CHAPTER 1

INTRODUCTION

Innovation is the essence of economic transformation of firms as well as nations. Firms undertake innovations to defend their competitive position as well as to seek competitive advantage (OECD 1997). Innovation is expected to offer organizations with a means of creating sustainable competitive advantage that is imperative in today's turbulent environment. With fast developing technology and gradually globalizing market with heightened competition, traditional organizational management is no longer considered to be an appropriate strategy. Nowadays, businesses must compete for their survival and sustained competitiveness through continuous improvement and innovation (Ho 2001). Innovativeness is perceived to be one of the essential elements of growth strategies to enter new markets, to augment the existing market share and to provide firms with competitive edge over others (Gunday, Ulusoy, Kilic and Alpkan 2011).

Innovation and competitiveness have a dynamic, reciprocated relationship. Innovation generates economic value, new jobs in the economy and cultures of entrepreneurship (NKC 2007). Realizing the significance of innovation, a large number of organizations have expended a lot of resources in an effort to acquire various forms of innovation with the aim to improve their competitiveness. Some of these organizations have been successful, whilst, many have not. These inconsistent results have led many scholars to conduct numerous research studies in an attempt to answer the questions as to how, why and what causes such a success or failure (Panuwatwanich 2008). Practically all new firms are born from a development which is innovative, in comparison with its competitors in the market place. If the firm has to survive and expand subsequently, it must constantly innovate- at least only gradually (Dangayach, Pathak and Sharma 2005).

Innovations have acquired a predominant role in the development and competition strategies of firms today. Innovation is considered to be the most

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essential tool to stimulate growth and enable firms to fight the competition brought out by the forces of globalization (Tiwari, Buse and Herstatt 2007). Innovation is considered to be one of the key drivers of organization success. There are empirical evidences indicating that implementing innovations improves organizational performance (Sawang, Unsworth and Sorbello 2007). In this respect, technical advances are not by themselves sufficient to ensure success. Innovation also means anticipating the needs of the market, offering additional quality or services, organizing efficiently, mastering details and keeping costs under control (Zhang, Lim and Cao 2004). A firm's innovation strategy has to be multidimensional, ensuring the coordinated efforts of all the departments and functions involved.

Organizational innovation is a vast multi-disciplinary area of research and is relatively a new area of inquiry. Many authors have regarded innovation as a key factor for a company to survive and grow on a long term. While most researchers agree upon the definition of innovation, the research is fragmented from different perspectives with efforts being made towards a cumulative body of research and a general theory (Read 2000). Although the implementation of innovation is considered highly important for enhancing the competitiveness of organizations, there had been little research so far on the possible approaches to measure and monitor organizational innovations in large scale surveys (Armbrustera, Bikfalvib, Kinkela and Laya 2008). The growing interest in innovation and its relationship to economic growth has resulted in a body of specialised literature on various facets of the process of innovation starting with simple linear "technology push" and "need pull" models in 1960s and 1970s, through the "coupling models" of late 1970s to early 1980s to the integrated model of Rothwell (Alwis, Hartmann and Gemunden 2004).

This research is an extensive empirical analysis of the objectives and drivers facilitating innovation adoption, the barriers hampering innovation and finally the outcome in the form of business performance with special reference to the Small and Medium Enterprises operating in the Knitwear cluster of Tirupur district. While literature on innovation adoption has been growing in recent times, this study provides an in-depth quantitative analysis on innovation adoption at a regional level,

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supported by qualitative analysis. This research draws its base from the compilation of generic aspects of current innovation adoption literature at the firm level. The major objective of this research thesis is to highlight the rate of innovation adoption among the SMEs chosen at random from the SME cluster of Tirupur knitwear industry, by identifying its determinants, and impact on the overall business performance. Primarily, this research adopts the Structural Equation Modelling to understand the linkage between innovation determinants and innovation adoption at the first level; and innovation adoption and firm performance at the next level. The study will provide inputs to understand the current trends on innovativeness and the general performance of the cluster, at large.

1.1 CONCEPTS OF INNOVATION

This research revolves around the concept 'innovation'. The term 'innovation' can be conceptualized in a variety of dimensions and contexts. Innovation may involve country, region, and /or industry specific elements that promote the development of improved or new products or services (Hertstatt, Tiwari, Ernst and Buse 2008). Research studies on innovation have emerged from several domains of knowledge such as management, psychology, economics, sociology, science etc. Within these and other disciplines, researchers tend to conceptualise innovation in different ways (Tang 1998). Innovations do not take place in static environments, but rather in dynamic settings that involve the presence and interplay of various external and internal factors. For better clarity and understanding, it is imperative to refer to the important definitions of the concept available in the literature.

1.1.1 Definitions of Innovation

The buzzword in 1990s used to be "globalization". In the second decade of 21st century, the word that has acquired sudden prominence, and with reason is 'innovation'. The President of India has declared the decade 2011-2020 to be the "Decade of Innovation" (Dutta 2011). A look into the innovation literature shows that the term "innovation" has been defined by different authors in different ways. On review of literature across the time line, we can find that the definition of

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innovation evolved from the generation of new idea in 1960s to the entire process of successful implementation and diffusion of a new idea in 2000s (Felekoglu 2007).

Joseph Schumpeter is often thought to be the first economist to draw attention to the importance of innovation (Rogers 1998). He defined five types of innovation (OECD 1997) as follows:

- Introduction of a new product or a qualitative change in an existing product
- Process innovation new to an industry
- The opening of a new market
- Development of new sources of supply for raw materials or other inputs
- Changes in industrial organization

Innovation is used synonymously with creativity i.e., creating new ideas and knowledge. However, such creativity will have significance only when it is implemented successfully and customers derive value from it (Wong and Fung 2005). Innovation has a connotation of "newness", "success" and "change" and can be defined as the "generation, development and adaptation of an idea or behaviour, new to the adopting organization" (Damanpour 1996). According to Rogers (2003), innovation is "an idea, practice, or object that is perceived as new by an individual or other unit of adoption".

One of the most comprehensive definitions generally adopted by researchers states that "innovation is an internally generated or purchased device, system, policy, programme, process, products or services that is new to adopting organizations" (Damanpour and Evan 1984). According to NKC (2007), innovation is defined as "a process by which varying degrees of measurable value enhancement is planned and achieved, in any commercial activity".

Innovation must be viewed less as sporadic product breakthroughs and responses to current competitive environment, but more as an ongoing pattern of strategic behaviour ingrained in all of an organization's operations (Milton-Smith

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2003). According to Cooper (2003), innovation refers to "alteration of what is established by the introduction of new elements or forms". In the context of Small and Medium Enterprises, innovation can be treated as any change that adds value to the organization. This value may not necessarily be financial, but might also represent product quality, employee satisfaction, customer satisfaction or other less tangible measures (O'Leary 2005).

The heterogeneity of Indian economy, however, calls for a wider definition of innovation- one that distinguishes between 'new to the world', 'new to the market' and 'inclusive innovation'. In the Indian context, innovation is not just pushing forward towards advanced technological frontiers, but it may be any improving practices across the whole nation. Thus, innovations are not to be restricted to products alone, it has to include innovations in processes and organizational models new to the local environment (Dutz 2007).

There are different interpretations of the term organizational innovation and the lack of widely accepted definition causes difficulties in designing and implementing measures and indicators that uphold validity over a large coverage (Lam 2005). Innovation is a continuous process. Innovation when viewed as a process involves a series of steps systematically followed such as idea generation, evaluation and selection, project planning, product development and testing to product marketing (Verworn, Herstatt and Nagahara 2006).

Firms constantly engage in making improvements in products, processes or practices, collect new knowledge and hence innovation is dynamic, making it difficult to measure. Prior researchers have conceptualized innovativeness either a global, uni-dimensional construct or as a construct consisting of several specific dimensions. The multidimensional approach to understanding innovation by focusing on the antecedents and consequences of its several components is especially important. Cooper (1998) states that a firm's propensity to adopt innovation is influenced by several characteristics and that the uni-dimensional perspective is simply too narrow to capture them all. Practitioners or researchers often treat innovation as an all-inclusive term, but in reality they will be referring to different events or processes associated with innovation.

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Apart from the diversity in defining the term 'innovation', there are also divergent views on the dimensions of innovation such as the types of innovation, the stages of innovation and the levels of analysis. Gopalakrishnan and Damanpour (1998) have classified innovation as product versus process, technical versus administrative and radical versus incremental. Stages of innovation can be generation of innovation and adoption of innovation. Innovation further can be studied at national, industry, organizational, group and individual level. Hence the scope of variability in understanding and conceptualizing innovation depends on the research objectives of the researcher in terms of dimensions of innovation, stages and the level of analysis (Read 2000).

1.1.2 Research Approaches on Innovation

There are two important research approaches to an innovation study (Panuwatwanich 2008). They are the variance research approach and the process research approach (Gopalakrishnan and Damanpour 1994). The variance research approach is an antecedent approach that investigates the influence of a host of independent variables on the dependent variable. The antecedent approach follows a contingency model based upon a set of factors and their interaction and influence under various circumstances. According to Wolfe (1994), the unit of analysis in this approach is an individual organization and investigation is survey based. The researcher who follows the variance approach delineates the antecedents and consequences of innovation. They investigate the relationship between variables identified within the scope of the study, through the strength of associations, determined by the amount of variance of dependent variable explained by that of independent variables (Subramanian and Nilakanta 1996).

The process research approach, on the other hand, involves the investigation of the process of generation or adoption of innovation. It involves detailing on the step by step process of adopting innovations. The process research approach of innovation research involves researches on diffusion of innovation and adoption of innovation (Gopalakrishnan and Damanpour 1994). The diffusion research focuses on the dissemination or dispersion of innovations among the members of a social system, which involves individuals or organizations. It is more inter-organizational

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rather than intra-organizational (Panuwatwanich 2008). Generation approach focuses on innovation as a process of generating ideas to developing products, processes or systems to their final adoption and assimilation into the value stream of an organization. The present research has taken the variance research approach to study innovation. The pre adoption variables and post adoption consequences of innovation are investigated to determine their strength of association and influence on each other. The generation approach of innovation, at a relatively lesser degree, has also been adopted in the study by way of analysing innovation adoption and its subsequent implementation. However, the other stages involved in innovation as a process are outside the purview of this study.

1.1.3 Determinants of Innovation

The lack of consistency between the innovation literatures regarding the determinants of innovation has not gone unnoticed by several scholars. A quantitative synthesis of organizational innovation was first put forward by Damanpour (1991) and since then a lot of empirical studies have been conducted. Damanpour focused on the impact of organizational level variables on organizational innovation. Further research studies conducted by several scholars in this direction moved beyond the organizational antecedents of innovation. Innovation has been conceptualized as being context-dependent and influenced by environmental, organizational and individual level antecedents (Russell 1990).

1.1.4 Innovation Objectives

Objectives influence the actions of the enterprise and thereby affect the outcomes. Enterprises may engage in innovation for a number of reasons. Innovation objectives affect the ability of the firms to successfully undertake innovations. The objectives to innovate may involve products, market, efficiency, quality, ability to learn and to implement changes and the like. Identifying and examining the motives for innovation can help in determining the drivers of innovation activities, such as competition and opportunities for entering new markets (OECD 2005). Prior research on innovations does not provide detailed analysis on the definitions and the breadth of innovation objectives the firms may

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wish to pursue (Leiponen and Helfat 2005). For example, within the scope of technological innovations, firms may have objectives regarding whether to pursue product innovations or process innovations or both. Apart from these general objectives, firms may also pursue specific objectives such as development of a completely new product or improvisation of an existing product related to product innovations; or reducing the labour costs or increasing the flexibility of production as specific process related innovations.

The innovation objectives may be surrounded by uncertainty regarding the costs and the benefits involved. For example, the firm may not have clear idea that if it introduces a new product or improves upon an existing one, will the customers accept it and be willing to pay for the value addition provided. By pursuing multiple objectives, firms improve the chances that any one objective reaches the goal. Pursuit of a broad range of innovation objectives helps to offset diminishing returns to depth of innovation activity in a single objective (Cohen and Malerba 2001). Also, innovation objectives need to be viewed from the relevance and degree of importance firms place on them to understand the priority of the firms in this regard.

1.1.5 Facilitators of Innovation

Innovations occur as a consequence of triggers happening in the environment surrounding an organization. Innovation is said to be initiated by a need felt by the organization that it can do much more than what it is actually doing at present. This need may be felt by the members in the internal environment or by the change agents in the external scenario (Rogers 1971). Accordingly, the facilitators or drivers of innovation can be broadly grouped into internal and external facilitators. These may be related to environment, organizational capabilities, organizational structures and demographics (Russell 1990). Among them, the external facilitators are considered to be leading to increased level of innovations. If the environment is dynamic and competitive, organizations are forced to adopt innovations. According to the prospect theory, in times of great uncertainty, firms are more likely to be risk seeking and innovative (Kahneman and Tversky 1979).

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Competition is regarded as an important incentive to promote innovation and thereby firm performance. Competition can induce innovation by exposing the firms with new ideas. Additionally, if the competitive pressures are high, firms will scan the environment to generate superior alternatives to the existing practices/ products. **Turbulence** also creates uncertainty in the environment leading the firms to involve in innovations in order to guard against uncertainly prevailing. Turbulence in the external surroundings forces the firms to search for better opportunities in order to capitalize on them. According to Aghion et al (2005), theories of industrial organization predict that innovation should decline with competition while empirical work finds that it increases. Firms' perceptions about their competitive environment are vital for innovation and the relationship can be positive or negative, depending on the situation. Competitive pressure has been identified as one of the best predictors of organizational adoption of innovations, especially the information system (IS) innovations. Competition within the industry has positive influence on the adoption of IS innovations and this argument is even stronger if the innovation has a direct impact on the competition (Boumediene and Peter).

Both external knowledge access and internal learning capacity are essential for organizations' innovation and performance (Tsai 2001). **Networking** and **collaboration** helps the firms to gain external knowledge and information access. An organization's innovation capability is significantly increased by its intra-organizational network that provides opportunities for knowledge transfers and information exchange. High absorptive capacity facilitates a firm to successfully apply the new knowledge learned towards commercial performance. As a firm's network position implies its relative strength in gaining access to external knowledge, its absorptive capacity reveals its ability to replicate or apply such new knowledge. Networking may result in power control, information sharing, knowledge generation, and capital for companies to grow and develop. Benefits that organizations achieve from doing networking are through competitive development. Networking and collaboration done by an enterprise can be evaluated on the basis of frequency in doing networking contact with others; emotional approach in communicating; degree of closeness in that relationship; and degree of commitment

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among the factors that are involved in the exchange process. Networking is very useful for firms as it leads to gain of information, knowledge, and access to capital (Setyawati, Shariff and Saud 2011). Literatures have shown that collaboration is a meta-capability for innovation. It is necessary for organizations to put together different capabilities and services with the goal, through cooperation between suppliers and customers, service providers and scientific institutions to achieve innovations of high quality (Ebrahim, Ahmed and Taha 2008).

A firm's **organizational structure** can influence its innovation activities. There is disagreement about the appropriateness of different organizational structures for innovation activities. The organizational structure of the company represents the back bone of innovation processes and projects. Organizational structure refers to the formal, internal framework required for innovation to happen. It provides the internal arrangement necessary for innovation through communication, information flow, centralization/ specialization and organizational procedures. Centralization and formalization is deemed to be discouraging innovations, by decreasing the commitment, awareness and involvement of employees in the affairs of the organization. If an organization is centralized, lower level employees will not be allowed to participate in decision making, due to which their involvement in innovations will be very less. Functional organizational structures are mostly considered to be inadequate. Hence, more an organization is decentralised, less rules and procedures are laid down; higher will be the climate for innovation and team work fostering a good innovation culture in the organization. It has been empirically proved that flexible and adaptive structures outperform the rigid ones in terms of success rates (Panne, Beers and Kleinknecht 2003).

It has been researched and proved that organizations that are more oriented towards customers are more likely to receive ideas and information from the customers that can stimulate innovations. Customer inputs are considered highly essential as the products manufactured or services rendered by the firm should be acceptable to the customers who will be investing their money and resources in the product or service. Kohli et al (1993) define **market orientation** as the "organization wide generation of market intelligence that pertains to current and

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future customer needs, dissemination of intelligence across departments and organization wide responsiveness". According to them, the greater the market orientation of an organization, the greater will be the overall performance and that this relationship will be moderated by several external forces such as changes in the economic conditions, market turbulence as well as competition. The environmental context, especially in the form of competition and dynamism, is found to be influencing market orientation positively. The association between market orientation and business performance depends on the environmental characteristics of an organization such as turbulence (related to technology as well as customers) and competition intensity. Organizations that can pace up according to the pace of technological advancements stay competitive, though technological innovation commensurate with the market orientation.

Past research shows that older organizations are very rigid and less open to change when compared to the relatively younger ones. However, some other researchers have recorded that younger firms are less willing to make changes that will affect their current way of doing businesses. They prove that older organizations have a well defined resource base and potential for survival that allows them to pursue innovations. Hence there exists a positive correlation between organization's **age** and innovation adoption (Kimberly and Evanisko 1981). Young firms face resource constraints and are unable to develop, especially through product innovation. Young firms are vulnerable to uncertainties. Often, early growth determines the success of new organizations, and the challenges of sustaining resources constrain many firms, leading to their closure or struggle for existence. The most important barrier preventing new firms from developing through innovation is the lack of routines to coordinate interactions. Innovation requires cumulative knowledge and such a knowledge base allows new ideas to get more easily absorbed; and hence, older firms with larger knowledge bases are more likely to follow productive opportunities (Rao and Drazin 2002).

Innovation and **leadership** are closely related. Leadership always has focus on bringing about betterment in the organization. In this sense, leaders are necessarily innovators and a strong leader will be able to promote more innovations

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in his organization. The impact of leadership on organizational effectiveness is well researched in the literature. Leadership is 'the process of transforming organizations from what they are to what the leader would have them become' (Dess and Lumpkin 2003). The leader can create a work environment encouraging creativity and generate an organizational climate that supports more creative work processes. Leader influence occurs primarily as a result of the management and successful implementation of changes according to the turbulence happening in the environment. Transformational leaders, by intellectually stimulating their followers, championing innovation, and projecting a strong vision for their organizations, help establish a positive organizational climate where employees feel challenged to look for innovative approaches in their jobs (Gumusluoglu and Ilsev 2009).

The motivation to innovate is the augmentation in profit that a firm can make if it invests in **Research and Development** (Gilbert and Weinschel 2005). This incentive can be classified into several economic forces that are present in varying degrees in different market environments. The economic force, according to the Schumpeterian view, is that the profit that can be earned from a new product or process depends on the size of the innovation and the extent to which the innovation is protected from imitators. Innovative output obviously increases with R&D investments. The relation between R&D intensity and innovative output is moderated by factors such as local knowledge spillovers, demand-pull effects or differences in technological opportunity (Panne, Beers and Kleinknecht 2003). These factors may explain that R&D input and innovative output are less strongly correlated as against the general notion.

Climate for innovation is the apparent manifestation of a pro-innovation culture that has a positive impact on innovation (Nybakk, Crespell and Hansen 2011). Climate comprises of the behaviours, attitudes and feelings which are distinctive aspects of the life in an organization. Climate when compared to culture is unstable and can be seen as the manifestation of culture at certain situations. Climate can have a positive effect on creativity in an organization (Cooper, Edgett and Kleinschmidt 2004). Employees are the sources of an organization's creativity and climate is important for motivating them to think and act creatively.

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For innovation to occur in organizations, employee interest should be directed toward creating new products, processes, and services critical for organization's survival. A strong climate for innovation may help to make employees focus their attention thereby creating a collective approach that is supportive to innovation adoption (Ven 1986).

1.1.6 Types of Innovation

OSLO manual, developed jointly by OECD and Eurostat, is a series of manuals devoted for the measurement and interpretation of data relating to science, technology and innovation. The manual identifies and differentiates between four types of innovation. These are product innovation, process innovation, marketing innovation and organizational innovation (OECD 2005). In the past, the innovations adopted by firms were categorized into product and process or rather, technological innovations (TPP Concept). However, since several other innovations also take place in organizations which could not be captured by TPP concept, the scope of the concept was widened. A firm can make many kinds of changes in its methods of working, usage of factors of production, types of products that it makes to improve its productivity and/or commercial performance. The new additions made were marketing and organizational innovations. These concepts were tested along with TPP concept at several OECD countries with promising results.

Technological innovations are those that occur in the operating component and affect the technical system of an organization. It can be the adoption of a new idea pertaining to a new product or service, or the introduction of new elements in an organization's production process or service operations. According to OSLO Manual (2005), product innovation is the introduction of goods or services that is new or significantly improved regarding its characteristics or intended uses; including significant improvements in technical specifications, components and materials, incorporated software, user friendliness or other functional characteristics. Product innovations are a result of usage of new technologies or knowledge, or combinations of existing knowledge or technologies. For successful product innovations, there has to be a strong interaction within the firm and between the firm, its customers and suppliers (Akova, Ulusoy, Payzin and Kaylan 1998).

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Administrative innovations are intended to increase firm's efficiency in performance by reducing administrative expenses, improving workers' satisfaction and developing access to knowledge. It involves introduction of new or improved business practices, organizational structure, external relations and the like. Marketing innovation refers to introduction of new marketing methods involving significant changes in product designs, packaging, promotion, pricing and the like. The objective is to better address the customer needs and thereby improving firm's sales.

Innovations may be 'new and improved' as well as 'insignificant or minor'. It is noteworthy that most of the developments that take place in an economy are due to incremental improvements. The term 'innovation' has also been extended now to include 'open innovations'. In an open innovation process, projects can be launched from internal or external sources and new technology can enter at various stages (Chesbrough 2003). However, if the locus of innovation moves from being deeply embedded within the firm to happening either outside the firm or in the form of a relation between the firm and outside members, there needs to be a coordinating, aggregating and synthesizing effort that helps create value out of the various support received from different sources (Fredberg, Elmquist and Ollila 2008).

1.1.7 Sources of Innovation

At the firm level there are three different sources of innovations: imitative, acquisitive (licensing, acquisition or merger) and incubative (developing own innovations internally). In developing countries, innovation among the small enterprises is largely an adoption of a product, process or method that has already been developed somewhere (Dijk 2002). Organizational learning requires an understanding of external boundary and identity while at the same time keeping the boundary sufficiently open to allow the flow of new knowledge and ideas from outside. Learning by the organization can be enhanced by capitalizing those arising from contacts and sources outside the organization that are in a superior position to challenge existing paradigms. External business alliances and networks, and using new as well as existing employees to develop new ideas and streamlining them to the existing learning systems, are important mechanisms for developing

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organizational knowledge on rapid technological advancements and disruptive changes happening in the competitive environment surrounding the firm (Teece and Pisano 1994).

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individual adopter's perspective and offers two important assessment information-concerns of the individual about whatever new programs, products, or ideas (innovations) are being offered, delivered, or implemented; and individuals' knowledge of and how they use these innovations. The stages of concern are related to self (awareness, informational and personal), task (management) and impact (consequence, collaboration and refocusing).

The Technology Acceptance Model (TAM) is an information system (IS) theory that explains how users accept and use technology (Davis, Bagozzi and Warshaw 1989). TAM was developed on the basis of the theory of reasoned action adapted into the context of user acceptance of information system. According to the model, attitude of a user towards a system determines whether he will actually use or reject a system. Such an attitude is influenced by two major beliefs: perceived usefulness and perceived ease of use.

The Unified Theory of Acceptance and Use of Technology (UTAUT) is also an information system (IS) theory that integrates elements across eight models of adoption such as theory of reasoned action, the technology acceptance model, the motivational model, the theory of planned behaviour, a model combining the technology acceptance model and the theory of planned behaviour, the model of PC utilization, the innovation diffusion theory, and the social cognitive theory (Venkatesh, Morris, Davis and Davis 2003). The theory offers useful support to managers needing to assess the likelihood of success for new technology adoptions and helps them understand the drivers of acceptance in order to proactively design interventions (including training, marketing, etc.) targeted at the users who may be less inclined to adopt and use them.

According to Disruptive Innovation Theory (Christenson 1997), disruptive technologies that provide different values from mainstream technologies are initially inferior to mainstream technologies. Market disruption occurs when, despite its inferior performance, the new product displaces the mainstream product in the mainstream market. There are two reasons for such a market disruption: performance of new product/ technology overshadows the mainstream attributes of the existing product, and asymmetric incentives between existing healthy business

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and prospective disruptive business. The predictive value of the theory on firm's performance is highly researched as well as debated.

1.3 INNOVATION INITIATIVES AT THE INTERNATIONAL AND NATIONAL LEVELS

Today, innovation is considered to be the essential precondition for the economic development and competitiveness of both developed as well as developing countries. The understanding of the term has also widened. The meaning of 'innovation' is no longer restricted to 'R&D' and scientific publications. Innovation has several dimensions and each of them is perceived to be critical for acquiring competitive advantage. Of course, technology plays a salient role in enabling radical changes. While new products are considered to be the outcomes of innovations, process related innovations also play an important role. It is through efficient process innovations that countries like Japan have dominated the world in several sectors during the late twentieth century. Innovations are not restricted to products alone, service firms are also innovating to offer faster, cheaper and high quality services. The arrival of information era has totally enhanced the scope of innovativeness of both manufacturing as well as service firms. Innovation strategies, earlier confined with MNCs' portfolio, are now an issue with even small enterprises. Even a local firm has to think and act innovatively to stay in business. Given the fact that innovation is inevitable, the challenge today is the scale at which it has to be developed and deployed. It is estimated that the entire volume of world trade that happened in the year 1950, is now happening on a single day (Tidd, Bessant and Pavitt 2005).

Innovations in business are now linked with issues of sustainability. Innovations were once believed to be the outcomes of heroic actions of certain well known individuals or businesses - 3M, Ford, Hewlett- Packard etc. to name a few. In the twenty-first century, innovation has to be viewed at the network level, not as an isolated activity. It is said that future of R&D is going to be C&D - where collaborative networks outside the firms will be the most important sources of innovations. Open innovations and networking will support diffusion of innovative best practices and help build rich linkages within the national systems of innovation.

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Such learning and sharing networks can bring in numerous benefits, especially in the form of incremental innovations.

In recognition of the growing need for innovations, several countries have already established policies supporting them. Organization for Economic Cooperation and Development (OECD) is a joint initiative of 30 countries that share democratic government and market economies. OECD's science, technology and innovation initiatives offer guidelines to member countries based on research and benchmarking. Similarly, Lisbon European council has launched European Innovation Scoreboard (EIS) to support European Unions' innovation initiatives. In America, Council of Competitiveness has been set up with objectives of promoting innovations and thereby driving economic growth. China has developed new science and technology policy that supports innovation (Gupta 2008).

India established the National Knowledge Commission (NKC) in 2005 to promote excellence in education, science, technology, intellectual property management etc. The experts in the Commission advise the government on policy matters concerning its agenda. In 2008, Department of Science and Technology (DST) introduced the Draft National Innovation Act (DST 2008). The Draft Act presented three main objectives: to 'facilitate public, private or public-private partnership initiatives for building an innovation support system to encourage innovation'; to 'evolve a National Integrated Science and Technology Plan'; and to 'codify and consolidate the law of confidentiality in aid of protecting confidential information, trade secrets and innovation'. Though the Act is technically sound and supportive, it is yet to be implemented to offer support to the entrepreneurs in the country.

In persuasion of its goal to create and sustain 'the decade of innovation', the Prime Minister of India constituted the National Innovation Council (NInC) in September, 2010. The council focuses on encouraging and facilitating the creation of an 'Indian model of innovation' by focusing on five important parameters: platform, inclusion, eco-system, drivers and discourse (National Innovation Council 2011). Realising the lack of innovativeness among the industrial clusters of the country, NInC has initiated the Industry Innovation Cluster initiatives to bring

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together local/state/national government agencies, R&D labs/ universities and private organizations, in a public private partnership effort to collaborate, share and network towards innovation in a self-sustainable manner. Such collaborations are expected to result in the industry innovation clusters giving birth to new products, services, business models and plugging gaps of finance, skill and others. A pilot phase of this initiative has already started in 7 industrial clusters of the country, and is proposed to be expanded to 30 plus clusters across all states by the end of fiscal year 2013.

1.4 CLUSTER

Clusters are geographically proximate group of interconnected companies and associated institutions in a particular field linked by commonalities and complementarities (Porter 1998). Clusters are geographic concentrations of interconnected companies, engaged in similar or highly connected economic activities (UNIDO 2005). Schmitz (1992) defines cluster as "a group of producers making the same or similar things in close vicinity to each other". These definitions suggest that a cluster possesses two major characteristics:

- Geographic concentration
- Sectoral specialization

Though, the conditions underlying firms clustering in a particular geographic location is not fully understood, three factors can be identified to be strongly associated with cluster development.

- Geographic factors: Consideration of the scope of transport costs versus production costs and regional demand conditions can induce firms to concentrate in one specific site.
- Historical events: The attraction of a location today has often its origins in the past events. Once the clustering process has begun, it is often maintained by its historical path-dependence and by being possibly locked in a certain specialization pattern (Antonelli 1997).

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- Institutional frameworks: This provides the legal-political-social structures that define the human interaction rules. The characteristics of institutional frame works are largely path-determined by historical developments (North 1990)

Alfred Marshall, the English economist is supposed to have propounded the cluster concept in 1920 (Chiles and Meyer 2001). After examining the industrial districts in Europe, he explained that physical conditions such as climate and availability of raw materials were the main reasons for the localization of industry. According to the Cluster Initiative Green Book (Sölvell, Ketels and Lindqvist 2003), there can be four major categories of actors who are present and mostly active in any cluster. They are:

- Companies
- Government/regulatory agencies
- Research institutions
- Financial institutions

Connections among the cluster operators/actors involve competition as well as cooperation simultaneously. Competition, like in any business, will be a prominent driver in a cluster that goes to improving the corporate performance. At the same time, the cluster actors will cooperate and complement each other through their own competencies. Dynamic clusters are critical for a successful microeconomic business environment. Such a cluster environment may exhibit intense local rivalry and dynamic competition on one side, as well as intense cooperation and collaboration on the other side. There will be intense informal interactions based on personal networks as well.

Clustering offers several benefits like proximity to raw materials, customized business development services, abundant clients attracted by the cluster tradition, a skilled local labour force and a vibrant competition among entrepreneurs, that spurs innovation and increases efficiency (UNIDO 2005). That clusters could fuel regional industrial growth through productivity rise has been observed in numerous cases

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(Das, Gulati, Sarkar and Banerjee 2007). The major benefits that can be derived from clusters can be summarized as productivity gain, innovation gain and new enterprise creation. Productivity gains emerge when companies begin to operate more productively sourcing quality inputs, accessing information, technology, and support from the needed institutions; coordinating with related companies; and measuring and motivating improvements (Porter 1998).

Some important traits of an innovative cluster eco-system observed nationally and globally are (National Innovation Council 2011):

- Strong linkages with pertinent stakeholders
- Efficient leaders who visualize development of the cluster
- Strong industry/cluster organizations capable of translating the vision into reality
- Existence of common needs, opportunities and/or threats
- Access to skilled and supportive mentors and advisors
- Risk-taking and acceptance of failures
- Supported by suitable Government policies and programmes

Though it has been widely accepted that firms benefit from the presence of external economies and opportunities for joint action in the cluster, some recent studies have contested this belief. According to them, spatial proximity is not sufficient to generate earnings, and that other forms of proximity (such as cognitive, social, organizational and institutional) are required for inter firm learning and innovation to occur (Boschma 2005).

Firms may establish themselves initially in a location because of its attractiveness, or as a consequence of historical action or a strategic event. As returns increase, this magnifies the original advantage of the location, attracts others to it and locks the location as the nexus of specialized business activities (Chiles and Meyer 2001). Clusters play a vital role in a company's ability to

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undertake innovations. Certain characteristics that help to enhance the productivity of the cluster firms have an even more dramatic consequence on innovation and productivity growth (Porter 1998). Because buyers are often part of a cluster, companies inside clusters usually have a better access on the market than isolated ones.

Clustering has been an old age phenomenon in India. Clusters have been in existence in India for centuries and are known for their products at the national and international levels. India has more than 6400 clusters which are broadly classified as industrial, handloom and handicraft clusters (UNIDO 2006). Clusters can be categorized on the basis of the number of units within the cluster, number of employees engaged, turnover etc. Among the clusters in India, Tirupur cotton knitwear cluster is considered to be one of the biggest cluster, giving direct as well as indirect employment to nearly 3 lakh people and reporting total turnover of Rs.12,000 crores.

Table 1.2 Details of big clusters in India

Sl. No.	Name of the cluster	Number of firms (approx)	Employment	Turnover (Rs. in crores)
1	Tirupur cotton knitwear cluster	7,200	3,00,000	11,000
2	Delhi readymade cluster	2,039	50,000	4,000
3	Chennai leather cluster	1,195	40,000	2,020
4	Panipat made ups cluster	7,435	2,60,000	1,200
5	Ludhiana knitwear cluster	12,000	5,00,000	5,000
6	Rajkot engineering cluster	2,190	62,800	5,450
7	Surat diamond cluster	6,000	7,00,000	62,000
8	Ahmadabad pharmaceuticals cluster	1,290	41,000	10,250

Source: UNIDO 2006

With respect to the textile and clothing clusters, the Government of India's Cluster development initiatives involving technical assistance, subsidies for technological upgradation and marketing support have strengthened their

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competitiveness. The Textile Committee, under the Ministry of Textiles, have undertaken cluster based programmes for the capacity building of the SMEs in the textile and related SMEs in across 20 clusters in India. Some of the important benefits of such initiatives are:

- Networking among the enterprises
- Economies of scale
- Improved bargaining power
- Technology and skill upgradation
- Global visibility and being a part of the value chain
- Easier access to finance
- Greater institutional support

1.5 SMALL AND MEDIUM ENTERPRISES

The SMEs have been recognized by Governments and experts as a potential engine of economic growth and a major factor in promoting development of private sector. According to the Reserve Bank of India (2005), a Small and Medium Enterprise is an undertaking in which investment in plant and machinery does not exceed Rs.1 crore, except in respect of certain specified items under hosiery, hand tools, drugs and pharmaceuticals, stationery items and sports goods, where this investment limit has been enhanced to Rs.5 crores. Units with investment in plant and machinery in excess of SSI limit and up to Rs.10 crores may be treated as medium enterprises.

The Micro, Small and Medium Enterprises Development (MSMED) Act, 2006 that came into effect from October 2006, define SMEs on the basis of investment made in plant and machinery. In case of enterprises engaged in the manufacture of goods, Micro enterprises are those whose investment in plant and machinery is less than Rs.2.5 million; Small enterprises are the ones whose investment in plant and machinery is over Rs.2.5 million, but not exceeding Rs.50

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million, and Medium enterprises are those whose investment in plant and machinery is in excess of SSI limit but less than Rs.100 million (MSME 2010). In India, Micro, Small and Medium Enterprises account for a large portion of the industrial production, employment and gross value added. In terms of value, the sector contributes to about 39% of manufacturing output and about 33% of the total exports of the country. They are a vital component of our national industrial system (Kumar and Sardar 2011).

SMEs-clustering has been of considerable interest over the last decade and is associated with regional development. The SME rating agency of India, SMERA, has made an evaluation of the textile based SMEs and clusters of our country and have developed a SWOT analysis as follows:

Table 1.3 SWOT analysis of SMEs

Strengths	**Weaknesses**
Self reliance	Highly fragmented
Manufacturing flexibility	High dependence on cotton
Abundance of raw material production	Lower productivity
Design expertise	Declining mill segment
Availability of cheap labour	Technological obsolescence
Growing economy and domestic market	Non-participation in trade agreements
Progressive reforms	
Opportunities	**Threats**
End of Quota regime	High competition from developing countries such as China, Bangladesh etc.
Increasing demand for branded readymade garments	Pricing pressures
Increasing disposable income	Locational disadvantages
Retail expansion and Mall culture	International labour and environmental laws

Source: SMERA 2011

1.5.1 SMEs and Innovation

Innovation is the driving force of economic development of nations. With their flexibility and responsiveness, Small and Medium Enterprises (SMEs)

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play a vital role in innovation. SMEs innovate to fill the opportunity gaps created by the changing marketplace. Especially in the Indian context, where SMEs are the biggest contributors to the nation's exchequer and employment, innovation enhancement and competitive capability building among them should be one of the primary concerns of the nation. An analysis of the global economic activity over the past 200 years reveals that there is a significant linkage between the exploitation of technological innovations and SMEs (Okongwu 2001).

The SMEs are considered to be the most efficient systems for exploiting most of the innovations that in turn leads to the industrial development of nations. Small firms account for a larger share of new product innovations in spite of their low R&D expenditures (OECD 2000). Small firms possess innovative advantage on account of differences in management structures (Rothwell 1991). However, the opportunity for innovations in small firms is significantly influenced by the 'system of innovation' in which they are embedded. Innovativeness of these firms is influenced and sometimes even dictated by their customers. The quality and skill of labour force locally available also exerts influence. Hence, though SMEs are said to have a high propensity for innovation, their innovativeness is conditioned by the national and regional contexts in which they are embedded (Tidd, Bessant and Pavitt 2005).

1.6 THE TEXTILE AND APPAREL INDUSTRY

The emergence of textile industry was one of the outcomes of the industrial revolution in the 18th century as a result of which mass production of yarn and cloth became a mainstream industry. New innovations in clothing production and design came during the industrial revolution - in the form of new wheels, looms, and spinning processes that totally transformed clothing manufacturing system. Manufacture of textiles soon became an organized industry as compared to the domesticated activity it had been associated with before. Global textile and apparel business is recovering after a slump during the economic recession in 2008-09 and is expected to reach USD 1 Trillion by 2020 from the current USD 510 billion. This growth in trade is driven by increased outsourcing of western / developed countries towards lower cost countries in Asia (Technopak 2010).

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The Indian textile industry is one of the leading textile industries in the world. After the waves of liberalization that happened in the 1990s, the industry started becoming more organized, playing a major role in the economic development of India. The industry is significant in many ways such as contribution to foreign exchequer, creating employment opportunities and adding to the GDP of the nation significantly. The industry contributes nearly 14% to industrial production, 5% to GDP, and 18% to employment of the country. The textile sector of the country employs nearly 35 million people and is considered to be the second-highest employer in the country, after agriculture. The Indian textile industry was valued at USD 70 Billion (around USD 47 Billion domestic and USD 23 Billion exports) during 2009. This is expected to grow to USD 220 Billion (around USD 140 Billion domestic and USD 80 Billion exports) by 2020, at a growth rate of about 11% per annum. This will increase India's market share in the world textile business from the current 4.5% to 8% (Technopak 2010). According to the World Trade Organization data, in the global exports ranking of countries in textiles during 2010, India was ranked as the third largest exporter, behind EU-27 and China. In the global market exports of clothing, India was ranked as the sixth (Textile Ministry 2012).

Exports of textiles and clothing products from India have been increasing steadily over the last few years, particularly after 2004 when textiles exports quota was discontinued. During the year 2010-11, Ready Made Garments (RMG) accounted for almost 45% of the total textiles exports, revealing that it is the largest segment contributing to the country's total textile export basket. Apparel and cotton textiles products together contribute nearly 70% of the total textiles exports. It is also one of the largest contributing sectors of India's exports worldwide and accounts for nearly 12% share of the country's total exports basket (Textile Ministry 2012). The export basket includes a wide range of items including cotton yarn and fabrics, man-made yarn and fabrics, wool and silk fabrics, made-ups and a variety of garments.

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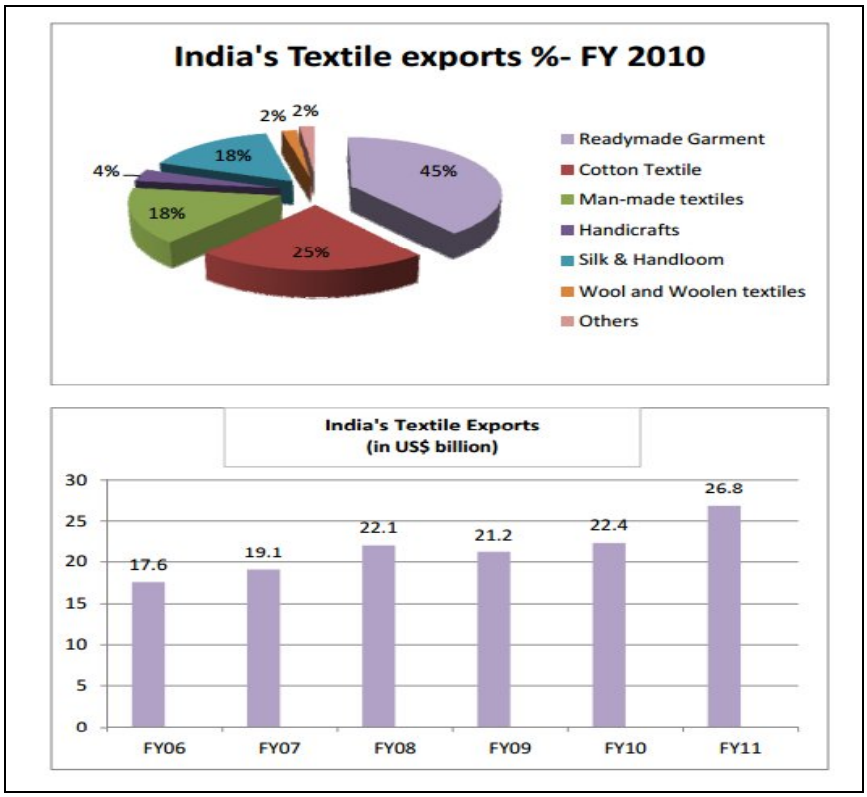

Source: Corporate Catalyst India 2012

Figure 1.2 India's textile export trends (2006-2011)

The knitwear (hosiery) plays a prominent role in the Indian textile sector. The knitwear products include T shirts, polo shirts, sweat shirts, banians, pyjamas, night dresses, jogging suits, jerseys, sports shirts, children wear, gloves, nightgowns, track suits, socks etc. Global knitwear market is likely to grow and reach USD 20.3 billion by 2015. Europe and North American markets dominate the global knitwear sector with a 65% share. Desire for trendy lifestyle, media awareness and an increase in the amount of disposable incomes, has led to the growth of the industry. Advancements in fine-gauge knitting, advanced technologies such as digital printing, glossy foil prints, inkjet printing, flocking etc., have also contributed to the development of the industry. New knitting machines have opened up new possibilities unknown till now such as technical textiles, products such as fishnet, fruit-net, shade net and composite products, to name a few (www.fibre2fashion.com 2011).

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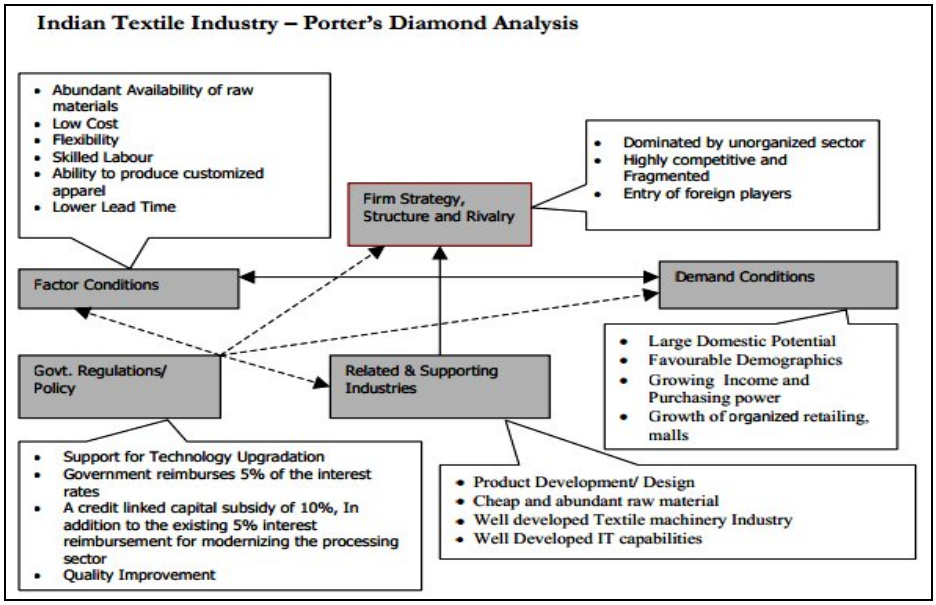
Like any other sector, Micro, Small and Medium Enterprises (MSMEs) dominate the Knitwear RMG Sector. In terms of export earnings, RMG sector contributes nearly 22% of the total export of various products from the SME sector. This is the highest contribution made by the SME sector which is largely decentralised, primarily due to reservation of the knitting units for small-scale sector. However, the garment making that was earlier reserved for only Small and Medium Enterprises (SME) was opened up only after 2000. Out of 77,000 garment manufacturers, 80% operate at small, tiny and cottage levels. Fabricators hold the bulk of the production capacity at nearly 72% (Verma 2000).



Source: Corporate Catalyst India 2012

Figure 1.3 Indian textile industry- Porter's diamond analysis

1.7 SCOPE OF THE STUDY

The scope of any research determines the context in which a research investigation will be performed and the units of analysis. Context of business affects innovation management to a large extent. For e.g. different sectors will have different priorities and characteristics (Pavitt 1984). Similarly the innovativeness of small firms differs from that of large firms (Hoffman, Parejo, Bessant and Perren 1998). Country specific influences in the form of institutions, policies etc., will

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influence innovation adoption (Nelson 1993). The life cycle in business, degree of novelty and role played by the external agencies are some of the other factors that may influence innovation adoption (Christenson 1997, Whitley 2000). The present study has been conducted in the context of Small and Medium Enterprises operating in the knitwear value stream of Tirupur hosiery industry.

The study has adopted a variance research approach to investigate the causal relationship between the variables of interest occurring before and after innovation adoption. The variables of interest have been identified after careful analysis of pertinent literature on innovation management. Even though the study investigates into the sequential relationship between the pre adoption and post adoption aspects of innovation, the study is cross sectional instead of being longitudinal. The scope of the study is limited to the variables investigated based upon the hypothesized model and select aspects considered in the research. However, innovation adoption may be influenced by other aspects present in the context of the units of analysis investigated here. Those factors and their impact on the model are beyond the scope of this study.

1.8 THE KNITWEAR CLUSTER OF TIRUPUR DISTRICT

The origin of Tirupur knitwear cluster can be dated back to the colonial times. Situated at the centre of the cotton farming belt, Tirupur is said to be a perfect location for cotton knitwear manufacturing. Tirupur has been a prominent centre of textile business since 1870. The first cotton knitting factory was established in Tirupur in the year 1925. During 1930s, many more factories were established in the region. Initially, the production was confined to manufacturing white vests, with the city owing the reputation of making the whitest of vests in India. Domestic demand for Tirupur garments was very significant during the 1940s. During 1970s, an Italian manufacturer visited the city to source cheap knitwear and this turned out to be the starting point of exports from this region (Arun, Bhalla, Fraser and Nicholson 2011). Thereafter, the cluster had no need to look back, but was making significant strides in the international market by manufacturing quality knitwear at the most competitive prices. Quality products and quick delivery add dimensions to Tirupur's prowess as a centre that produces excellent knitwear.

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Today, Tirupur is the foremost garment cluster in India, providing employment to more than 3 lakh people either directly or indirectly. About 45% of Indian garment exports are in the form of knitwear, of which 80% is accounted for by Tirupur worth an estimated USD 1 billion thus contributing significantly to the foreign exchange earnings of the country (Sachitanand 2007). In earlier days, Tirupur was predominantly an agrarian region. Cotton was cultivated on a large scale in the region, leading to the setting up of cotton ginning factories. Tirupur started off as a cotton ginning cluster, got transformed into a hosiery cluster and at a later stage into knitwear cluster (ACDS 2009).

Close proximity to Coimbatore which is a major centre of cotton spinning industry in the country makes it easy for Tirupur to access its basic raw materials quickly and as and when required. The strong entrepreneurial élan, personalized management and direct control over all the operations makes competition and negotiations cost effective in Tirupur (Kumar 2005). The phenomenal growth rate of the knitwear industry in Tirupur can be attributed to the region's unique export culture, easy availability of raw materials, and labour as well as flexible attitude of entrepreneurs in meeting the demands of the buyers.

Following the dismantling of the Multi-Fibre Agreement on international textile trade from January 2005, Tirupur showed substantial growth in its exports. From Rs.19 crores in the year 1985, the knitwear exports from Tirupur rose to Rs.3,581 crores during the year 2000. This further increased to Rs.11,500 crores during the fiscal year 2009-10 and then to nearly Rs.12,500 crores by the year 2010-11. The slowdown of the world economy, closure of wet processing units and rupee appreciating against dollar has affected the business of Tirupur to a great extent, recently. If Tirupur had grown at its usual pace, it would have touched annual exports of Rs.18,000 crores in 2011-12. However, the export is just about Rs.12,000 crores (Preetha 2012).

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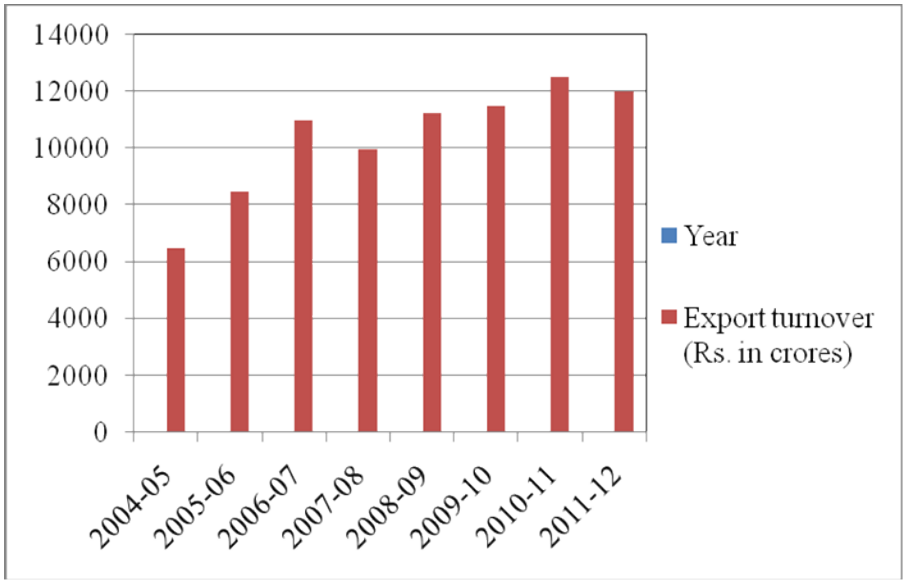

Source: www.tiruppur.tn.nic.in 2011

Figure 1.4 Export turnover of Tirupur cluster

Overseas buyers from nearly 35 countries visit this 'Dollar City' every month. It is noteworthy that "this town can deliver customized samples of knitted garments in less than 12 hours; and up to half a million pieces in a matter of days" (Kumar 2005). From being producers of basic knit garments for the lower end of the domestic market, Tirupur cluster has today a diversified production range comprising of T-shirts, polo shirts, sportswear, sweat shirts, ladies dresses, children's garments, nightwear etc. The wide range of garments manufactured by the cluster has regular customers from countries across the world such as Europe, USA, Canada, Mexico, Brazil, Hong Kong, Korea, Africa etc. The exports cater to various brands and retailers across the globe. Most of the leading international brands such as Nike, Cutter and Buck, Adidas, GAP, Tommy Hilfiger, Katzenberg, Van Heusen, Fila, Arrow and leading retail chain stores such as C&A, Wal-Mart, Target, Mothers Care, H&M source garments regularly from Tirupur. Nearly 90% of the exports from Tirupur used to cater the American and European markets. However, as the recessionary trends in these countries are much affecting the cluster's existing business, the cluster members have started exploring new markets with better import growth.

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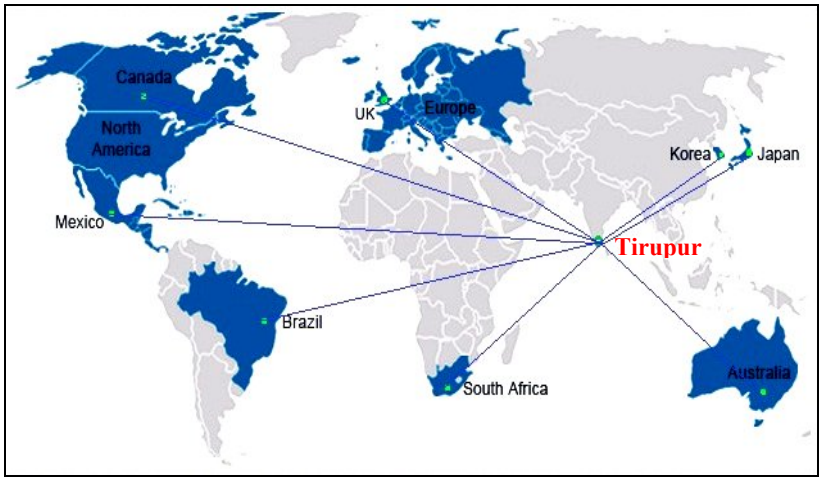

Source: TEA 2011

Figure 1.5 Export destinations of Tirupur knitwear

Tirupur garment cluster is recognized today as one of the important industrial centres not only in India, but also in south Asia. There are about 15 active industry associations in the cluster supporting the cluster members in matters such as inter-firm product sharing, adoption and adaptation of newer technologies, settlement of various inter and intra firm disputes, liaisoning with Government and the like. They also support the cluster by bringing in common facilities like common effluent treatment plants, logistical support, arranging knit fares and trade shows etc.

The Tirupur knitwear industry is predominantly SME dominated that has emerged due to market access, availability of raw materials as well as private initiatives of the residents here. Based on the UNIDO study on the clusters in India (2011), Tirupur has been identified as a natural cluster of India, contributing almost 80% of country's hosiery exports. The socio-economic contribution of the industry is substantial. A large variety of hosiery products are manufactured at Tirupur, which have good demand in the national and international markets. Though there is rise in turnover and exports over years, the profits have fallen recently due to high cotton and yarn prices as well as transportation costs.

Besides knitwear units catering to the export and local markets, there is a large number of other ancillary and supporting industrial units engaged in the manufacture of items like elastic tapes, cartons, labels, polythene bags and other

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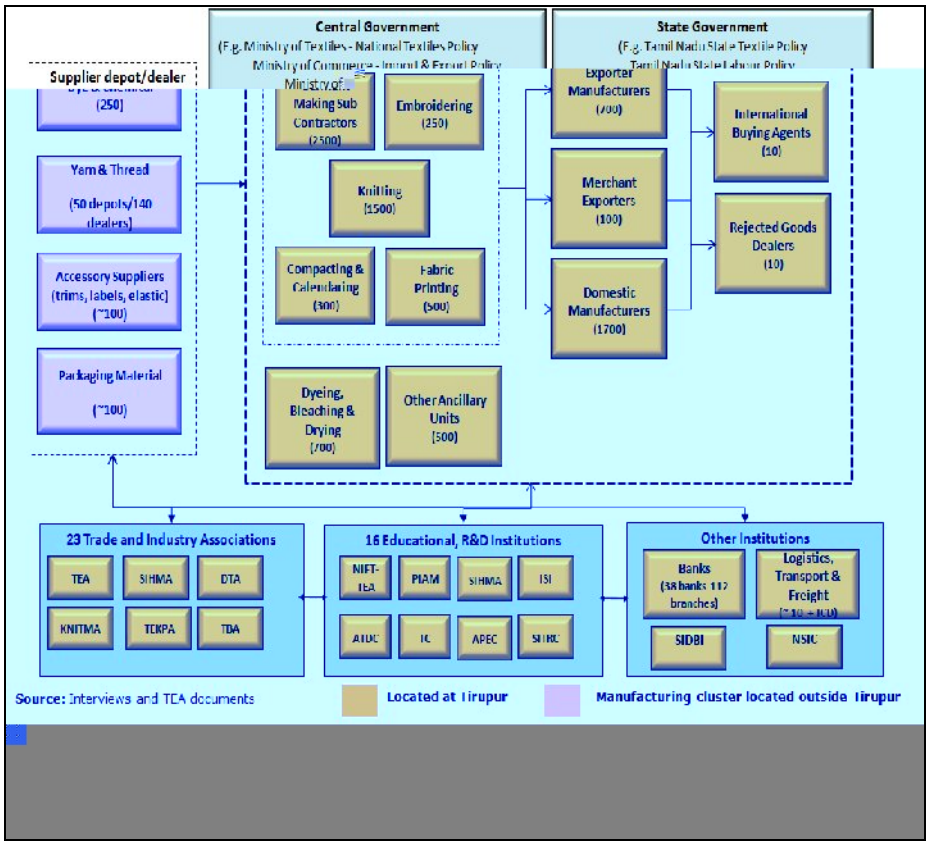
packing materials. The main stakeholders are exporters (700 approx.) and domestic manufacturers (1700 approx.) supported by allied manufacturers and suppliers. As per the official statistics, there are nearly 6250 manufacturing units in the cluster engaged in various activities involved in the knitwear manufacturing (Tirupur Cluster-A Success Story 2009).



Source: Arun, Bhalla, Fraser and Nicholson 2011

Figure 1.6 Tirupur knitwear cluster eco-system

1.8.1 The Knitwear Value Chain

The knitwear value chain comprises of activities such as procuring yarns, knitting panels, cutting or trimming cloth, assembling panels, finishing and selling in the domestic or export markets. Yarn making, knitting/weaving (fabric making) are the major activities in the first stage of the hosiery industry. This is followed by textile processing in which bleaching and dyeing of gray cloth and printing takes place. A number of ancillary activities like calendaring and rinsing are also being

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undertaken on a need basis. The third stage involves cutting, stitching, embroidery, buttoning, labelling, packing and despatching/exporting the finished goods. A few entrepreneurs, who are mostly involved in garment exports, have vertically integrated many of these activities due to which they gain a competitive edge over the others in terms of overall control, guaranteed quality and timely delivery. Tirupur cluster has demonstrated the ability to go up the value chain, however in a limited manner. The product range is diversified, with a marginal increase in unit value addition (Nelliyat 2007).

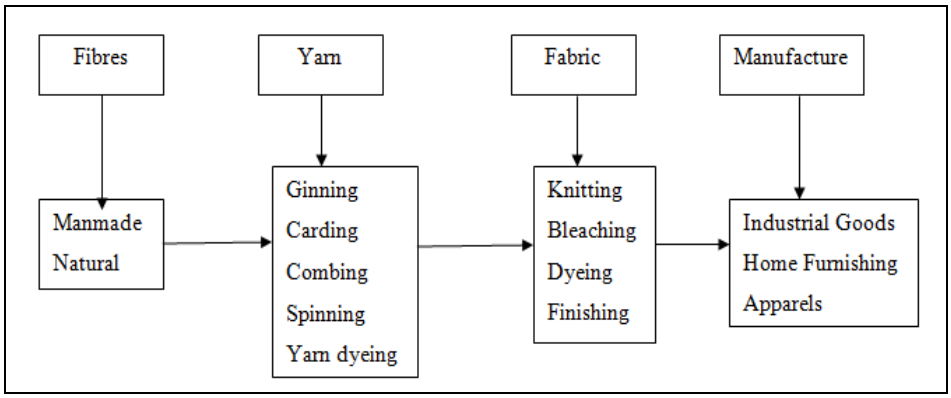

Figure 1.7 Knitwear value chain

1.9 STATEMENT OF THE PROBLEM

Tirupur knitwear cluster is recognized today as one of the important SME intensive industrial centres not only in India, but also in south Asia with a reported annual export turnover of Rs.12,000 crores during the fiscal year 2011-12. It is the foremost garment cluster in India. About 45% of Indian garment exports are in the form of knitwear, of which 80% is accounted for by Tirupur worth an estimated USD 1 billion. From the humble beginning of being a cotton ginning cluster, Tirupur knitwear industry has grown to a great extent.

The SME cluster of Tirupur district is a matured industrial cluster. But being a naturally developed cluster, it suffers from the shortcomings in professionalism. The pace of innovation adoption and diffusion by the cluster members is therefore, not up to the level of sustainability. The rationale behind this investigation is that SME industrial clusters will have a different rate of innovativeness when compared

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to the larger industry population outside the cluster. The literature is in want of empirical results based on the comprehensive model developed for investigation here, especially in the cluster and SME context. Further, this study will be the first of its kind in the knitwear cluster of Tirupur, the cluster that has made its own mark in the international fashion industry.

The innovativeness of the cluster and its diffusion needs to be analyzed to understand where the cluster stands and what can be done to promote it further. The extent of innovation adoption and its linkage with the antecedents and consequent business performance can be probed to understand what drives innovation and what happens after its adoption. Literature is in want studies addressing this issue and hence statement of the research problem is "What is the impact of innovation adoption on business performance among the SMEs operating in the knitwear cluster of Tirupur?".

1.10 NEED FOR THE STUDY

In India, statistics reveal the increasing significance of innovation and scale and scope of such innovation occurring among the firms today. According to NKC survey, 42% of large firms and 17% of SMEs surveyed have introduced 'new to the world innovations' during the course of their business (NKC 2007). India is emerging as global hub for innovation-low cost as well as high value products and services. When faced with the question as to why a study on innovation is required, what is the purpose of measuring innovation and how to measure it in the context of Small and Medium Enterprises; it will be necessary to understand in depth the concept of innovation and its relevance in today's competitive business scenario. The importance and use of measuring innovation is directly related with the impact of innovation on performance at the organizational level, improvements in competitiveness, economic growth and general well being of the society at the macro level.

A great deal of economic literature has emphasised the positive impact of innovation on the principle performance indicators of the enterprise. This determines competitive capabilities of the firms in the national as well as international markets.

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Investigating the concept at the regional level in particular, a need was felt to probe the extent of innovativeness among the SMEs in the knitwear cluster of Tirupur that determine their very survival and competitiveness in the international landscape. This study intends to contribute to the existing body of knowledge of SMEs' innovativeness and its influence on business performance in the context of hosiery industry. Given the scarcity of studies in this field, it was decided to conduct a primary level survey to collect information on the level of innovativeness in the cluster and thereby understand the cluster firms' innovation orientation and relate the same to their performance. In the light of the development of future research, this research identifies the factors relevant for the innovativeness and competitiveness of SMEs which may provide them with advantages in the face of international competition. The awareness and sensitization of these factors is the only way by which both firms and policy makers take them into serious consideration and promote them in the future.

1.11 STRUCTURE OF THE THESIS

This thesis aims at advancing further, the knowledge on innovation adoption in three specific ways. Firstly, the thesis will arrive at a proper theoretical framework of innovations. Secondly, conceptual model developed will be empirically tested to prove or disprove the hypotheses framed on its basis. Finally, directions for future research and recommendations will be provided based on the findings of the study. This introductory chapter has already set the broad area of the research interest and discussed briefly the concepts involved, that justifies the need for the research.

Chapter 2 provides an extensive review of literature pertinent to the field of innovation adoption among the SMEs. Initially, the major published empirical studies that broadly discusses on innovation, factors affecting innovation, innovation-performance linkage and the adoption of various technologies among the SMEs are discussed. This leads to the identification of gaps existing in the literature that offers direction towards the conceptual framework for the study. A conceptual model that addresses the literature gap is systematically developed. Relevant literatures on the concepts are discussed during the model development.

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Chapter 3 details the research problems identified in the study, the research questions and the objectives of the study. Research propositions are then arrived and hypotheses are developed to lead the study towards empirical testing and validation.

Chapter 4 outlines the methodology of the study which addresses the key aspects relating to the research approach, research design and the relevant analytical techniques used for the purpose of the study. The operational, sample, observational and statistical designs are explained in detail.

In Chapter 5, the results of data analysis are presented. First, the characteristics of the data are analysed. Reliability and validity tests are performed for data purification. Confirmative factor analysis is done on the items of latent constructs and the results are discussed on the validity and uni-dimensionality of the constructs. Then the results of the inferential analysis are presented and the hypotheses are verified. Necessary parametric and non-parametric tests are performed on the data and results are presented.

In Chapter 6, the findings of the study are discussed. By comparing the current findings with the previous findings and by discussing the information gathered from interviews with the industry experts, the results are analysed and presented from a practical point of view. Implications to various stakeholders are discussed and recommendations are provided.

In the concluding chapter, the contributions of the study are highlighted. The limitations of the study are explained and the possible directions for the further research are discussed. Finally, the thesis is concluded. Other relevant details not included in the main body of the thesis are presented in the appendices.

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