, inter related firms built around not just an end product, but also a similar technology or end market. The later implies an emphasis towards supply chain linkages upwards or downwards, that transcend traditional boundaries defining sectors, linking the primary producers, processors, manufactures, distributors and retailers (Tully & Berkeley, 2004). Local industrial clusters are the spatial
agglomerations of the firms in an industry in which the firms benefit from their co-location (Brenner, 2004). A cluster typically refers to an area smaller than a US state, but is not limited to the geographic boundaries of a state; in many cases, clusters cross state lines and even country lines (Federick & Cassil, 2009).

1.2.2 Studies on Industrial Clusters in international arena

The studies on industrial districts in advanced and less developed countries show how clustering has helped the local enterprises to overcome growth constraints and compete. The convergence of three important issues like cluster development, responsible business practices, and business and national competitiveness are presented in the seven in-depth case studies from Africa, Latin America and Asia (Mccor Mick, 1999); (Mac Gillivary & Raynard, 2006). It has traced the trajectory of the debate on industrial clusters in developing countries and identified the key issues relating to it. The case studies on Japan, Taiwan and China carried out to formulate an endogenous model of cluster based industrial development (Otsaka, 2006); (Schmitz & Nadvi, 1999). Case study of Java cluster showed that clustering is not a matter of population density or infrastructure facility, but it is a response to particular marketing and technology problems. (Weijland, 1999). Study on surgical instruments industrial clusters, small firm clusters in Tuttlingen (Germany) and Sialkot (Pakistan), analyses the connections and differences between the industries leading production sites (Nadvi & Halder, 2002); (Nadvi K., 1999). The response of clustered producers from the surgical instruments of Sialkot, Pakistan was examined in the study, that mainly focused on the new standards of quality assurance particularly on inter firm relation and production organisation within the cluster. By investigating the enterprises in the export oriented Sinos Valley, South Brazil found that the enterprises have stepped up co-operation among them in response to intensified global competition in
leather footwear (Schmitz H., 1999). The peculiarity of Latin American clusters, which are of distinctive in terms of firm size, markets served, clustering trajectories, growth potential etc were described. The study observes three common deficiencies in this cluster-heterogeneity of development level and lack of composite small and medium enterprises; lack of innovative capabilities; low degree of socialisation and inters firm co-operation (Meyer-Stamer, 1999). The nature and benefits of clusters were examined by using case studies of shoe making industry in Sinos Valley, machine industry in Tokyo’s Ottawa, and the wood working industry in Brazil and computer industry of Taiwan. The clustering of industrial units in Santa Catarina, Southern states of Brazil was examined and found that there exists strong element of clustering. Interaction between the firms and supporting institutions are strong. There is a tendency in cluster to move from an unco-operative to a co-operative game as the firms slowly understand that cannot do everything on their own (Meyer-Stamer, 2000); (Fisher & Reuber, 2000). The forces behind the cluster formation has been analysed by examining the Israeli high-tech industrial cluster. The industries in Israel are close enough together, geographically, to be considered one cluster. Core of Israeli cluster lies behind the information and communication technologies of software, hardware design and internet technologies. The Israeli information and communication technology clusters comprise of diversified industrial units (Fontenay & Camel, 2004). Examining the music industry of Queensland, Australia in terms of concepts derived from cluster and network theories, the study analysed the nature of firms and cluster and network dynamics in operation in the industry. Porter’s cluster model and network features were used to assess the ability of Queens Land’s music industry (Abraham, 2005). Okamoto, (2005) study explains the current flow of foreign investment into Malaysia’s electronics industry and the extent to which it contributes to the formation of industrial clusters. The industrial competitiveness of Malaysia
was examined by using statistical measures such as market share in major international markets and the RCA index. The study found that Malaysia’s industrial dynamism was not yet lost. It has begun to find a new model of growth combining both hardware and software in the electronics industry. Haussker & Zademach’s study (2006) analysed the evolution of biotechnology clusters in Germany between 1996-2003 giving particular attention to their respective composition in terms of venture capital, basic science institutions and bio technology firms. The manufacturing based clusters across the Aegean Region were identified and their provincial locations for forming potential regional policies were also identified in the study conducted by Kumaral & Deger (2006). Aegean regions share in GDP has remained relatively stable around 17 percent during 1990-2000. Knowledge based framework to facilitate understanding of the key factors governing the way in which a cluster functions and its international success. Oyeyinka-Banji, 2000 in their study use the rate of capacity utilisation to measure the performance of firms within the Nnewi cluster. In SME’s trust between employers and employees are critical for its success. Nnewi cluster have their origin in traditional crafts. They have got a longer history of technical apprenticeship provision of real services, credit to firm and training and it was revealed that clusters help for reducing and distributing costs and minimising risks.

The important cause for localisation is geographical, i.e., the natural advantage offered by different places for instance the natural resources, sources of power and climate. An industry cluster can be narrowed down to a smaller geographic area by using location quotient analysis to find concentration of these clusters within the United States. Location changing has its own role in the process of cluster development, i.e., the increasing importance of the industrial town’s centre in the product quality
improvement stage, which would strengthen the tendency for clustering (Belussi & Caldari, 2009); (Porter M. E., 2003); (Knorringa, 1999).

In addition to enhancing productivity, clusters play a vital role in a company’s ongoing ability to innovate. Companies inside clusters usually have a better window in the market than isolated competitors do. The cluster literature emphasizes the potential scope of even embryonic clusters in redrawing the industrial map of developing countries by citing the Sinos Valley cluster of Brazil, the Roofletes cluster of Indonesia, the Hosiery clusters in Tiruppur as examples. For the evolution of industry the key variable is invention, more specifically, evolution of industry is the history of this force. For stimulating innovation the mechanisms like knowledge spillovers, geographical proximity has their own roles. A firm is likely to innovate more if it is located in a region where firms from its own industry have a strong presence. Sustainability of a cluster depends more on the innovative capacity of the firm than the level of technology produced or used in the process. Empirical evidence shows that clustering is an important prerequisite of innovation. It is accepted that innovative activities have a highly cumulative nature for both firms and clusters. Own sector employment have got a large positive effect on the probability to innovate (Baptista & Swann, 1998); (Feldman, 1994); (Porter M. E., 1998) (Mac Gregor, 1929); (Hu, Lin, & Chang, 2005); (Lai, Chiu, & Leu, 2005); (Enright, 2000); (Baptista R. , 1996). For a firm’s competitive advantage, innovation plays a significant role. Both product and process innovations are crucial in creating new markets or gaining and sustaining market shares (Kristensen & Laursen, 1999). There exist correlation between a firm’s propensity to innovate and the strength of the region in which it is located (Beaudry & Breschi, 2003). Stated that cluster environment is conducive to innovation because of the availability of the essentials of innovation attractions such as skills and knowledge base, information access, capability of market, conversion of ideas and knowledge
spillovers (Mitra, 2000). The role of local knowledge spillovers as a driver for regional innovativeness is focused in this work. The study concluded that both knowledge spillover and pecuniary externalities may be important for innovation in clusters (Caniels & Romjn, 2003). The study put forth the argument that the process of industrial development is supported by the development of market transactions among assemblers, part suppliers and merchants and the stimulation of innovation made possible by the benefits of industrial clusters arising from the geographical concentration of a large number of enterprises and a variety of human resources in a small geographical area (Otsaka, 2006).

The industrial district model is useful for analysing the cluster of firms in less developed countries through a comparative study of two footwear clusters in Italy and Mexico. The core characteristics of industrial district are also identified. The combination of functional and territorial integration contributes a lot to the success of industrial districts. Industrial districts can generate innovations. It is through a gradual improvement of the final product, through change in process and through overall production organisation; progressive specialisation of all the firms working in the same sector and in the same area become important characteristics of industrial district. Firms are able to build and sustain trust-based relationships in industrial districts (Rabelotti, 1997); (Asheim, 2000); (Brusco, 1989); (De Propris, 2001).

Under the umbrella of cluster the very different territorial systems are included. In terms of early condition and later development the history of each cluster may be unique. The popular notion of cluster is based on an ample geographical and functional indeterminacy of what is on the scrutiny of research. It is a new way of organising the value chain. It consists of independent and informally linked companies and institutions which represent
a robot organisational form that offers advantages in efficiency and effectiveness; it represents a new spatial form of organisation, significantly different from the traditional, hierarchical, vertical integration of companies and markets. Clusters provide the conceptual basis for successful industrial clustering in the west. Industrial clusters provide an active basis for business and social interactions. A cluster prospers when firms within the cluster grow and a sufficient number of start-ups survive. They are distinguished from other industries through inter firm, cluster specific, stock of architectural knowledge, which were developed by firms within the cluster. Many determinants of cluster advantages are more different across nations than within a nation. The advantages of industrial clusters are information spillovers among enterprises; the division and specialisation of labour among enterprises; and the formation of skilled labour markets. When the industries involved are geographically concentrated interchange among industries and the cluster works better (Das, 1995); (Lai, Chiu, & Leu, 2005); (Porter M. E., 1990); (Pinch, Henry, Jenkins, & Tallman, 2003); (Hakanson, 2005); (Porter M.E, 1998); (Marshall, 1920); (Gilly & Wallert, 2001). A perfect equilibrium cannot be achieved in any industrial cluster. No set formula is there for creating an industrial cluster. In order to emerge a cluster, it must be grounded by an institution, natural resource or a core company (Mullin & John, 1998). Established clusters are more likely to be associated with employment growth. But they are not much internationally significant. The importance of industrial sector for employment growth and international competitiveness contradicts the view that industrial sector does not affect cluster performance (Macdonald, Huang, Dimitrios, & Tuselmann, 2007); (Porter M. E., 2003). Industrial clusters can be connected by functional relationships between suppliers and purchasers; producers and distributors etc. or by competition for similar markets (Porter M. E., 1998). The main challenges before these clusters are to create an environment that stimulate
and support learning, innovation and constant upgrading. Clusters of Trans National Corporations typically dominated by foreign firms not only at the assembly stage but also in parts of production (Meyer-Stamer, 1999). The roles of industrial clusters are stressed in this study. The public and nonprofit institutions can help to promote SMEs by fostering the development of clusters. The study comes out with the findings that for reducing transaction costs, social capital is the crucial factor that attracts the traders towards clustered enterprises (Weijland, 1999); (Fisher & Reuber, 2000). The study revealed that relatively bigger units in the cluster were going in for foreign collaboration in forming marketing tie ups for boosting their export, as an inevitable step, given the nature of the crisis in the cluster. Within the cluster the existence of a variety of technical institutions and movement of skilled personal helped technology replication (Pillai, 2000). Focuses on the evolution of high technology regional SMEs clusters. The nature and causes of evolutionary trend was assessed. Empirical evidence shows that research and development is concentrated in large firms (Longhi & Davide, 2000). The study helped to identify the key processes at work in a cluster and the gaps in the understanding of these processes. Factors like internal characteristics, external linkages, external policy and economic environment influence the nature and quantum of knowledge flows in a cluster. The role of these characteristics in the generation and flows of knowledge within the cluster are highlighted in the study. The study suggested that major concerns are to be given to knowledge embodied in products, processes and practices and variety of sources that contribute to the development and diffusion of this knowledge (Basant, 2002). Here an attempt is made to examine the clustering of SME units. The study identifies the key cluster actors such as SMEs along the supply chain, cluster associations, support institutions, and private operational business development service providers (Padmanand, 2006). The study identified different cluster types and investigated their internal and
external inter connectivity in comparative manner and analysed changes in
cluster composition. The significance of co-location of “money” and “ideas”
were highlighted stressing the importance of a cluster’s openness and external
linkages and the path dependency debate. The dynamic perspective proves
effective illuminating cluster growth and performance, and the explorative
findings provided promising avenues for further evolutionary research
(Haussker & Zademach, 2006).

The term agglomeration has been applied to industry in the
manufacturing belt. This concept can be applied to any state with a large
metropolitan area where industry is clustered. The three main processes which
led to the agglomeration of firms in the cluster are the relocation of global
players to Bangalore because of the adequate availability of skilled
workforce, new start ups and spin-offs i.e., former employees of large firms
starting their own business. These clustering is the result of intermediate
markets external economies. Regional agglomeration have its own role in
promoting national specialisation (Porter M. E., 1990); (Lee, Liu, & Stafford,
2001); (Okada, 2005).

Three concepts used in relation to clusters of enterprises- collective
efficiency, economies of agglomeration and transaction costs. Collective
efficiency describes the advantages that are achieved by the enterprises
through active collaboration. Achievement of collective efficiency depends on
the structure of the cluster and its links with the rest of the economic system.
Two different types of clusters, vertically specialised industrial cluster and
horizontally specialised market town are introduced for explaining little
collective efficiency viewed in African enterprise clusters. The enterprise
cluster is seen as an element within the total production and distribution
system and not seen as an isolated phenomenon .The degree of collective
efficiency of different clusters, are compared and then the ideal type of
industrial district and concepts of external economies and co–operation effects are derived at. Although collective efficiency matters in both the places, Italy and Mexico the empirical investigation has clearly highlighted some important difference relating to the intensity and quality of collective effects between the reality studies and the ideal type of industrial district. Different degree of collective efficiency exists in different clusters. The study found that the collective efficiency in Italian clusters is higher than Mexican clusters, but it is lower than the ideal type of clusters. The advantages of collective efficiency on small enterprises through clustering, states what may be done for promoting clusters in developing countries? The main advantages of collective efficiency include external economies of proximity, potential gains of consciously pursued joint action. The three essential elements required for effective enterprise assistance are developing customer orientation, a collective approach, and the building of cumulative capacity to upgrade. Clustering in Africa enables firms to overcome obstacles of growth through collective efficiency, growth in small steps and the response to opportunities and crises. The industrial capacity of a country can be built through clustering of small enterprises by increasing market access, fostering communication and information sharing, facilitating technological upgrading, increasing efficiency and contributing to the development of supportive institutions, clustering of small enterprises can build industrial capacity of a country. Collective efficiency may be active or passive. In African clusters the benefits of external economies are reaped by passive collective efficiency and active collective efficiency which involves collaboration between and among the clustered firms. Market access is the most important external economy in these clusters. Linkages among the governmental producers are weak (Mccor Mick, 1999); (Schmitz, 1998); (Rabellotti, 1997); (Pederson, 1997). Case study on Palar Valley cluster focuses on the joint action aspect of collective efficiency. The study examines difficulties which arises from
collective action and explores public–private interaction in the pursuit of environmental goals. Findings of the study show that collective action has got an important implication for small firm clusters in developing countries. Collective efficiency helped to frame joint action that business association can bring about in industrial clusters. Four clusters from Pakistan, Brazil, India and Mexico are taken as case studies for identifying the types of business association present within them and the nature of new competition that they have faced during the 1990s (Nadvi K., 1999); (Kennedy, 1999). The importance of clustering in order to overcome the growth constraints of the small enterprises was analysed and also emphasized the importance of collective efficiency (Schmitz & Nadvi, 1999). The study highlighted that for responding to major opportunities and crisis there has to be more and better co–operation between the clustering of firms and successful response requires “shifting gears” from passive to active collective efficiency. Constructing co–operation and performance index the study tested the hypothesis that co–operative firms perform better. The survey results shows a modest increase in horizontal and a substantial increase in vertical co–operation, contributing to a major advance in raising product quality, speed of response and flexibility (Schmitz H., 1999). The study comes out with the findings that with collective efficiency some enterprises prosper but others decline and that innovations and evolving of clusters are influenced greatly by the nature and strength of the underlying socio–political networks (Fisher & Reuber, 2000). Collective action enables simultaneous improvements in business, social and environmental impacts. The study concludes that responsible business practices can help cluster development and clusters can help to increase the impact of such practice in developing countries (Mac Gillivary & Raynard, 2006).
1.2.3 Proximity

Proximity may facilitate exchange of ideas, possibly innovatory combinations. The theory behind industry cluster research is the perceived benefit from spatial proximity of the productive and institutional actors which lead to increased competitiveness, innovation and productivity growth for the constituent players’ . Geographical proximity is instrumental to facilitate networking and enable firms to exchange inputs and outputs at low costs. LQ is used for measuring the benefits of locating in close proximity to other firms in the same industry. The critical role of managerial efficiency is brought out by the findings that higher technical efficiency correlate with better energy use and higher investment in plant management (De Propris, 2001); (Feser & Isserman, 2005); (Camgni, 1991); (Rodrigo & Lall, 2001).

1.2.4 Benefits of clustering

The benefits of industrial clustering were brought out by Marshall, (1920) state that clustering could enhance enterprise competitiveness through labour pooling, easy access to suppliers and quick dissemination of knowledge. Cluster have gained attention of policy makers with various empirical studies on industrial clusters supporting Marshall’s hypothesis. The central theme of a firm’s competitiveness is the home base, where the firms are allocating the bulk of their resources to research and development (Kristensen & Laursen, 1999). Clusters comprise a collection of linked industries and other units important to competition, which include suppliers of specialised inputs such as components, machinery, services and providers of specialised infrastructure. Sophistication and competitiveness of a business environment indicates the existence and functioning of industrial clusters (Park, 2004); (Kelton, Pasquale, & Rebelein, 2008). Clusters represent a new unit of competitive analysis along with industry and the firm. The cluster as a unit of analysis is better aligned with the nature of competition and
appropriate roles of government than traditional classification schemes. Porter M. E. (2000) and Das (1995) studies point out that policy environment and the state’s attitudes towards SMEs influence the competitive capabilities of small firms; Clusters of small enterprises can effectively respond to the challenge of international competitiveness through the flexible production systems and multi-skilled labours (Das, 1999). The study tested the hypothesis that higher the degree of knowledge integration between the member firms and the higher the global scope of competition of member firms the higher will be the economic performance of industrial clusters. Critical dimension behind the economic performance of industrial clusters depends on the degree of knowledge integration and competition of industrial clusters (Morosini, 2004). Empirically investigating the conditions under which knowledge-based industrial clusters in developing countries build competitiveness, the study focuses on the dynamics of local labour market, as an institutional mechanism for promoting and strengthening industrial competitiveness. As an institutional mechanism local labour market play a critical role in channeling and mediating the supply of and demand for the knowledge and skills which are necessary to build innovation and competitiveness in clusters (Okada, 2005).

Co-operation is helpful for communities and that shared local identities enables the clusters to meet the pollution crisis. Nadvi K. (1999); Kennedy (1999) studies proved that positive and statistically significant association improves firm performance and increases joint action. Comparison between different clusters shows that under certain conditions the behaviour of firms can change profoundly towards co-operation and collective efficiency. The most important changes in the behaviour are attempts to stimulate co-operation between firms and to shape the supporting environment. Four criteria - cost efficiency, quality, variety and ability are to be scored for getting “good” firms (Tamer S, 1998). The overall external environment
determines the nature and outcome of the balance between co-operation and competition (Das, 1995). Extensive collaborative local networks between firms and supporting agencies that exist in deep cluster can help to develop and maintain competitive edge for firms in the cluster by sharing information, knowledge and assets (Macdonald, Huang, Dimitrios, & Tuselmann, 2007). The study revealed that in Agra, the challenges during 1990s have changed the cluster composition and the extents of co-operation in interfirm relationships (Janvisser, 1999). Nadvi K. (1999) in his study generated the performance and co-operation indices and analysed the correlation. Kendall correlation coefficient assessed the relationship between the aggregate measure of performance and the co-operation indices and the causal relationship between increasing co-operation and improved performance. The evidences cluster showed weak horizontal co-operation between Ludhiana’s Knitwear firms but a strong vertical co-operation. The study found that within a short period the cluster recovered rapidly from the crisis and because of clustering it was able to improve and diversify into more demanding and competitive for the external markets. Co-operation among firms was virtually nonexistent. Through the business partnership the co-operation linkages, both forward and backward are developed in these clusters. Most of the software industries within these clusters are SMEs. They are highly skill intensive, innovative, adaptive and competitive (Lateef, 2000).

In their studies state that clusters in itself may be a source of negative externalities. Only from innovative firms, positive agglomeration externalities are likely to flow. But clustering in itself is not a source of benefit for firms’ innovative activities. Inter-actor co-operation may lead to capturing of additional pecuniary externalities (Caniels & Romijn, 2003); (Beaudry & Breschi, 2003).
1.2.5 Development of cluster

The two components required for cluster development are – cluster creation and cluster upgrading (Mac Gillivary & Raynard, 2006). Upgrading within organisational networks and within the factory, relate to upgrading at the firm level. But upgrading within regions and economies relate to general upgrading of a geographical area (Humphery & Schmitz, 2002). Collective efficiency, especially joint action gains are required in the process of upgrading for meeting the standard of quality assurance. The study revealed that upgrading to meet the global standard by clustered producers necessitated enhanced joint action in both vertical and horizontal ties (Nadvi K., 1999). Cluster upgrading is necessary for meeting the challenges of globalisation and internationalisation. In their studies Nadvi & Halder (2002), discusses the global nature of surgical instruments industries and their distinct patterns of upgrading for facing new challenges. The world market for surgical instruments, their production locations etc. are identified and these shows the way in which the various locations and the global market are to be linked together for their own overall development. The sketch of the two main clusters shows the difference in their product range. Tools like quality upgradation programme, marketing promotion, creation of export consortium etc., are promoted for enhancing cluster competitiveness. State intervention provides adequate help for the cluster and social capital consolidations are likely to act as the major factor for the success of the cluster. Artisanal and micro enterprise clusters also provide a challenging new area of work (UNIDO, 2005). Linkages and value chains differ and have different implications for product, process and functional upgrading in different groups of sectors. The capacity and the way in which firm’s upgrade depend upon cumulativeness of knowledge, degree of appropriability, codification and complexity of the knowledge base (Pietrobelli & Rabellotti, 2005). The study on industrial clusters in India examined the role of labour in promoting
industrial clusters and came up with the finding that it is necessary to improve the labour standard for attaining technological and organisational flexibility and dynamism. Adequate availability of skilled labour plays an important role in the flourishing of industrial clusters. Study on Cash men sweater cluster in China shows that rural industrial clustering lowers the entry barriers of initial capital investment through the diversion of labour. Pointing on to the efficiency of acquiring trade credits to mitigate constraints of working capital within the clusters, the study explains China’s rapid industrialisation even in the absence of an efficient financial market (Lateef, 2000); (Das, 1999); (Ruan & Xiaobo, 2008).

In order to identify textile committee clustering the I-O data based on SIC\(^3\) then NAIC codes, in 2000 was taken. For this 23 manufacturing economic clusters in United States with linked SIC code industries were selected. The data from the 1987 Benchmark United States I-O accounts were considered for it (Feser & Isserman, 2005).

For matching the demand and supply of labour, the local labour market should be more efficient. The efficiency of labour market depends on the degree of specialisation of the labour force. Clustering helps to widen markets and there by encourages specialisation and innovation in rural micro enterprise and ultimately helps the industrial development of the country. Within the cluster specialisation and technical indivisibilities results in external economies which vary significantly by sub sectors (De Propris, 2001); (Weijland, 1999).

A successful unit Lorenzen at Bologna identified that the secret behind the high consistent quality, lower cost and early, almost off-the-shelf deliveries, lay in the nearby cluster of industrial units with which it successfully networked. To explain the existence of inter firm networking trust within the firm is required. Trust is a spontaneous process, it cannot be
generated, triggered or set up by means of external intervention (Dasgupta, 1988). Based on the context and variety of the cluster the nature and intensity of networking varies. The study outlines different cases of clusters where clusters and networks have been promoted successfully and identifies several mechanisms that can build up customer orientation and competitiveness (Oyeyinka-Banji, 2000); (Schmitz, 1998).

Inter firm division of labour and vertical specialisation of individual firm, enables to subcontract each other’s work. The argument, subcontracting the work will lower costs, improve the quality of firms’ products and enhance the flexibility and innovativeness of firms were empirically tested of spatial cluster of small clothing firm in Lima, Peru. The study came up with the findings that, in high and low income areas vertical division of labour between firms in the cluster is more common and performance of firms within the cluster is better than that of firms in other parts of the city. Empirical evidence revealed that relatively good sales record of firms in the cluster was sustained by a higher productivity, longer working day and better quality. Findings showed that the demands of quality assurance changed the pattern of subcontracting in the cluster. With greater differentiation between producers and among subcontractors, co-operation increased in exchange of information, quality control and quality assurance become more consistent and long standing (Visser, 1997); (Nadvi K., 1999).

The clustering can derive benefits like improved market access, technological upgrading, and enables to use relatively small amount of resources. The experience of Latin American SMEs cluster shows the existence of joint action involving private and public firms and institutions. The study finds a positive and statistically significant association between improvements in firm performance and increases in joint action through business associations. Qualitative case studies of Brazil and Pakistan provides
a more perspective of the ways in which joint action through associations has led to evidence of both collective efficiency and collective failure. Association plays an important role in motivating sustainable growth trajectory for developing countries industrial clusters. The hypothesis derived is that joint action is necessary for clustered producers to cope with new competitive pressures (Schmitz & Nadvi, 1999); (Mccor Mick, 1999); (Nadvi K., 1999); (Pietrobelli & Rabellotti, 2005).

The studies analysing the clustering of software firms in Bangalore brought to light the role of government intervention in the evolution of cluster. It was the result of the deliberate policy decision on the part of the government. One of the factors acting behind the success of certain clusters are public policy (Fontenay & Camel, 2004); (Lateef, 2000). The study revealed that in SSI clusters human resources play a vital part and a higher level of involvement of institutions and government agencies in cluster based strategies will increase their potential for achieving cluster development. Clusters expect a supportive role from the government, but on the contrary they stand as an obstacle in the way of smooth development (Kumar S., 2005). Study on Japan focuses on policies implemented by local and central governments for attracting the companies to their prefecture in order to form industrial clusters. Government of Okinawa prefecture has implemented several policies to invite the information and communication technology industry since 1999. The study suggested that the local government should follow the policies introduced by the central government strictly and look for the deficiencies of its programmes. It ensures the success of its clustering (Nakagawa, 2005). The findings of the study clarified the effects of Honda, Nissan and Toyota on agglomeration in Guangzhou automobile industry cluster. Local government plays a crucial role in successful industrial cluster policy, especially those of the success of city’s industrial cluster policy (Kuchiki, 2007).
1.2.6 Knowledge- Role in cluster Development

Study conducted by Dahl & Pederson, (2004) on regional cluster of wireless communication firms in Northern Denmark, examines empirically the role of informal contacts in a specific cluster. The main carriers of knowledge between firms in a cluster are informal contacts between employees in different firms. Through informal contacts the engineers share quite valuable knowledge, which showed that informal contacts represent an important channel of knowledge diffusion. It was found that the engineers also share more locality specific information about their products and technologies.

Different modes of inter firm linkages exist between the firms within the cluster. The types of linkages existing among cluster actors are also different. They are linkage between common customers, common suppliers and service providers, common infrastructures and common pool of human talent. The number and economic value of linkages indicates the strength of an industrial cluster (Morosini, 2004); (Meyer-Stamer, 2000); (Oyeyinka-Banji, 2000). Proper linkages exist between agglomeration and firm level learning mechanisms. Suppliers are attracted by large scale demand (Caniels & Romjn, 2003). The vertical and horizontal spill over are facilitated by technology and knowledge transfer benefits of FDI and industry clusters (Park, 2004). Studies have been conducted to examine structural changes that have taken place in selected clusters of poor households and to situate them against the background of various anti-poverty programmes. Analysis reveals that clusters are contributing more to employment and poverty reduction than isolated SME (Mac Gillivary & Raynard, 2006); (Nair, 2000). This explains the relationship between industrial clusters and poverty. Industrial clusters are themselves engaged in poverty alleviation both directly and indirectly. Directly through employment, income and well-being generated for the
working poor and indirectly, through their wider impacts on the local economy. For understanding the effects of cluster development programme on poverty, this study combines value chain mapping and capabilities approach. Using a mix of quantitative, qualitative and participatory methods for analysing the impact of industrial cluster upon poverty, the study finds that social capital can contribute to strengthening cluster capacities and the wellbeing of local workers and producers. The basis for mapping clusters and poverty are provided by the relationship between poverty reduction, specific cluster features, cluster processes and cluster dynamics (Nadvi & Barrientors, 2004).

Roads, industrial estates, ports, airports, telecommunication links etc. are part of the cluster corridors. These corridors reinforce trade between clusters. To make the best use of scarce resources by concentrating them initially in select area, creating critical mass and high quality, the clusters and corridors approach is the most suitable one. The interventions like institutional support, tax breaks and fiscal incentives, stable policy regime and infrastructure support from government etc. have led to the success of the clusters (Sharma, 2004). The conditions required for attracting staff to the city and for developing a cluster depends on the quality of life in the urban region that is availability of comfortable housing, metropolitan ambiance, cultural conditions, green spaces and climate. Public-private co-operation and interactive policy making are needed for the flourishing of cluster. The study concludes high quality of the urban living environment as a precondition for ICT cluster development (Van Dijk & Winder, 2004). The study of Balatchandirane(2007) states that better climate influencing the professionals to choose the place, availability of good educational institutions for the professional’s children, low cost of living, existence of international airport etc., as factors that has attracted the professionals to Hyderabad. The cluster studies point into the influenced factors like strong role by the government,
quality of human capital and institutions, a positive image about the location, no hard and fast rules that has resulted in cluster promotion and regional development.

1.2.7 Studies on industrial Clusters in Indian context

The new economic reforms and the liberalisation process in the country necessitate a policy in favour of clusters. When the protectionist policies are not going to be working to safeguard the SMEs it would be better to make the SMEs become internationally competent by way of better quality and technique. Historically large number of clusters have existed in India. Both spatial and sectoral clusters of small firms existed, but the in depth studies on the internal dynamism of the clusters and the influences of policy intervention on the cluster are rare. The clusters in India as part of the South Asian cluster, is distinguished as highly group oriented, male dominated and humane (Taeube, 2004). Cluster studies finds an unprecedented dynamism in the industrial clusters of Italy during the seventies turned out to be a major experiment with successful outcomes and suggests that cluster studies in developing countries like India must be based on pragmatic research and not on the excitement generated by the industrial district concept. The important role played by SME clusters for the industrial production and export promotion of Indian economy was examined. Suggesting Italian clusters as role model for Indian clusters, the study stated the key factor behind the success of Italian clusters as their ability to innovate and modernise and attune to changing market conditions. About 90.57 percent of Indian clusters have developed naturally and remaining 9.43 percent are induced clusters, arise due to the introduction of government policies. Some unanimous historical roots for the origin of Indian and Italian industrial clusters are viewed. Major difference viewed between these two clusters is that Italian clusters are modern technology oriented and is able to face the competition that is created
with the globalisation. But Indian clusters are traditional and using outmoded methods (Das, 1995); (Gomes, 2000). The performance of clustered and dispersed producers were analysed by using the indicators like employment size, employment growth, average monthly sales per workers in 1993, use of family labour, and average monthly wage per worker. Producers in Agra have responded to the common challenge by increasing inter firm co–operation. Survey results shows that vertical inter firm relationships with suppliers of leather and soles, and with buyers, have been strengthened, while the relationship with subcontractors more often remain unchanged. A performance indicator was constructed based on total output in number of pairs, sales value, net profits and number of workers. Using Kendall correlation matrix statistically significant correlation was found between the firms that have increased their participation in business association, large firms and strong performers. The study provides empirical evidence on the conduct and performance of both clustered and dispersed SMEs in a developing country (Janvisser, 1999). Another study explains the ability of woolen knitwear cluster, Ludhiana, to recover quickly from its twin crisis in the early 1990s the collapse of its primary export market, the former Soviet Union and the greater trade and international competition due to the opening up of the domestic economy. The local firms picked up the knowledge, marketing skills and contracts to enter into more sophisticated markets within a short period (Tewari, 1999). The qualitative transformation which has undergone in the pump manufacturing cluster at Coimbatore district, in Tamil Nadu after liberalisation has explained. The study highlights the changes in terms of economic performance; inter firm linkages; subcontracting networks; commercial links; co–operation and competition between firms and the influence of local institutions of Tamil Nadu (Pillai, 2000). A broad strategic assessment of the experience of rural industrialisation in India was described. In Indian development thinking and policy formulation, rural and small scale
industrialisation has got special place. This privileged position, has not derived from a universal consensus with regard to the rationale and policy framework applicable to this sub sector. The rural and small scale industrialization is facing a lot of challenges. The study concluded that clustering of small scale industries can become a useful strategy for the development of these industries and for the overall development of the economy (Saith, 2001). Examine technical efficiency variation across four industrial sectors in India, using a stochastic production frontier technique. The obtained results are comparative to technical efficiency distribution patterns obtained in other countries. The study found that managerial effectiveness significantly influences efficiency and that there are considerable benefits deriving from location within established industrial clusters for particular industries. By using cross-section analysis gross value of capital stock to circumvent the depreciation issue are analysed. Some of the important sources of growth and competitiveness that are associated with industrial agglomeration and clustering are not yet tapped by Indian industry, unlike successful industrial districts like Silicon Valley (Rodgrigo & Lall, 2001). Attempts were made to study the nature of trust and institutions in small firm clusters by taking the case of Kanpur Saddlery cluster in India. The main features of trust and institutions included are region, religion, family, language, ethnicity; caste etc. Information is collected by using qualitative methods. The data collected through semi-structural interviews, institutional reports and trade publications, the study concludes that knowledge based trust can be developed through interaction and in small firm clustering collective actions are through interaction among international institutions and small number of active entrepreneurs (Dwivedi, 2003). Study of clusters in Andhra Pradesh suggests that, created clusters are to be connected by ‘corridors’ of transport and communication infrastructure. The study found that most of the successful clusters in Andhra Pradesh are begun by chance
and favorable policies which have propelled growth and consolidation. Andhra Pradesh have initiated measures to develop smart clusters which combine international best practices, draw upon the experience of industry associations, take consultancy advice and use the experience of working with clusters (Sharma, 2004). The role of industrial clusters in the economic development of an economy, i.e., India’s FDI experience was described from a Korean perspective. The study states that FDI inflows into India are determined by industries and products which are technology intensive and have economies of scale and significant domestic content. As a result of FDI inflows the big companies, Hyundai, LG and Samsung have developed their industrial clusters in India. Hyundai motors India could be a good example for the FDI with industrial clusters. FDI is influenced by the relationship between the investors and host countries (Park, 2004). The evidence from Indian cluster study shows that upgrading of low technology industrial clusters is possible. A large number of people get the benefit of low technology clusters in the form of employment and income for poor (UNIDO, 2005). The peculiarity of sickness in Indian SSI clusters are focused and recommended for measures to improve the competitive strength of the cluster. Five points are included for research design networking, human resources, communities’ linkages, regional embeddedness and government policy (Kumar S., 2005). Cluster intervention by CDA and SISI in Coimbatore are in an early stage and future agenda of the cluster development initiatives are to include successful implementation of CFC brand promotion, market development initiatives (Padmanand, 2006).

1.2.8 Industrial Cluster Studies in Kerala

Study on the problems faced by the 551 sick industrial units of Kerala stated that the adoption of cluster development approach and the incentives provided by both central and state governments for cluster development
initiatives for the growth of SME sector in general and SSI sector in particular will be helpful to face the challenges forced by globalisation and liberalisation. With the introduction of cluster approach the linkages among all the actors of clusters are become strong and reduce the relative isolation. Thereby coordinates the actions of these units and pooling their resources for a common development goal. By providing common facilities the entrepreneurs engaged in manufacturing similar products and belonging to the same locality can be brought together. All these will help Kerala in fulfilling the dreams of becoming an industrial state (Madanan & Chandresekar, 2006).

For the reduction of poverty and achieve sustainable development, industries that provide enlarged employment opportunities are to be developed. Even though development of labour intensive industries has been identified as the central theme of economies and central focus of the development policies, still there is a sheer lack of empirical studies enquiring in to the process of industrial development in developing economies. Certain questions remain unanswered, such as which type of industries should be promoted, what institutions and industries support the subsequent development of such industries and what conditions are essential for innovations to take place, which makes it difficult to formulate appropriate policies.

1.3 LITERATURE REVIEW OF HANDBOOM STUDIES

1.3.1 Studies on Textiles and industry

The overall positions of textile and garment industry in India have been explained in various studies examining the industries in Bangalore, Mumbai, New Delhi and Tiruppur. The studies shows that the emergences of non-tariff barriers along with quota phase out have affected the industry. Modern changes in this field have been analysed (Devaraja, 2011).
Chaudhary, (2011) explores the changes in profits and exports of Indian textile exporters and also investigates the role of foreign direct investment in the industry and the role played by Indian government for promoting the industry. With phase out of MFA the big firms in India are the gainers but small and medium firms find it difficult to survive. Indian exporters are to be more vigilant to the changing market trends. It mentions about the MFA and the changes experienced by the textile sector under different phases of the agreement. Importance, direction and composition of India’s textile sector and the working of quota system have been discussed in Khanna (1991). The conditions of cotton textile industry in India by considering their profitability and reasons for low profitability have been analysed in the study conducted by Narasimha Rao, (1994). The various sources of finance of the cotton textile industry, the relative importance of internal sources and the reasons for the fall of internal sources and also the trends in the financing of cotton textile industry are discussed. The external sources of financing are also considered along with detailed discussion on the capital structure of the industry and its impact on the profitability and liquidity. Evaluation of the bilateral and global impacts of removing MFA quota as part of WTO agreement on textiles and clothing have been carried out by Elbehri, (2004). An important contribution of this study has been the application and development of new sets of export tax equivalent estimates for MFA constrained countries using recent 2002 data on quota prices and quota trade and utilisation rates at the MFA product level. Here a comparison was made about the alternative scenarios of MFA quota and tariff elimination and examines the production and trade effects in textile and cotton sectors in the post MFA environment. Kathuria & Bhardwaj, (1998) study examined the international trade regime prevailing in textiles and clothing sector. Study used primary data and made use of data processed through interview with various garment and textile exporters and with quota brokers in India. The important domestic constraints affecting
garment and textile sectors were examined and the study suggested policy changes for making improvement in this field. India’s recent integration into the global apparel market to understand alternative forms of global insertion, especially in light of the elimination of quota have been examined in the study conducted by Tewari, (2005). Three inferences derived through the work first, India’s path to integration in the world market in clothing has been quite different from the experience of many of its competitors. Second quick emergence of India as a successful textile and garment exporter after years of inward orientation had more to do with changes in domestic policy that took place throughout the 1980s and 1990s. Thirdly it is argued that some of the same factors that account for India’s slow integration into global textile and apparel markets have also, indirectly provided subsets a segment of the industry with opportunities to move along a different more high road path to upgrading and export growth. An in-depth analysis of the current status of Indian textile industry in the back drop of emerging global scene and gives an outlook of the industry up to 2010. Industrial production, foreign exchange earnings and employment generation reflects the conditions of Indian economy. Different sectors like organised cotton, manmade fibre, textile mill industry, the decentralised powerloom sector, woolen textiles, silk, handlooms were included under the textile industry (Cygnus, Business, consulting and research group, 2006). Kumar D. R., (2011) observed that production of yarn, fabrics and cloth are increasing and there is an increase in exports and for imports at international market. The textile industry occupies a vital place in our economy and it contributes substantially to its export earnings. The problems faced by the industry are liquidity for many organised sector units, demand recession, insufficient price realisation, the need for sufficient modernisation and restructuring of the entire industry to cater more effectively to the demands of the domestic and foreign market.
Financial crisis of 2008 affected Indian dyestuffs industry with reduction in export demand, growth and profitability. By adopting a holistic approach Indian industries are able to overcome the crisis and get enough opportunities, which result in a profitable growth (New Cloth Market, 2012). By considering the impacts that work through the demand for Asian textile and garments exports in their major markets, the European Union and United States the paper brings the effects of world recession on the textile and garments industries of Asia. China has gained at the expense of other Asian producers Indian economy performed well in garments than in textiles (Thoburn, 2009). The extent where the Indian textile industry reached is pointed out here through the impact of the global crisis of 2008 and the measures that are to be taken to overcome such a situation (Seshadri, 2009). By taking into account the recent technological and managerial developments in the sector and focusing on recent developments in supply chain management in the clothing and textile sectors the study tries to assess the likely impact of liberalisation. The study takes into account the recent developments in the organisation of the textiles and clothing sector, where vertical specialisation, i.e., the inputs embodied in the final product cross borders several times, is an important feature. On the basis of its findings the study concludes that India and China were the gainers of market share in the European Union (Nordas, 2004).

1.3.2 Studies on handloom industry

A survey was undertaken in Sholapur which is one of the biggest handlooms weaving centre in India. Idea for conducting the survey was to study the organisation of the handloom industry in this area (Kakade, 1956). Another study analysed a fair good account about the important handloom centers of production in India and the structure of the market. The study explained the position of handloom industry in Kurnool district of Andhra
Pradesh. The different problems faced by the weavers are mentioned and suggested different measures for the development of the handloom industry (Narasaiah M. L., 2004). Handloom industry has become a part of Indian tradition and culture. The weavers got an important place in the cultural life of Indian people (Nagen & Sarma, 1986). Historians opined that India is the birth place of cotton manufactured the records shows that this industry originated in India during the Vedic period (Nambiar, 1996). The significance of handloom industry in Indian economy was mentioned in detailed manner in this study. Through its backward and forward linkage effects employment generated among loom and accessories manufactures, dyers, printers, processors, twisters, sellers etc (Vasundara, 2007-08). Irrespective of different programmes and policies handloom sector is undergoing changes, some of them are internal and others are external, affecting the livelihoods of handloom weavers and the growth of modern textile sector. For achieving sustainable development of the country handloom sector should get the required assistance. For this government adopted adequate measures. The strength, relevance and the crisis faced by the handloom industry are pointed out in this study (Reddy, 2010). Compared to other areas in textile sector, handloom provides a livelihood for large number of people from generation, but now it is facing severe crisis. The conditions prevailing in Andhra Pradesh was explained. Even though it has got an increased domestic market, government has given priority to export oriented production, through various policies. The superiority of Indian handlooms compared to others is explained and are also mentioned about the need to protect the industry (KrishnaKumar, 2003). Attempts were provided to give a picture of the overall scenario of the handloom by considering regional specificity in weaving in terms of market, organisation, product etc. The main study area was Uttar Pradesh, but the causes for expansion and contraction of weaving in different areas were also examined. Features of handloom industry by identifying its fundamental
needs/requirements and the different ways in which the prevailing problems could be handled (Planning Commission, 2002). An explanation about the historical aspect and the progress of handloom industry during different periods has been provided in the study conducted by Aiyer, (1977). The textile industry in India consists of five distinct sectors including cotton, jute, silk, manmade and wool highlighting the contribution of the industry for the national economy. The study examined the problems and prospects of handloom industry by taking the examples from states like Tamil Nadu, Karnataka, Andhra Pradesh and Maharashtra etc. With the withdrawal of several subsidies so far enjoyed by the handloom sector and especially the winding up of the Janatha cloth scheme of 1976 which ensure cheap cloth and employment to the vulnerable section of the weavers, to the old people and also to low skilled workers. But the new economic reforms led to worsening the situation (Noor Basha, 1996). Already seriously threatened by the unequal competition from powerlooms, the very survival of the handloom sector and of handloom weavers has now been imperiled by the sharp rise in prices of yarn and dyes, which was the result of the economic reform programmes. Greater emphasis on pushing up exports worsened the domestic economic and social crisis (Srinivasulu, 1994). A comparison was made with other policies, recommendations earlier and contemporary to 1985 policy, the article was giving more stress to the negative aspect of the policy. Opined in all respect the policies become a failure. It failed to consider the actual situations prevailing in handloom sector and formulate policies in that respect (Jain, 1985). Unexpected growth of powerlooms creates artificial scarcity for yarn (Sahai, 1956).

Technical aspect of the industry like type of looms, warping, winding, bleaching etc. are stressed. Existing technical support is inadequate and more help is required to improve the technical side (The Council of Scientific and Industrial Research, 1957). Significant improvement in earnings can be
brought through changes in labour productivity which depends on the techniques of production (Nanekar, 1968). The various processes included in cotton handloom weaving are mentioned in this study. Weaving consists of pre loom stage, loom stage and post loom activities. Pre loom activities include spinning of yarn, dyeing of yarn, winding, warping and sizing etc. At the loom stage the major activity is weaving. Some of the post loom activities are finishing and marketing of the fabrics (Mahapatro, 1986). Co-operative societies are facing different problems like lack of proper financial facilities (Goel, 1984); (Kottaiah, 1992). A committee was appointed to study the restructuring of the production system in the handloom sector, which recommended to bring value addition in handloom products through product diversification and change the wage structures, improve the conditions of co-operatives etc. (Balan, 2008). The major problem suffered by handloom industry is the lack of coordination and improper planning which creates unhealthy competition and makes the textile sector to be sick (Ghosh & Ghosh, 1995). The problems faced by the industry and the suggestions to solve such problems are plotted using the Ishikawa diagram. Ishikawa the name generated from the author, who formulated it. It is also called fish bone diagram due to the basic lines drawn to represent the categories (Panneerselvam & Rathakrishnan, 2011).

A provident scheme was implemented and a group insurance scheme with twenty thousand rupees, in order to secure the life of the weavers, for better treatment of the weaver’s disease construction of ESI hospitals are required, government should take measures to avoid the intervention by middlemen and supply yarn directly to weavers and also remove all type of taxes on inputs for providing short term loans to weavers, develop banking facilities. Under housing scheme construct better houses and work sheds to weavers (Kottaiah, 1987). For the survival of the handloom industry it must be developed on co-operative lines. For the development of handloom co-
operatives several measures were suggested (Bharatham, 1988). Need for financial assistance is required to co-operatives was emphasised and government should spent huge amount for it (Goel, 1984). Identifies the various aspects of the industry especially marketing (David Anterro, 1960); (Sinakandhan, 1972); (Angadi, 1975). Difficulties arise in the marketing of handlooms than that of mill-made cloth (Sharada, 1979).

1.3.3 Studies on Weavers – The major factor of production

The different aspects of weavers and weaving in East Godavari district have been examined in Subrahmanyam, Rao, & Rao, (1983). The study explains the different problems affecting the weavers, no clarification was given about bonded labour, the classification of the weaver and their relations with each other. Based on the invitation from the Sholapur municipality in 1939, the Gokhale Institute of Politics and Economics, conducted a study about the socio-economic conditions of weavers (Kakade, 1956). To get continuous employment and earn more wages through handloom weaving, weavers should learn more techniques and design (Sahai, 1956); (Sarangapani, 1987). Weavers lack proper organisational support. The weavers are suffering from a lot of problems like increase in raw material cost, lack of proper product marketing and financial facilities, scarcity of the necessary inputs (Rao, 1973); (Rao & Prasad, 1989); (Narasaiyah & Krishna, 1999). Handloom sector provides livelihood to lakhs of weavers. But the weavers were in a precarious condition and majority of them lived in ill-clad and semi-starved. They are belonging to rural areas with low income expenditure groups. Facing problems of unemployment and underemployment, the majority are belonging to below poverty line category. The incidence of dependence is very high among the weavers (Sharada, 1979); (Noor Basha, 1989); (Venkata Subbaiah, 1991).
Sarangapani, (1987) in the study compares the socio-economic conditions of weavers and classified the weavers into different categories like independent weavers, working for master weavers, weavers working for cooperatives and coolie weavers. Coolie weavers have to suffer the incidence of poverty more. Due to lack of better socio-economic condition the weavers are trying to abandon their jobs and search for alternative works (Rajila Devi, 1983); (Kottaiah, 1992).

The study of Narasaiah & Krishna, (1999) was conducted to know the actual problems faced by the weavers of Prakasam district of Andhra Pradesh and examines the standard of living of the weavers. While entering to a weaver’s house the whole house is occupied by the loom of the weaver. There is not enough space for preparing food. Majority of handloom workers are stagnating themselves under poverty line. The aim of this study was to discuss the problems of the handloom industry and the weavers in it and to explore its prospects in the contexts of liberalisation and globalisation. The study tries to facilitate the voices of the weavers to reach it to the policy makers (Srinivasulu, Anilkumar, & Sekhar, 2004). It focuses on the working of master weavers and how they come into being and how they operate. The process and activities which enables the weavers to keep their transaction cost at low level. The techniques used by them, their social networks, contribution to the success of the firm and also the challenges faced by the weavers are also discussed (Bhagavatula, 2010).

1.3.4 Studies on raw materials

Handloom cloth production is continuously declining because of the hike in raw material cost. The high cost of raw material lead to the decline in quality of the handloom products (Chakravorthy, 1982). The hike in raw material cost often puts handloom industry in deep crisis. A large number of co-operative societies are running in dormant lines (Noor Basha, 1989). Due
to the hike in raw material cost the weavers are not able to meet their requirements. The prices of dyes and chemicals are also increasing. The government has to take adequate measures to supply yarn at reasonable and stable prices to weavers (Narasaiah & Krishna, 1999). Attempts to examine the relationship between unit cost and productivity in cotton yarn industry, man-made textiles and readymade garments by using a panel data analysis for selected states over 1989-97 period. It also identifies that disbursement of credit, cheaper raw material, better availability of electricity, encourage capacity utilization, labour laws are easily flexible, and firms have no difficulty to exit. All these make Indian textile and garment industry to become more cost effective (Pal, 2010). The hike in price of raw material adversely affects the handloom industries of Orissa. This price rise of raw material leads to increase in prices of the finished goods also. Weavers argued to raise their wages (Mohanty, 2011).

Kumar A., (2011) explains about the conditions of cotton production, exports in India. Factors affecting cotton price fixation, effects of international price rise of cotton and comparison was made between the situations prevailed in Indian cotton and international cotton scenario. Report highlights the cotton production in India in 2012-13. Reduction in area by 10 percent, but no variation to the position enjoyed by India, banned cotton exports on March 5, 2012. The production, supply and demand tables of cotton situation in India are presented (Sood, 2012). Reddy D. N.(2011) mentioned the key issues faced by cotton farmers examines the cotton cultivation in Raichur, in Karnataka and the policies implemented by government for cotton. The institutions like Union Ministry of agriculture, Ministry of commerce, Ministry of finance are involved in production and marketing of cotton. Various national fibre policies were explained. Recommendations made by the sub groups on cotton were also pointed through this article. MFA period and post MFA scenario and its impact on
Indian textile and cotton industrial sector were explained. Demand for cotton, trends in export demand, trends in domestic consumption of cotton, effect of cotton price rise upon consumer demand etc. are pointed. The structure and growth of textile industry, trends in spinning and weaving, schemes for the improvement of the sector, situation prevailed in handloom sector etc. are briefly described (Landes, MacDonald, Singh, & Vollrh, 2005). Some general implications about United States were discussed. Policies in India and Pakistan will be beneficial for cotton producers of United States. Since the United States only held about a 1 percent share of world trade in cotton yarn, lower world cotton price has less effect. When the share of United States increased the price variation created great impact at international market (Hudson & Ethridge, 1996).

Weavers of the handloom industry require sufficient yarn for uninterrupted work. But due to increasing export of yarn to foreign countries, it is not available in required quantity (Rao S. J., 1979). Existing yarn distribution system is not favourable to handloom industry. The country produces 100 percent yarn to meet the needs of our handloom societies. But still the co-operative spinning mills of the country lack adequate capacity to meet the yarn requirements (Varada Raj, 1979). Quality of yarn, selection of dyestuffs, selection of process and effectiveness of chemicals, use of adequate machines and application process are taken into account for manufacturing of yarn into dyed shirting fabric. The process involved in yarn dyed shirting fabric was explained in this study (Athalye, Gupte, & Gaidhani, 2012). It is difficult to point out clear-cut reasons for price hike in cotton yarn. For the last three years there was a short fall in cotton production. The reason is being linked to policies on the deregulation of the markets. The export of raw cotton creates deficiency in the yarn output, which in turn results in rise of yarn price. To facilitate easy access to raw material to the weavers the government took measures like hank yarn obligation of 1974, cotton textile control order
of 1986, hank yarn packing notifications in 1995 and 2000. The study concludes by explaining the conditions prevailed in China (Shyama Sundari, 2004). The impact of cotton yarn price variation upon the handloom weavers have been discussed in the study of Grandhi & Crawford, (2007). The interventions made by government to address these problems have been analysed. Interventions include price control, technological upgradation, decentralisation in spinning, vertical integration and maintenance schemes for micro level yarn stock. The study also comes forth with a set of recommendations for policy makers. Problems faced by spinning mills are demand recession in the domestic market and a steep fall in yarn exports. Smaller units suffered more during the period. Mounting stocks of unsold yarn and erosion of working capital were the other major problems faced by the mills (Sridhar, 1999).

Dyeing with natural colour was explained in this study along with it printing of handloom cloth with onion skin, tea leaves, marigold flower and palas flower along with different inorganic salts for their better use in dyeing are also mentioned. The intention behind this work was to introduce environment friendly safe natural printed handloom textile products (Ray S & Mandal, 2010). Based on different studies done earlier a report is presented here on chemistry and application of natural dyes on textiles to know the science of natural dyeing and to focus the problem areas, difficulties and also mentions the probable measures to overcome them (Samantha & Agarwal, 2009). Over use of ground water by the textile dyeing industries has resulted in the depletion of ground water. Methods were suggested for reducing the water usage through establishing proper effluent treatment plants. The adverse effects of untreated textile dyeing effluents released from the industries to open areas and its impact was discussed (Chatterjee, 2010). Synthetic dyes are now common in textile sector. Rapid changes are taking place in dye consumption of the textile sector. Different processes are involved in making
textile products. For this the industry uses more water. In Tiruppur, the textile centre of Tamil Nadu alone utilise around 28.8 billion liters of ground water (Usha & Nandhini, 2010). Cotton is more comfortable compared to other natural fibre. The major dye stuffs used for cotton dyeing are the reactive and vat dyes. Due to their highest level of fastness vat dyes are commonly used. Different methods of dyeing, the different processes involved in it and their advantages are explained in a clear-cut manner (Athalye, Chakrabarti, & Shirke, 2008). Explained the different methods of dyeing including Bale dyeing, Batik dyeing, Beam dyeing, Burl or Speck dyeing, Chain dyeing, Cross dyeing, Jib dyeing, Piece dyeing, Random dyeing etc. The process of dyeing includes colouration and absorption. The chemistry of dyeing is also explained. Mentioned about the machineries and equipments used for dyeing (Latha, 2009). Through this study a brief idea about the chemical wet processing and its uses for the different classes of dyes and fabrics. The influence of ultrasound on dyeing have been explained. Some of the revolutionary ways to advance the textile wet processing are Plasma technology, Supercritical carbon dioxide, microwave dyeing, application of ultrasonic waves and electro chemical dyeing of textiles (Guglani, 2008). Cotton consumption is estimated to increase day by day due to its comfort environment friendliness and cost effectiveness. For dyeing cotton, reactive dyes are used more. The use of bifunctional reactive dyes having high exhaustion and fixation are some of the approaches for eco-friendly colouration of cotton with reactive dyes. Research is in progress for bringing changes in this field (Gokarneshan, 2008).

1.3.5 Role of Government for the survival of handloom industry

By allocating huge resources government should take care of the handloom industry (Rajila Devi, 1983). Government should take measures for establishing adequate training centers for the weavers. Conduct special
courses in villages where the weavers are highly concentrated. Supply required material and related instruments to the weavers at free of cost (Sahai, 1956). To reduce the high rates of the handloom products supply raw material at subsidised rate to the weavers by the government (David Anterro, 1960). To provide raw materials directly to weavers establish supply centers with government intervention (Abdul Zahir, 1967). Government neglected this sector (Somappaa, 1970). Allocate resources properly to this sector (Sinakandhan, 1972). Government should implement reservations to the handloom items (Angadi, 1975); (Arulanandam, 1980). With the existence of middlemen government benefits are not reached to the actual weavers. Then to eliminate middlemen government introduced photo pasted identity cards of the actual weavers (Sharma, 1980); (Kottaiah, 1992). Restrict the production of powerlooms. Establish marketing centers for the products of weavers. Spinning mills has to increase the production of yarn (All India Handloom Conference, 1993). The various exhibitions and holding of all India handloom week helped to focus the attention of the people on various aspects of the handloom industry and provide publicity to handloom products (Gandhi, 1945). Attempts to provide a review of the government policies and programmes for the industry by analysing the relevant documents; an idea about the different estimates of basic parameters like number of units, value added, output, employment, number of machines/looms etc. A wide range of aspects like stages of processing, sectors of production, their competitiveness, retail marketing, and number of intermediaries are also included in the study (Bedi, 2009).

1.3.6 Studies on handloom co-operative societies in Kerala

Globalisation created a negative impact on production, sales and profits of handloom weaver’s co-operative societies in Kerala and was also less prepared to face globalisation. But it has performed well in export field.
Several suggestions put forward to solve the problems of this industry. Participation and co-operation of everyone from different fields are required for the survival of this industry (Ajithan, 2011). The decline in handloom industry of Kerala started with lack of modernisation in all respects including technological change. Kerala possess high quality labour force. To protect handloom sector the government of Kerala decided to set up co-operative societies and nearly 80 percent of the looms were brought under it (Kannan, 1998). The popularity of set mundu is declining. Government is reluctant to declare rebate due to the existence of fake primary societies. Majority of societies are running in losses because of changing fashion habits of customers, unsold stock of clothes, rebate dues, non-diversification in designs, competition from powerlooms, lack of adequate working capital and appropriate sales strategy etc. High raw material price, meager income received through occasional sales are not enough for the existence of weavers. Situation will further worsen if better management practices are implemented (Kumar S., 2002). The work provides a description about the attitude of saliya community at Balaramapuram, in Trivandrum. These people exhibited cohesion to such an extent that it has marginalised their community. From the experience of handloom cluster existing in this area the lesson derived is that social embeddedness in combination with thick homophile in production and information networks can fuel the decline of a community. But with network analysis, it is derived that not mere embeddedness or homophile alone, but cohesion in its full sense i.e., detrimental. The policy makers must recognise that informal knowledge exchanges between units along their social networks was a significant channel of knowledge diffusion in traditional technology clusters (Cowan & Kamath, 2012). Earlier the major products produced in the handloom sector include dhotis, lungis, towels and bed sheets. This filed is also subject to changes with changing consumer taste, and diversification in production. With the guidance of IHTT, Kerala, the handloom industry started
to produce home furnishings. IHTT provides several training to weavers for producing modern varieties. The demand for uniform clothes also compels the industry to produce this type of clothes (Naha, 2010). Provide information about IHTT as a training institute for weavers in handloom industries in Kerala. The industry offers different courses in addition to the training to weavers. This can bring a new face to the traditional industry. The information are provided about the different courses and training programmes conducted by the institute. This institute can provide trained manpower required by the industry in our state (Cheleri, 2007). Entering to the history of Kannur handloom export, it is viewed that the direction of export is changing. Now new markets were opened in countries like Bangladesh, Europe and United States. Along with change in direction, product diversification also took place in export from shirting and bed sheets to plain coloured lungi and to crape, then later to the export of home furnishings. Kannur is included in the list of 24 leading textile centers in our country, by the Ministry of Textiles (Nazeer, 2006). Even though the industries department introduced several programmes for the upliftment of these industries; the desired results are not achieved as expected. But some of the policies like, wear khadi and handloom cloth at least once in a week, achieved adequate response from public including students, government employees etc. The wages of khadi and handloom weavers revised. For bringing modernisation in handloom industry, the government tried to link the industry with the fashion designing industry. For this a centre, National Institute of Fashion Technology was set up at Kannur in Kerala. Training programmes were conducted for upgrading the skills of handloom weavers (Nair N. J., 2010). Quality is the trade mark for handloom products of Kannur. The products produced for local markets include dhoti, bath towels, and for export the products like a wide range of made-ups and home furnishings are produced. Many hotels, interiors of office
and of houses are started to decorate with cotton furnishings instead of synthetic fabrics (Nazeer, 2007).

1.3.7 Studies on handloom Cluster

The study provides information about an artisanal handloom cluster at Chanderi, in Madhya Pradesh. The Indian handloom industries are of vivid nature. They developed as a specialised cluster with certain distinctions. Chanderi cluster has got a prominent place in India due to its old weaving specialty of producing finely textured fabrics of silk and cotton. The institutional linkages in this cluster were explained through theoretical way. Using value analysis and SWOT analysis different aspects of the Chanderi handloom cluster was explained and a draft action plan to implement in the cluster was developed. (AEGIS of the Government of Madhya Pradesh and UNIDO cluster development programme, 2003). A study on Kannur handloom cluster, a district in Kerala which is characterised by more concentration of handloom units and related textile manufacturing units such as dyeing, embroidery, washing, stitching and other finishing units that manufactures textiles and other home furnishings (Textile Committee, 2003). With the case study of Tiruppur textile cluster in India, the paper attempts to operationalise sustainable development strategies. Both development and environment aspects are considered. Due to the pollution created by textile industries in Tiruppur an environmentally sustainable industrial development is important to preserve the interest of the local people who are the major dependents of this industry. Actual situation of textile industry in Tiruppur was explained with prime importance to environmental aspect (Nelliyat, 2007). Attempt is made to assess the accuracy of cluster development policy aiming at sustainable poverty alleviation as actually deployed in the Indian handloom sector. Varanasi and Chanderi handloom clusters are chosen for the study, which are among the 20 localities benefiting from Integrated
Handloom Cluster Development Programme by Entrepreneurship Development Institute of India. With clustering a new way has opened to bring changes to firms or units engaged in handloom, increased government participation in these areas, the research centers and universities get enough opportunity to provide encouragement to them (Beddig, 2008). The competition among the firms concentrated in the same locality has fostered a certain degree of co-operation in textile industrial districts (Chapman, 1904).

The review of literature shows that industrial clusters have made significant contribution to the industrial development of the region. Hence the present study attempts to uncover the process of clustering that has led to successful industrial development of handloom industries by taking the case study of Kannur Handlooms so as to enable the policy initiatives to be more focused and turn out to be successful.

1.4 STATEMENT OF THE PROBLEM

During the era of globalisation and liberalisation, it is very difficult for SME’s to withstand, without co–operation. Clustering offers greater scope for developing co–operative behaviour among SME’s. SME’s face several problems like knowledge fragmentation, lack of coordination and lack of information dissemination etc. The co–operative behaviour of the firm in the clusters will act as a cure for these problems. Industrial clusters can be considered as third institution to complement, market and government for attaining successful industrial development. Empirical studies show that the process of industrial development is actually inter twined with the formation and development of industrial cluster as it promotes the birth and development of industries through information spill over, diversion and specialisation of labour and the formation of skilled labour market.
The review of literature on the clusters both in advanced and less developed countries has shown that clustering helps local enterprises to overcome growth constraints and compete in distant markets. The present study tries to analyse if co-operative societies has been able to derive advantages from clustering through government intervention. More precisely, we investigate the changes in performance of clustered firms in relation to the efforts of government. The study hypothesis that (raising) co-operation among firms belonging to a cluster helps in improving its performance and enables it to compete in the new market environment. This hypothesis is investigated in the handloom cluster among the co-operative societies in Kannur.

At present the scope and importance of handloom industries are not reduced. Out of the 75 SME Clusters identified in Kerala, two major handloom clusters were identified. One is at Balaramapuram, Trivandrum and the other is the handloom cluster of Kannur (Cherukara & Manalel, 2007).

In Kerala, cluster approach was adopted in the later periods and it finds success in different fields. Government of Kerala in its industrial policy 2003 focused on bringing about a paradigm shift in the industrial scenario of the state. A ‘Cluster Development Programme’ was introduced with a view of developing co-operative behaviour in the SMEs.

The experiences from various clusters indicate that linkages have led to improved efficiency and international competitiveness of the SMEs as it enhances its economies of scale and scope. This study focusing on structural changes in vertical and horizontal relationships between Kannur handloom co-operative societies and their suppliers, subcontractors, buyers, competitors and supporting institutions tries to assess whether the cluster development programme induces greater co-operation in vertical and horizontal linkages.
The context of the decentralised planning offers clusters tremendous potentiality for a bold experiment of developing handloom industrial segment in the country. The thrust of state policy in India in recent years has been in exports. Clustering of the handloom industry will help to develop extensive market and also help to the growth of a traditional, decaying industry and help a vast majority of dependence of this industry. The review of literature of the various studies on the handloom industries in Kerala has provided findings on various aspects of the industry, its performance, productivity etc. The analysis of clustering and its influence on the performance have not been dealt in any of these studies and the understanding of the dynamics of SME clusters especially in the traditional industries remains rudimentary. With the following objectives, the study tries to explore the advantages from clustering and investigate the ability of clustered firms to shift gears in the face of the challenges posed by the changes in the world scenario, overcome growth constraints, upgrade and compete in markets in a globalised world. In wake of the globalisation and liberalisation, various policies have been pursued by the government but the evidence based research to analyse its impact are not found. Studies have paid more attention to deal with successful and thriving clusters while the stagnating traditional clusters and impact of government policies on them have been really attempted.

Substantive evidences are not available in the question of gains of collective efficiency. It is often argued with no substantive evidence that because of the backward and forward linkages, networking, joint action (external and agglomeration economies) results in better performance of clustering units. Moreover, one also needs to examine the impact of government intervention in the cluster development programme in the light of its performance. Since the problems and challenges faced by the handloom industry differ from the other clustering industry and due to its important role
in the country, this study in the handloom industry in Kannur district gains relevance. The study has been conducted based on the following objectives.

1.5 OBJECTIVES OF THE STUDY

1. Significance of the cluster approach for the handloom industry in the district.

2. Examining the backward and forward linkages in the handloom industry.

3. Analysing the efficiency of cluster approach and the influence of co-operation on firm performance.

4. Measure the intensity of linkage in the handloom clusters and the effectiveness of government intervention in the cluster development.

5. Suggest strategies for improvement of cluster development approach.

1.6 HYPOTHESES

The study investigates the following hypotheses -

1. Raising of co-operation among firms belonging to a cluster increases their ability to compete in the market.

2. There exist positive association between firms’ performance and co-operative behaviour.

3. The clustering firms show strong backward and forward linkages.

4. The government intervention in the form of cluster development programmes have resulted in better performance.
1.7 METHODOLOGY

In an era of globalisation the small scale industries are facing a lot of existence problems including competition from large scale industries, from foreign countries and multinational corporations. The review of literature of studies on various clusters indicate that cluster approach have been successful in foreign countries whether developed or under developed and is also effectively applied in a large number of industries in India.

Based on the literature review and data availability the study intends to analyse the impact of cluster approach in Kerala by taking handloom cluster as sample model. Using the data collected from the co-operative societies and analysing the system of networking in the cluster, the study analyses the efficacy of clustering. The open-ended interviews with entrepreneurs, secretaries of the co-operative societies, and officials from business associations, labours, buyers and representatives of institutions implementing cluster development programmes provided an insight into the feasibility of cluster approach, its process and problem. An overview of the handloom clusters development based on secondary sources and the key local informants were gathered. These information helped in gaining an understanding of the units engaged in the clusters core activity, the range of suppliers and buyers and the performance trends of the industry as a whole.

For getting a more detailed picture of the linkages and the performance of the cluster information has to be acquired from the societies under study. For this purpose, a questionnaire was drawn up which collected both quantitative and qualitative data (Appendix VIII). The questionnaire prepared by Rabelloti (1998) and Knorringa (1999) were used while framing questions. Fieldwork was carried out in the handloom cluster of Kannur district. The study selected the co-operative societies for analysing the impact of clustering as it has experience of being a part of natural cluster as well as intervened
cluster i.e., after the implementation of the cluster development programme of the government.

As the cluster development programme was carried out in the co-operative societies, the study conducted its analysis through the data collected from the co-operative societies using closed questionnaire. The questionnaire focused on investigating the linkages-backward, forward, vertical, horizontal and institutional. The information was also complemented with secondary data, especially official statistics and data from business associations and government institutions. In particular the questionnaire helps to identify the production process, its performance, problems and constraints. It brings forth details of the society’s relationship with suppliers of raw materials, equipment and services, relationship with buyers internal and external, its marketing arrangements, the ways in which the local firms interact and co-operate with each other, the role and relevance of business association and government support. The society’s views on the advantages and disadvantages of operating within the cluster and its implications on the performance of the cluster are also examined.

The study attempts to know the benefits of clustering and measure the intensity of linkage in existing clusters by conducting case study of Handloom cluster of Kannur, which comprises of four Consortiums. The handloom cluster is formed with the timely intervention of the Government for protecting the small co-operative societies.

Using census method all co-operative societies come under the purview of data collection. The recent history of clustering in handloom industry can be divided into two main periods; a first phase of study i.e., before the implementation of cluster development programme starting from 1998-99 to 2002-03 and the second phase is after the introduction of cluster development programme by the government from 2002-03 onwards. During
the second phase there were two different schemes introduced by the government DDHPY\textsuperscript{11} and IHDS (Appendix-II).

Secondary data on basic details of the locality, resources, population structure etc. collected from various departments and local administrative bodies and also data collected using structured schedules from the selected units as well as personal interviews and discussions with enterprises, trade union leaders, and business association representatives, experts of the industrial units, government officials and knowledge persons in the locality have been used for analysing the process and advantages of clustering in the sector. They provided very useful and qualitative information on the cluster.

Using both analytical and descriptive methodology, the study intends to determine the actual field situation in respect of small scale industries and their problems in respect of inputs, labour and marketing of their output i.e., goods and services and to determine as to how these problems are solved or at least minimised through the formation of suitable clusters with a view to draw implications for strategy to develop handloom industry. The study thus aims to provide inputs for policy formulation regarding development of viable clusters in the handloom field.

1.7.1 Location Quotient (LQ)

The identification of meaningful industry clusters is not an exact science. Besides descriptive case study materials of clusters several measures have been used to approximate agglomeration, including employment, production and export figures. Three principal methods for measuring and evaluating clusters are location quotient (LQ) analysis, shift share analysis and input output analysis. Measurement of growth rates and location quotients for each industry in a cluster, as well as the total cluster determines where the regions comparative advantage lies. The so called LQ is largely used as a
standard approach. This method identifies the industries that employ more workers or produces more goods and services in the region than the national average for that same industry, assuming that by employing more workers or producing more than the national average the industry is producing more goods and services than the region alone can consume, thus the industries export the excess product out of the region.

Location quotients may be calculated on the basis of industries employment or any other measures of economic activity. Here in this study LQs based on employment will be calculated using formula:

\[ LQ = \frac{\frac{E_i}{E}}{\frac{N_i}{N}} \]

Where  
\( E_i \) - regional employment in industry i  
\( E \) - Total regional employment  
\( N_i \) -National employment in industry i  
\( N \) - Total national employment

If LQ < 1, region is less specialised in industry i and for meeting local demand goods have to import.

If LQ =1, region produces just enough to satisfy local demands.

If LQ > 1, region is more specialised in industry i and exports the industry’s output to other regions. The LQ also refers to the Employment Concentration Factor (ECF) (Beule & Bulcke, 2005).

Three technical factors are important in determining which industries constitute a cluster—Employment Concentration Factor (ECF); the Cluster Dependency Factor (CDF); and the Economic Prosperity Factor (EPF). In the context of cluster analysis, the higher the location quotient generally stronger
will be the cluster. Location Quotient is used for studying the industrial location patterns through the LQ; it is the coefficient of localisation and the comparison among different industry rankings. LQ are used to develop a cluster map. This simple measure uses numbers to measure the relative concentration of an industry in a given location or region relative to the country as a whole.

1.7.2 Production Concentration

The production shares are added to determine concentration. The production concentration is calculated as gross output value in each industry as a percentage of production in that industry for the whole of the country.

1.7.3 Regression analysis - Ordinary Least Squares

The study is based on the field work carried out in the Kannur district in Kerala. Using questionnaire survey covering the population of 36 co-operative societies, the study tries to investigate the hypotheses using various methodologies. The study examines the linkages, co-operation and the performance of the co-operative societies in the handloom sector. The specialisation ratio helps to identify the relevance of the handloom industry in the district. The examination of the backward linkages and the forward linkage and the percentage share of co-operation results in the proving of the hypothesis. This study takes into account the following stages in production: pre-assembly, yarn-chaining, scouring, washing, bleaching, weaving, dyeing, finishing activities etc. An input-output analysis is especially useful in the analysis of a vertically integrated cluster to identify the buyer-seller linkages. This top-down approach requires a comprehensive analysis of inter industry relationships between all sectors. But as the detailed data is not available, the study has resorted to other statistical analysis techniques of cluster approach.
that helps to identify the impact of co-operation among the clustering firms and their performance.

The volume of production takes into account (a) subcontracts (b) sales volume (c) sale prices (d) costs of production including labour, depreciation, taxes, finances and other services. With available data, performance of the co-operative societies on estimates of net value added or productivity per worker. As many of the co-operative firms are small and keeping of records are not often systematic, the data collection was quite difficult and inadequate. The quality of data at times was poor and could lead to considerable non sampling measurement errors (Liedholm, 1991).

The type and quality of handloom products produced by the co-operative societies are quite varied and hence quantity based analysis of societies would be difficult and misleading.

Using the ordinary least squares (OLS) regression analysis the study tries to assess if co-operation is related with performance. The survey results of the 36 co-operative societies are used for this purpose. The independent variables included in the analysis are indicators of the horizontal, backward and forward co-operation. The effect of the co-operation on the performance indicator is assessed. The quantity of sales is taken as the performance indicator. Co-operation indices for backward co-operation is developed on the basis of exchange of information and experience, negotiation of payment and delivery conditions, joint product development, improving quality and respect of delivery timing. The indices of the forward co-operation with the buyers is based on exchange of information and experience, negotiation of payment and delivery conditions, technological upgrading, quality control, setting of product specifications and organisation of production. The inter firm co-operation or the horizontal co-operation indices is based on the co-operation existing in exchange of information and experiences, sharing orders, joint
products, lending machinery, joint marketing, joint labour training and joint purchase of inputs.

To estimate whether there is a casual relationship between increasing co-operation and improved performance, the regression analysis of the following model is carried out. The sales (PERFSALE2) being the dependent variable is being regressed by the independent variables, inter firm co-operation (INTERFIR2), backward co-operation (BACK2) and forward co-operation (FORW2)

\[
\text{PERFSALE2} = \beta_1 + \beta_2 \text{INTERFIR2} + \beta_3 \text{BACK2} + \beta_4 \text{FORW2}
\]

The step wise linear regression is also used to estimate the equation. This enabled in testing the hypothesis that there exist positive association between firms’ performance and co-operative behaviour.

The handloom units in the district were clustered by geographical proximity but did not exist in co-operation. The advantages of clustering which will help firms to overcome growth constraints, increase output, upgrade technology and compete in distant markets. The study analyses the changes in the pattern of co-operation over the years from 1998-99 to 2009-10. For furthering co-operation among the clusters the government introduced cluster development programme in two phases, under Deen Dayal Hathkargha Protsahan Yojana (DDHPY) scheme and Integrated Handloom Development Scheme (IHDS) (Appendix II). The study analyses the variation of the performance of the societies under the two schemes, dividing the time period of study into three phases. Using regression analyses the relationships between firm performance and co-operation. This helps to assess if co-operation is related with performance. Evaluating the relationship between changes in levels of co-operation and firm growth allows for an assessment of the clusters growth trajectory. The study is presented as follows:
1.8 SCHEME OF THE STUDY

The present study is arranged in six chapters. The first chapter introduces the cluster approach and reviews the extensive literature available in the area. It presents the background of the study and the statement of the problem. The chapter also covers the objectives of the study, hypothesis and various methodologies used to validate the hypothesis.

The second chapter ‘Cluster Approach- Theoretical Framework for Analysis’ briefly describes the cluster, steps involved in the formation of a cluster, characteristics of cluster approach and highlights the merits and demerits of clustering of industries. It is followed by a detailed study of ‘Industrial Clusters in India with special reference to Kerala’. The chapter highlights the importance of industrial clustering and its role in the industrial development of India and also points out the importance of implementation of cluster approach in Kerala’s industrial atmosphere.

The third chapter deals with the Handloom industry in India- and its challenges ahead. This chapter examines in detail the handloom industries in India and Kerala.

The fourth chapter ‘Kannur-The City of Looms and Lores’ provides information regarding clustering of small units, the achievements of these units by introducing cluster approach in their industrial field, the importance of cluster approach in the industrial atmosphere etc. The problems faced by these industries earlier and the solving of these problems with their clustering are also examined.

In the fifth chapter, ‘Handloom cluster in Kannur district-Analysis of co-operation and performance’ using the survey data, the performance of the cooperative firms is analysed followed by the analysis of backward and forward linkage. The regression results is analysed to assess if there is
significant association between co-operation and performance. The impact of government intervention and possible reasons for the failure in co-operation is discussed.

The findings emerged from the study, the limitations of the study and the further scope of research in the study is presented in the last chapter.

1  Putting out system is a means of subcontracting work. In putting out, work is contracted by a central agent to subcontractors who complete the work in off-site facilities either in their own homes or in workshops with multiple craftsmen.
3  SIC was developed for the purpose of collecting, analysing and publishing statistical data related to the US economy.
4  CDA- For each cluster, the corresponding implementing agency has to identify and appoint a CDA exclusively for each cluster. The CDA is responsible for implementation of the scheme in the assigned cluster, and CDA shall be located in the cluster full time.
5  The plasma is an ionized gas with equal density of positive and negative charges which exist over an extremely wide range of temperature and pressure. This can modify the surface properties of textile materials, deposit chemical materials (plasma polymerization) to add up functionality or remove substances (plasma etching) from the textile materials.
6  Super critical carbon dioxide is a fluid state of Carbon dioxide where it is held at or above its critical temperature and critical pressure. It is an important commercial and industrial solvent due to its role in chemical extraction in addition to its low toxicity and environmental impact.
7  Microwave dyeing is a quick and easy way to dye small quantities of Protein fibre using acid dyes. It is a great method for dyeing fibre for a small project or quickly sampling colour ways.
8  Homophile- It is an alternative to the word for homosexual or gay; Person who is sexually attracted to members of the same sex.
9  Lungi- is a traditional garment worn around the waist.
10  Crape-is a silk, wool or polyester fabric of a gauzy texture, having a peculiar crisp or crimpy appearance or a light cotton silk, wool or polyester fabric of a gauzy texture, having a peculiar crisp or crimpy appearance.
11  DDHPY was a comprehensive scheme, in order to take care of a wide range of activities such as product development, infrastructure support, institutional support, training to weavers, supply of equipments and marketing support etc. With the help of this scheme clusters were formed.